



CORPORATE OF THE TOWN OF TECUMSEH
2016 Culvert Needs Study

Structures with Spans $\leq 3.0\text{m}$ – Final Report



Our File: 15-2977



October 28, 2016

Corporation of the Town of Tecumseh
917 Lesperance Road
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Attention: Mr. Phil Bartnik, P.Eng.,
Manager, Engineering Services

**Town of Tecumseh
2016 Culvert Needs Study
Structures with Spans \leq 3.0m – Final Report**

Dear Mr. Bartnik:

Dillon is pleased to submit three (3) copies of the 2016 Culvert Needs Study Final Report for Structures with Spans \leq 3.0 m to the Town of Tecumseh.

Should you have any questions or concerns, please contact our office.

Sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in black ink, appearing to read "Patrick E. Robitaille".

Patrick E. Robitaille, P. Eng.
Project Manager

HB:mli
Enclosure

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References

- Mark Hernandez (2014), Manning Road Improvements, (12-6301), Dillon Consulting Limited.
- Krystal E. Kalbol (2009), Asset Valuation Report, (09-2188), Dillon Consulting Limited.
- Flavio Forest (2015), Roads Needs Study 2014, (14-9186), Dillon Consulting Limited.
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- Policy, Planning & Standard Division. (Oct. 2000), (Revised: Nov. 2003, Apr. 2008). Ontario Structure Inspection Manual (OSIM). Ontario Ministry of Transportation.
- Ontario Ministry of Transportation (MTO)'s Parametric Estimating Guide (PEG)*, 2011.
- Ontario Ministry of Transportation (MTO)'s Highway Costing (HiCo)*, 2014.

Executive Summary

A Needs Study was carried out in 2016 by Dillon Consulting Limited (Dillon) for the seventy-one (71) culvert structures having spans equal to or less than 3.0 metres located in the Town of Tecumseh (Town). This report summarizes the findings of the study and identifies required improvements to the structures which are currently deficient, or will likely become significantly deficient within a ten (10) year study period from the time of this report.

The findings revealed that of the seventy (71) inventoried structure, twenty-one (21) of those structures were identified with deficiencies that should be addressed either within the next year, or in certain cases to a maximum period of ten (10) years. The recommended work for those twenty-one (21) structures varies between major rehabilitation and full replacement, with an estimated probable cost of construction over the next five (5) years (2017 to 2021) of \$3.9M. The estimated cost to address all the remaining identified needs over the subsequent five (5) years (2022 to 2026) is \$1.4M, with a total capital needs for the period of ten (10) years of \$6.0M. All of the mentioned prices exclude H.S.T., but include an allowance for Engineering and Contingency. The following presents a summary of the Town's culvert needs in year 2016 dollar values. The Table below presents a summary of the Town's culvert needs in year 2016 dollar values.

Timing	Replacement or Rehabilitation	Roadside Safety	Total
< 1 Year	\$680,000.00	--	\$680,000.00
1 – 5 Years	\$3,669,500.00	\$200,000.00	\$3,869,500.00
6 – 10 Years	\$1,396,000.00	--	\$1,396,000.00
		Total	\$5,945,500.00

Potential cost savings may be realized by combining capital works for more than one structure under a single contract. The Town should also consider the needs of the road network when determining priorities for the structures. By combining road and structure works, the Town can potentially realize additional cost savings and reduce construction disruptions to the public.

These estimated costs are in 2016 Canadian dollars without allowance for inflation and based on our limited visual observations during the study, and may not necessarily include every improvement which can, or may need to be made to each structure. The final estimated costs for a structure rehabilitation or replacement will vary based on a detailed assessment, results of various investigations, or changes to the proposed scope of work during detailed design. A detailed summary of all culvert needs can be found in Appendix B.

A 'Culvert Condition Index' (CCI) has been provided in a similar manner as the Bridge Condition index to be used as a planning tool, see Appendix D. The CCI was calculated for each structure with an overall average of 63.0. This indicates that the overall inventory is at the lower end of the 'Good' range, and the Town needs to assign budgets for maintaining this infrastructure in overall good condition.

1.0 Background, Purpose, and Methodology

1.1 Background and Purpose

Dillon Consulting Limited (Dillon) was retained by the Corporation of the Town of Tecumseh (Town) in December, 2015, to conduct a needs study for culverts having spans equal to or less than 3.0m. The Town currently has an inventory of seventy-one (71) culverts.

The general scope of work for this study is as follows:

- Perform a visual site inspection of the Town's current inventory of the seventy-one (71) culverts having spans equal to or less than 3.0m;
- Where accessible, take approximate site measurements and record structural defects, deficiencies, and maintenance needs;
- Photograph and document the current condition of each structure;
- Prepare inspection reports for each structure in close accordance with the Ontario Structure Inspection Manual (OSIM);
- Prepare a capital plan for improving, maintaining or replacing these structures as required over the next ten (10) years (2017 to 2026);
- Review recent camera inspection video for inaccessible structures; and
- Review as-built drawings of structures as provided by the Town.

1.2 Methodology

1.2.1 Visual Inspection

The general methodology used for conducting the visual site inspections of the structures is as follows:

- Hammer sounding all accessible concrete elements from the ground level where applicable;
- Visually observing the condition of steel elements where applicable;
- Visually observing the condition of all exposed but inaccessible elements;
- Photographing elements and defects as required; and
- Recording of defects for each element inspected as follows:
 - Material defects, such as steel corrosion and concrete delamination, spalling, cracking, scaling, etc., where applicable.
 - Performance deficiencies, such as observed settlements, or reduced load carrying capabilities.
 - Maintenance needs, such as cleaning deck drains, removing debris, asphalt repairs, embankment.

Repairs, installing/replacing signage, etc. (Note: Costs for these items have not been included and are assumed to be included in the Town's routine maintenance budget.)

1.2.2 Definition of Bridges and culverts

The definition of bridges and culverts for the purpose of this study, have been taken from the CSA S6-14 Canadian Highway Bridge Design Code (CHBDC), which is summarized below:

- Bridge – A structure which provides a roadway or a walkway for the passage of vehicles, pedestrians, or cyclist across an obstruction, gap or facility and is greater than 3 metres in span.
- Culvert – A structure that forms an opening through soil.

For the purpose of this report, all the noted structures shall be considered 'culverts' as per the above definition.

1.2.3 Structures Physical Inventory and Classification

The structures included in this study were identified through discussions with the Town, field investigation, and previously issued reports and were inventoried and appraised in close accordance with the Ontario Structures Inspection Manual (OSIM). Approximate structure locations can be found on the location plan provided in Appendix A.

Table 1: Inventory of Culverts

Recent Str. ID	Original Str. ID	Road Name	Location	Type	Municipal Drain
01	01	Riverside Dr. E	0.37 km West from Lesperance Road	Non-rigid Box culvert	N/A
02	18	Warwick Rd.	0.10 km North from Burlington Rd.	Corrugated Steel Pipe	N/A
03	17	Burlington Rd.	At intersection with Arlington Blvd.	Concrete Pipe	N/A
04	04	Hayes Ave.	East of intersection with Edgewater Blvd.	Corrugated Steel Pipe	N/A
05	05	Hayes Ave.	West of intersection with Edgewater Blvd.	Concrete Pipe	N/A
06	06	Lenor Ave.	At intersection with Edgewater Blvd.	Concrete Pipe	N/A
07	07	Desro Dr.	At intersection with Manning Rd.	Corrugated Steel Pipe	East Townline Road Drain
08	08	Jamsyl Dr.	At intersection with Manning Rd.	Corrugated Steel Pipe	East Townline Road Drain
09	09	Sylvestre Dr.	At intersection with Manning Rd.	Corrugated Steel Pipe	East Townline Road Drain
10	10	Tecumseh Rd. E	1.0 km East from Manning Rd.	Corrugated Steel Pipe	N/A
11.A	11.A	Manning Rd.	At intersection with St. Gregory's Rd.	Precast Rigid Box	East Townline Road Drain
11.B	11.B	Manning Rd.	At intersection with Tecumseh Rd. E.		
11.C	11.C	Manning Rd.	At intersection with Lanoue St.		
12	72	Riverside Dr. E	At intersection with Manning Rd.	Rigid Frame Box Culvert	East Townline Road Drain
13	24	Sylvestre Dr.	At Exit from County Rd. 22	Corrugated Steel Pipe	Cyr Drain Outlet
14	22	Intersection Rd.	At intersection with Banwell Rd.	Corrugated Steel Pipe	N/A

Recent Str. ID	Original Str. ID	Road Name	Location	Type	Municipal Drain
15	15	Estate Park	At intersection with Tecumseh Rd. E	Concrete Pipe	N/A
16	16	Tecumseh Rd. E	0.30 km East from Manning Rd.	Corrugated Steel Pipe	N/A
17	66	North Talbot Rd.	At transition from N Talbot Rd. to Concession Rd. 9	Non-Rigid Open Footing Culvert	9th Concession Drain
18	65	North Talbot Rd.	1.10 km East from Oldcastle Rd.	Corrugated Steel Pipe	Talbot McCarthy and Relief Drain
19	64	North Talbot Rd.	0.60 km East from Oldcastle Rd.	Corrugated Steel Pipe	Washbrook Drain
20	63	Oldcastle Rd.	At intersection with North Talbot Rd.	Corrugated Steel Pipe	Washbrook Drain
21	30	Concession Rd. 8	0.50 km North from North Talbot Rd.	Corrugated Steel Pipe	N/A
22	62	Ure St.	At intersection with North Talbot Rd.	Corrugated Steel Pipe	Robinson Drain
23	6	Ure St.	0.30 km North from North Talbot Rd.	Corrugated Steel Pipe	N/A
24	60	Delduca Dr.	West of intersection with Ure St.	Corrugated Steel Pipe	N/A
25	28	O'Neil Dr.	North of intersection with Moynahan St.	Corrugated Steel Pipe	N/A
26	31	O'Neil Dr.	South of intersection with Moynahan St.	Corrugated Steel Pipe	N/A
27	59	Moynahan St.	0.12 km West from O'Neil Dr.	Corrugated Steel Pipe	N/A
28	58	Moynahan St.	West of intersection with Hennin St.	Corrugated Steel Pipe	N/A
29	57	Moynahan St.	East of intersection with Hennin St.	Corrugated Steel Pipe	N/A
30	56	Moynahan St.	0.10 km West from Hennin St.	Corrugated Steel Pipe	7th Concession Drain
31	55	Picadilly Ave.	At intersection with Oldcastle Rd.	Corrugated Steel Pipe	N/A
32	54	Oldcastle Rd.	1.10 km South from North Talbot Rd.	Corrugated Steel Pipe	Downing and Branch Drain
33	53	McCord Lane	At intersection with Walker Rd.	Corrugated Steel Pipe Arch	N/A
34	29	Pulleyblank	0.70 km South from North Talbot Rd.	Corrugated Steel Pipe	Wolfe Drain

Recent Str. ID	Original Str. ID	Road Name	Location	Type	Municipal Drain
35	--	Rossi Dr.	0.30 km east from Outer Dr.	Corrugated Steel Pipe	N/A
36	50	Blackacre Dr.	At intersection with Outer Dr.	Corrugated Steel Pipe Arch	Wolfe Drain
37	49	Outer Dr.	At intersection with Outer Dr. Connector	Corrugated Steel Pipe	Collins/HWY#3
38	38	Malden Rd.	At intersection with South Talbot Rd.	Corrugated Steel Pipe	South Talbot Road Drain East
39	39	Concession Rd. 10	At intersection with South Talbot Rd.	Non-Rigid Open Footing Culvert	South Talbot Road Drain East
40	101	South Talbot Rd.	0.10 km West from Concession Rd. 10	Non Rigid Open Footing Culvert	West Branch of Deslisle Drain
41	75	Concession Rd. 9	At intersection with South Talbot Rd.	Corrugated Steel Pipe	South Talbot Road Drain
42	79	Snake Lane Rd.	At intersection with South Talbot Rd.	Non-Rigid Open Footing Culvert	South Talbot Road Drain
43	67	South Talbot Rd.	At intersection with Concession Rd. 8	Corrugated Steel Pipe	8th Concession Road Drain
44	43	Sexton Side Rd.	At intersection with South Talbot Rd.	Corrugated Steel Pipe	8th Concession Road Drain
45	44	South Talbot Rd.	At intersection with Walker Rd.	Non-Rigid Open Footing Culvert	Old Castle Road Drain
46	46	South Talbot Rd.	At intersection with Holden Rd.	Non-Rigid Open Footing Culvert	South Talbot Road and Shreve Drain
47	47	South Talbot Rd.	0.36 km East from County Rd. 9	Corrugated Steel Pipe	Benson Drain
48	45	Holden Rd.	1.35 km South from South Talbot Rd.	Non-Rigid Open Footing Culvert	Holden Outlet Drain
49	68	Concession Rd. 8	At intersection with South Talbot Rd.	Corrugated Steel Pipe	N/A
50	102	Concession Rd. 8	0.35 km South from South Talbot Rd.	Corrugated Steel Pipe	N/A
51	42	Concession Rd. 8	2.50 km South from South Talbot Rd.	Non-Rigid Open Footing Culvert	Webster Drain
52	78	Snake Lane Rd.	0.55 km South from South Talbot Rd.	Corrugated Steel Pipe	Snake Lane Drain
53	77	Snake Lane Rd.	1.20 km South from South Talbot Rd.	Non-Rigid Open Footing Culvert	9th Line Drain
54	76	Snake Lane Rd.	2.15 km South from South Talbot Rd.	Non-Rigid Open Footing Culvert	Webster Drain

Recent Str. ID	Original Str. ID	Road Name	Location	Type	Municipal Drain
55	74	Concession Rd. 9	0.90 km South from South Talbot Rd.	Corrugated Steel Pipe	9th Line Drain
56	73	Concession Rd. 9	1.75 km South from South Talbot Rd.	Corrugated Steel Pipe	Webster Drain
57	41	Concession Rd. 9	At intersection with County Rd. 8	Corrugated Steel Pipe	Snake Lane Drain
58	--	Concession Rd. 10	0.25 km South from South Talbot Rd.	Corrugated Steel Pipe	McPherson & J.C. Smith Drain
59	--	Concession Rd. 10	0.65 km South from South Talbot Rd.	Corrugated Steel Pipe	McPherson & J.C. Smith Drain
60	--	Concession Rd. 10	0.80 km South from South Talbot Rd.	Corrugated Steel Pipe	McPherson & J.C. Smith Drain
61	--	Concession Rd. 10	1.0 km South from South Talbot Rd.	Concrete Pipe (East) Corrugated Steel Pipe (West)	McPherson & J.C. Smith Drain
62	--	Concession Rd. 10	1.80 km South from South Talbot Rd.	Corrugated Steel Pipe	McPherson & J.C. Smith Drain
63	36	Concession Rd. 10	At intersection with County Rd. 8	Corrugated Steel Pipe Arch	Colchester Townline Drain
64	35	Malden Rd.	At intersection with County Rd. 8	Corrugated Steel Pipe	Colchester Townline Drain
65	37	Concession Rd. 11	At intersection with South Talbot Rd.	Corrugated Steel Pipe	South Talbot Road Drain East
66	--	Concession Rd. 11	0.75 km south from South Talbot Rd.	Clay Pipe (East) - Big O (West)	East McPherson & Santo Drain
67	--	Concession Rd. 11	1.0 km south from South Talbot Rd.	Corrugated Steel Pipe	East McPherson & Santo Drain
68	--	Concession Rd. 11	1.3 km south from South Talbot Rd.	Corrugated Steel Pipe	East McPherson & Santo Drain
69	33	Concession Rd. 11	At intersection with County Rd. 8	Corrugated Steel Pipe	Colchester Townline Drain
70	34	Concession Rd. 12	At intersection with South Talbot Rd.	Non-Rigid Open Footing Culvert	South Talbot Road Drain East
71	27	Odessa Drive	At intersection with County Road 42	Corrugated Steel Pipe	Klondyke & Branch Drains

All the seventy-one (71) structures reviewed for this report meet the definition of a culvert. Any structures not falling into one of categories are considered part of the individual road section and any improvement to these structures should be assessed at a time that improvements to the road are undertaken.

1.2.4

Visual Site Inspection

The visual site inspections were performed in close accordance with the OSIM in order to provide records to assist for the Town in maintaining a safe culvert inventory. Approximate structure measurements were taken and recorded where applicable. The field inventory included a visual inspection on an element-by-element basis for material defects and performance deficiencies. Maintenance needs of a structure were identified in the inspection forms and included in the comments associated with recommended works in the summary of construction needs and probable cost tables in Appendix B.

Visual comments, recommended work, and timing for the works were recorded and inputted into the OSIM inspection forms in PDF format, including a photo log of each structure. A sample of elements common to most structure types which were inspected (where applicable) is summarized in Table 2 below for reference. The complete OSIM inspection forms can be found in Appendix C.

Table 2: OSIM Element List

Element Group	Element Name	Units
Decks	Wearing Surface	Sq.m.
	Deck Top	Sq.m.
	Soffit - Thin Slab	Sq.m.
	Soffit - Thick Slab	Sq.m.
	Soffit - Inside Boxes	Sq.m.
	Drainage System	Each
Joints	Seals/Sealants	Each
	Concrete End Dams	Sq.m.
	Armouring/Retaining Devices	m.
Sidewalks/Curbs	Sidewalks and Medians	Sq.m.
	Curbs	Sq.m.
Barriers	Barrier/Parapet Walls	Sq.m.
	Railing Systems	m.
	Posts	Each
	Hand Railings	m.
	Inside Boxes (sides & bottom)	Sq.m.
	Diaphragms	Each (Sq. m. if concrete)
Coatings	Structural Steel	Sq.m.
	Railing Systems / Hand Railings	Sq.m.
Abutments	Abutment Walls	Sq.m.
	Ballast Walls	Sq.m.

Element Group	Element Name	Units
	Wingwalls	Sq.m.
	Bearings	Each
Piers	Shafts/Columns/Pile Bents	Sq.m.
	Caps	Sq.m.
	Bearings	Each
Retaining Walls	Walls	Sq.m.
	Barrier Systems on Walls	Sq.m.
Culverts	Inlet Components	Sq.m.
	Outlet Components	Sq.m.
	Barrels	Sq.m.
Foundations	Foundation (below ground level)	N/A
Embankments & Streams	Streams and Waterways	All
	Embankments	Each
	Slope Protection	Each
Signs	Signs	Each
Approaches	Wearing Surface	Sq.m.
	Approach Slabs	Sq.m.
	Drainage System	All
	Curb/Gutters	m.
	Sidewalk and Curb	Sq.m.

A limited visual inspection was performed for elements (or parts of elements) which could not be readily accessed during the inspection. This typically includes deck soffits, deck tops (below a wearing surface), and interior portions of main longitudinal elements (i.e. inside of small diameter culverts). The elements which received a limited inspection are noted on the OSIM inspection forms.

Approach slabs were assumed to be present on some structures which typically require them according to the Canadian Highway Bridge Design Code (CSA S6-06). A length of 6.0 metres was assumed, as the actual length could not be visually confirmed in the field. Some culverts extend beyond the road embankment fill and have exposed exterior ends. As a result, any observed defects in these exterior portions of the barrel were recorded as part of the primary barrel element.

1.2.5 Condition of Elements and Defects

Structures were appraised on an element-by-element basis. The condition of each element is rated as Excellent, Good, Fair or Poor. The condition of the elements and defects was recorded according to OSIM, which provides guidance as to how the condition of element defects should be rated. Culverts are rated deficient if the condition of any of the elements that make up the structure has recommended work.

1.2.6 Timing of Needs

Recommended work and timing are noted for each element in the inspection forms and summary table (see Appendix B and C). Timing for the recommended work was recorded as < 1 Year, 1-5 Years, 6-10 Years, or None. The following are the definitions used for the timing of recommended works:

< 1 Year	A structure need that is required with some degree of urgency, but can still be addressed within one (1) year, unless specifically addressed as an immediate concern. In some cases, it may be possible for the Town to complete these items as part of their regular maintenance. Where the apparent safety of the public is at risk due to an impending failure of the structure, such as notification shall be given for recommended closure of the road way until repair or replacement can be undertaken.
1 – 5 Year	A structure need that should be addressed within a period of one (1) to five (5) years from the time of this report. In some cases, it may be possible for the Town to complete these items as part of their regular maintenance.
6 – 10 Year	A structure need that is not of any immediate concern but will likely develop further deficiencies that should be addressed within a period of up to ten (10) years from the time of this report. In some cases, it may be possible for the Town to complete these items as part of their regular maintenance.
None	The structure displays no major deficiencies, and no work is required other than routine maintenance.

1.2.7 Additional Investigations

Additional investigations have been recommended in the OSIMs based on the triggers which warrant such investigations provided in the summary of construction needs and probable costs, in Appendix B, and/or based on engineering judgement for the site. Those recommended investigations include:

- Camera inspections: generally for CSP culverts which are long, and/or have small diameters, and/or have inaccessible inlets or outlets, and/or submerged at the time of inspection; and
- Monitoring of deformations, settlements and movements.

A camera inspection have been performed for a number of structures (01, 20, 35, and 49) and reported in the summary sheet. For the remaining structures that have suggested additional investigations, the recommended rehabilitation measures and costs should be re-assessed based upon the result of the investigations.

1.2.8 Material Condition Survey

A number of additional material condition survey types may be warranted based on the results of the visual inspection and the condition of the observed elements. One or more of the following surveys are typically recommended when necessary:

A detailed deck condition survey is recommended for structures showing significant asphalt defects (such as wide, transverse, longitudinal, alligator, or map cracking), or significant soffit deterioration. These defects suggest that the deck top may also have deficiencies not visible due to the asphalt wearing surface. The investigation recommended by the OSIM includes a half-cell survey to determine the extent of deterioration.

A half-cell survey is normally warranted in the OSIM due to the presence of bottom-up asphalt defects; however the survey could still be warranted if the asphalt wearing surface was recently replaced (eliminating the bottom-up asphalt defects) and concrete deterioration of the soffit is still observed due to past leakage through the deck. The asphalt may have been replaced a reasonably short time ago in some cases, and it is suspected that not enough time has passed to allow for the formation of new bottom-up asphalt defects.

A substructure condition survey is recommended for structures that have a significant amount of concrete in poor condition and require delineation of delaminated areas, areas of high corrosion potential, and the testing of concrete core samples. It is likely that these structures may require rehabilitation or replacement as a result of further investigation.

It was also recommended in some cases that the asphalt wearing surface and deck waterproofing be replaced in order to access the bridge deck, where deterioration is suspected but could not be verified visually.

1.2.9 Benchmark Probable Construction Costs

Benchmark probable costs for culvert improvements are provided in (see below) for each type of improvement. It has been used to establish probable costs of construction. Probable cost of construction estimates were derived from the following sources, where applicable:

- Ministry of Transportation Ontario (MTO) Highway Costing System (HiCo);
- Ministry of Transportation Ontario (MTO) 2011 Parametric Estimating Guide; and
- Recent similar locally tendered bridge and culvert projects by Dillon.

Where applicable, some discretion has been applied for smaller rehabilitation works based upon past local tendering experience to allow for more realistic costs. The costs are based upon estimated quantities and unit costs, plus an additional 30% contingency and engineering allowance based on the type of recommended work items. A summary of probable cost for each structure has been included in Appendix B.

Table 3: Culvert Benchmark Probable Costs of Construction

Category	Description	Units	Unit Cost	Reference
Asphalt Paving & Waterproofing	Removal of asphalt pavement from concrete surfaces	m ²	\$95.00	HiCo 2014
	Structure deck waterproofing			
	Asphalt pavement			
Concrete Repairs(See Notes)	Crack Injection	m	\$330.00	HiCo 2014
	Concrete patch repairs – Type A	m ²	\$575.00	HiCo 2014
	Concrete patch repairs – Type B	m ²	\$1,800.00	HiCo 2014
	Concrete patch repairs – Type C	m ²	\$1,425.00	HiCo 2014
Deck Drains	Removal and replacement of deck drains	each	\$2,000.00	Previous tenders
Gabion Basket Retaining Wall	Earth excavation – grading	m	\$2,600.00	HiCo 2014
	Gabions			
	Granular 'A'			
New Barrier on Bridge Deck	Concrete removal – full depth	m	\$2,200.00	HiCo 2014
	Reinforcing steel bar			
	Concrete in structure			
	Concrete in parapet wall Parapet wall railing			
Erosion Protection	Earth excavation – grading	m ²	\$100.00	HiCo 2014 and previous tenders
	Geotextile			
	Rip rap, handlaid			
Replacement	Culvert – low cover (0.0 – 2.0 m)	m	\$7,000.00	Previous tenders
	Culvert – high cover (2.0 – 5.0 m)	m	\$11,000.00	
Investigations	Roadside Safety	L.S.	\$5,000.00	Previous investigations
	Hydrology Study & Hydraulic Analysis	L.S.	\$8,000.00	
	Structure Condition Assessment & Renewal Options Report	L.S.	\$20,000.00	
	Monitoring of Deformations, and Settlements	L.S.	\$5,000.00	
	Camera Inspection, Review, and Reporting	L.S.	\$5,000.00	

Notes:

- Common assumptions were made for all structures in order to obtain simplified cost estimates (e.g., asphalt type and thickness, concrete repair depth, dimensions of reconstructed components, and others). Actual components, values and their associated costs should be used in actual construction project cost estimates. These costs should not be used for tender estimating purposes.

- These prices may vary according to the amount and extent of work performed on a structure at one time. It is expected that unit prices will be higher for small quantity work items.
- Prices do not allow for costs associated with mobilization, demobilization, bonds, insurance, or other costs related to performing and executing capital work.
- Unit prices DO NOT include HST.
- Definitions of concrete patch repairs are as follows:
 - Type 'A': Concrete removals that typically apply to the top surface of decks, including removals over round voids in post tensioned structures; sidewalks; curbs; and culvert and tunnel floor slabs and the top and inside faces of concrete barrier and parapet walls.
 - Type 'B': Concrete removals that typically apply to deck soffit and fascia of bridge decks, soffit of the top slab of culverts and tunnels, girders, diaphragms, and outside face of concrete barrier walls and parapet walls.
 - Type 'C': Concrete removals other than the ones specified for concrete removals – Partial Depth, Type A and Type B, and typically apply to abutments, wingwalls, pier columns and caps, bearing seats, retaining walls, and vertical walls of culverts and tunnels.

1.2.10 Culvert Condition Index (CCI)

The 'Bridge Condition Index' BCI was developed by the Ministry of Transportation (MTO) as a mean of combining the inspection information obtained through the OSIM data into a single value. The BCI is essentially a planning tool to assist the Town in scheduling improvements for the structure. However, Using the BCI in this study was found to be inappropriate due to the small sizes for some of the inspected structures. Therefore, Dillon has provided the 'Culvert Condition Index' (CCI). The CCI is calculated in a similar manner as the BCI, where only the culvert element (barrel or concrete frame) is considered for condition indexing.

The CCI is categorized into a range of 0 to 100, where a rating of 80 to 100 in 'Excellent' which represent a new constructed culvert free of any immediate repair needs, 60 to 80 in 'Good' condition, 40 to 60 in 'fair' condition, and rating less the 40 in 'Poor' condition where immediate repair would be required.

The CCI was calculated for each of the seventy-one (71) culverts. The index values have been listed and presented in a bar chart for comparison purposes in Appendix D. The average CCI of 63.0 calculated from the results of 2016 investigation indicates that the overall inventory average is at the lower end of the 'Good' range, and the Town needs to assign budgets for maintaining this infrastructure in overall good condition.

2.0 Discussion of Findings and Capital Needs

A total of twenty one (21) culverts were identified with deficiencies that should be addressed within a maximum period of ten (10) years from the time of this report. The following Sections 2.1 to 2.3 provide a discussion of those structures needs in order of priority. Roadside safety concerns and recommendations are presented in Section 2.4.

2.1 Specific Structures: < 1 Year (Immediate) Capital Needs

A total of two (2) culverts were identified with deficiencies that should be addressed within one (1) year of the time of this report, and are presented in order of priority.

Structure No. 45: South Talbot Road

The structure was built in 1965 and is a 2.4 m single – span cast-in-place concrete non-rigid open footing frame culvert. Severe deterioration was observed at the deck soffit, walls, and wing walls which includes; spalling, scaling, exposed and corroded reinforcing steel.

This structure has reached the end of its useful service life due to its condition and is recommended for full replacement. Dillon has been assigned to provide design for replacement of this structure.



Structure No. 47: South Talbot Road

This structure was built in 1999 and is a 1.4 m diameter corrugated steel pipe. Severe corrosion was observed at the culvert barrel, along the full length at the spring line.

This structure has reached the end of its useful service life due to its condition, and is recommended for full replacement.



2.2 Specific Structures: 1-5 Year Capital Needs

A total of fifteen (15) culverts were identified with deficiencies that should be addressed within the next one (1) to five (5) years from the time of this report, and are presented in order of priority.

Structure No. 08: Jamsyl Drive

This structure was built in 1985 and is a 1.70 m diameter corrugated steel pipe. Failure of the C.S.P was observed directly below the road surface. The current condition provides a reduced hydraulic opening and a possible hazard for the traffic passing over the culvert section. Light corrosion is noticed at the surface surrounding this distorted section. It is recommended that the full structure be replaced.



Structure No. 54: Snake Lane Road

The original structure was built in 1965 and is a 2.0 m single – span cast-in-place concrete non-rigid open footing frame culvert. The original structure was later extended, and wingwalls were added at both edges to provide wider road section and supporting element. A number of significant deficiencies were observed such as:

- Severe scour below the foundation;
- Large spalls at soffit with exposed and corroded rebar;
- Severe concrete erosion at the culvert walls; and
- The wearing surface is slippery and flushing over the culvert and severe settlement was observed over the culvert section.

This structure has reached the end of its useful service life due to its condition and apparent age and is required for replacement.



Structure No. 53: Snake Lane Road

This structure was built in 1960 and is a 1.5 m single – span cast-in-place concrete non-rigid open footing frame culvert. Severe spalling, delamination, and exposed corroded reinforcing steel were observed at the deck soffit, walls, and wingwalls.

It is recommended that the structure be fully replaced due to its deteriorated condition.

**Structure No. 42: Snake Lane Road**

This structure was built in 1965 and is a 1.8 m single – span cast-in-place concrete non-rigid open footing frame culvert. The wingwalls, abutment walls, soffit, and curbs were observed to have regions of severe delamination, spalling, cracks, exposed corroded reinforcing steel, and alkali silica aggregate reaction.

Rehabilitation or replacement of this structure is recommended.

**Structure No. 46: South Talbot Road**

This structure was originally built in 1965 and is a 1.9 m single – span cast-in-place concrete non-rigid open footing frame culvert that was later lengthened. Severe disintegration of the concrete curb was observed and spalling at the northern headwalls. Apparent scouring was observed below the foundation at the original section. Asphalt surface with severe ravelling, and longitudinal and transverse cracking.

Although rehabilitation is an option, due to the size of the structure; full replacement was recommended as the most practical long term solution.



Structure No. 70: Concession Road 12

This structure was built in 1965 and is a 2.45 m single – span cast-in-place concrete non-rigid open footing frame culvert. Moderate to severe spalling of the culvert soffit was observed with exposed and corroded reinforcing steel approximately below the road center line.

Rehabilitation of the structure is recommended.

**Structure No. 51: Concession Road 8**

This structure was built in 1965 and is a 2.5 m single – span cast-in-place concrete non-rigid open footing frame culvert. Moderate to severe spalling of the culvert soffit was observed with exposed and corroded reinforcing steel below the road center line.

Rehabilitation of the structure is recommended.

**Structure No. 07: Desro Drive**

This structure was built in 1985 and is a 1.90 m diameter corrugated steel pipe. Typical severe corrosion was noticed at the bolted connections. Moderate settlement was also observed at the culvert top side, approximately located below the road.

This structure is approaching to the end of its useful service life due to its condition and is recommended for replacement.



Structure No. 14: Intersection Road

This structure was built in 1990 and is a 0.50 m diameter corrugated steel pipe. Severe corrosion was observed at the culvert barrel, in addition to wide cracks in few sections at the spring line.

This structure is approaching to the end of its useful service life due to its condition and is recommended for replacement.

**Structure No. 29: Moynahan Street**

This structure was built in 1957 and is a 0.40 m diameter corrugated steel pipe. Severe corrosion was observed at the culvert barrel, mainly below the spring line.

This structure is approaching to the end of its useful service life due to its condition and is recommended for replacement.

**Structure No.09: Sylvestre Drive**

This structure was built in 1990 and is a 2.0 m diameter corrugated steel pipe. The culvert barrel is moderately corroded below spring line with wide split located approximately 3.0m from the north edge. Mortar bags at the south-east corner were found in poor condition.

This culvert is recommended to be monitored for deformation, and settlement until it is fully replaced.



Structure No.58: Concession Road 10

This structure is 0.4m diameter corrugated steel pipe. The inspection of the culvert was limited due to the high water level. The east end was covered under the heavy plant growth.

In the drainage report, this structure is recommended to be replaced with new 750mm smooth wall concrete pipe.

**Structure No.60: Concession Road 10**

This structure is 0.45m diameter corrugated steel pipe. The culvert barrel was observed with a full length split at the spring line.

In the drainage report, this structure is recommended to be replaced with new 600mm smooth wall concrete pipe.

**Structure No.62: Concession Road 10**

This structure is 0.6m diameter corrugated steel pipe. The bottom half of the culvert barrel is moderately corroded. The water flow is partially blocked with debris and the heavy plants growth at both ends.

In the drainage report, this structure is recommended to be replaced with new 900mm smooth wall concrete pipe.

**Structure No.67: Concession Road 11**

This structure is 0.6m diameter corrugated steel pipe. The culvert barrel was observed with moderate to severe corrosion, and the bottom half was filled with sedimentation.

In the drainage report, this structure is recommended to be replaced with a new 600mm aluminized CSP as part of the Drainage Works.



2.3 Specific Structures: 6-10 Year Capital Needs

The following four (4) structures were identified with deficiencies that should be addressed within a period of six (6) to ten (10) repair years from the time of this report.

Structure No. 35: Rossi Drive

This structure is 0.6m diameter corrugated steel pipe. It was inaccessible at time of the field inspection. Therefore, camera inspection was conducted by a subcontractor. The video recording of the culvert barrel showed a joint displacement and a wide opening. The rest of the barrel length was found in good condition.

It is recommended to anticipate a full replacement of this culvert within 6 - 10 Years.



Structure No. 48: Holden Road

This structure was originally built in 1965 and is a 2.4 m single – span cast-in-place concrete non-rigid open footing frame culvert. The original structure span was lengthened at both ends. Severe alkali aggregate reaction was observed at the recently added wingwalls and headwalls. Signs of severe deposits were observed at the joint between both the original and new extension.

Structure is recommended to be fully replaced with widened structure.



Structure No. 68: Concession Road 11

This structure is 0.45m diameter corrugated steel pipe. Existing pipe is in fair condition with distorted west end. The bottom half below the spring line is moderately corroded. Excessive plant growth needs to be repaired as part of the routine maintenance.

It is recommended to anticipate full replacement within 6 - 10 Years due to corrosion. (Monitor in interim).



Structure No. 69: Concession Road 11

This structure is 1.8m diameter corrugated steel pipe. Culvert barrel was observed with moderate corrosion around the bolts, and lightly corroded haunches at the bottom. Wearing surface with wide transverse cracks over the culvert. Monitor structure for further corrosion loss.

It is recommended to anticipate a full replacement of this culvert within 6 - 10 Years.



2.4 Roadside Safety

The existing roadside safety at each culvert site was reviewed based on the Ministry of Transportation, Ontario (MTO) Roadside Safety Manual and the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads. The potential hazards observed at the culvert sites were generally of three types:

- Culvert ends within the clear zone;
- Perpendicular ditches with steep, deep side slopes; and
- Headwalls on parallel culverts.

The hazard mitigation recommended by the MTO Roadside Safety Manual and the TAC Geometric Design Guide is to remove the hazard by extending the culvert ends outside of the clear zone and flattening the side slopes, where possible. If removing the hazard is not feasible, the MTO Roadside Safety Manual and TAC Geometric Design Guide recommend shielding the hazard with guide rail.

It is recommended to remove the hazard where feasible. However, as there are many deep ditches adjacent to or perpendicular to the Town's roads, removing the hazard is not always feasible. Furthermore, adding guide rails create become as an obstacle for the moving farming equipment, and there are cases where guide rail is warranted in isolation but does not improve the overall roadside safety when considering the approach roadsides (i.e., the ongoing presence of unprotected driveway culvert headwalls or deep roadside ditches).

In general, the ends of transverse and parallel culverts should be tapered to the side slope to minimize the hazard. Culverts less than 1.0 metre in diameter or span are considered traversable and not considered a hazard. Concrete headwalls at parallel culverts are usually within the clear zone and are considered hazards. When these parallel culverts are replaced, roadside safety can be improved by replacing the headwall with a longer culvert with ends tapered to the 4:1 or 3:1 slope. Refer to Appendix B for comments related to the more minor roadside safety concerns not specifically outlined per structure in this section.

A total of seven (7) culverts were identified with major roadside safety concerns that should be addressed where and when possible as outlined as follows:

Structure No. 39: Concession Road 10

Type of Hazard:

Concrete Headwalls

Roadside Safety Comments:

Concrete headwalls are a hazard that vehicles should be protected from. Guide rail may be warranted on South Talbot Road at this location whether this culvert is rehabilitated or replaced. If the culvert is replaced a widened culvert would reduce the risk associated with the headwalls perpendicular to Concession Road 10. At a minimum, Wb-33 object marker signs should be erected at the ends of each headwall due to their proximity to the existing edge of pavement. The need for guide rail should be confirmed during detailed design.



Structure No. 42: Snake Lane Road

Type of Hazard:

Concrete Headwalls

Roadside Safety Comments:

Concrete headwalls are a hazard that vehicles should be protected from. Guide rail may be warranted on South Talbot Road at this location whether this culvert is rehabilitated or replaced. If the culvert is replaced a widened culvert would reduce the risk associated with the headwalls perpendicular to Snake Lane Road. At a minimum, Wb-33 object marker signs should be erected at the ends of each headwall due to their proximity to the existing edge of pavement. The need for guide rail should be confirmed during detailed design.



Structure No. 57: Concession Road 9

Type of Hazard:

Concrete Headwalls

Roadside Safety Comments:

Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.



Structure No. 63: Concession Road 10

Type of Hazard:

Concrete Headwalls

Roadside Safety Comments:

Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.



Structure No. 64: Malden Road

Type of Hazard:

Concrete Headwalls

Roadside Safety Comments:

Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.



Structure No. 69: Concession Road 11Type of Hazard:

Concrete Headwalls

Roadside Safety Comments:

Concrete headwalls are a hazard that vehicles should be protected from. Guide rail may be warranted on County Road 8 (CR8) at this location whether this culvert is rehabilitated or replaced. If the culvert is replaced, extending the culvert length would reduce the risk associated with the headwalls perpendicular to Concession Road 11. At a minimum, Wb-33 object marker signs should be erected at the ends of each headwall due to their proximity to the existing edge of pavement. The need for guide rail should be confirmed during detailed design.

**Structure No. 70: Concession Road 12**Type of Hazard:

Concrete Headwalls

Roadside Safety Comments:

Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended on South Talbot Road. A widened culvert should be considered if culvert is replaced to reduce risk on Concession Road 12.



Structures with major and minor roadside safety concern are flagged on the location plan provided in Appendix A. Comments and recommendation for all the inspected structures are listed in Appendix B. The recommendations contained in this report are preliminary and based upon a cursory site review. A detailed roadside safety design should include an analysis of traffic volumes, collision history, and feasibility of improvements.

3.0 Program of Work and Study Updating

3.1 Program of Work

It is difficult to initiate and complete a major construction project in a period less than one (1) year due to the lead time required for investigations, planning, environmental assessments, engineering, as well as possible property acquisition and utility relocation. A two (2) year program is therefore recommended as follows, for any major culvert construction project.

- First Year: Preliminary Design, Legal Surveys, Land Acquisition and Utility Relocation
- Second Year: Detailed Design & Construction

3.2 Recommended Structure Improvement

The findings revealed that of the seventy-one (71) inventoried structure, twenty (20) of those structures were identified with deficiencies that should be addressed either within the next year, or in certain cases to a maximum period of ten (10) years. As discussed in Section 1.2.10; although an average CCI of 63.0 was maintained for the inventoried structures, it is the lower end of 'Good' range and indicates that the Town needs to assign budgets for maintaining this infrastructure in overall good condition.

The recommended work for those twenty (20) structures varies between major rehabilitation and full replacement, with an estimated probable cost of construction over the next five (5) years (2017 to 2021) of \$3.9M. The estimated cost to address all the remaining identified needs over the subsequent five (5) years (2022 to 2026) is \$1.4M, with a total capital needs for the period of ten (10) years of \$6.0M. All of the mentioned prices exclude H.S.T., but include an allowance for Engineering and Contingency. Table 4 below presents a summary of the Town's culvert needs in year 2016 dollar values:

Table 4: Culvert Construction Needs Summary

Timing	Replacement or Rehabilitation	Roadside Safety	Total
< 1 Year	\$680,000.00	--	\$680,000.00
1 – 5 Years	\$3,669,500.00	\$200,000.00	\$3,869,500.00
6 – 10 Years	\$1,396,000.00	--	\$1,396,000.00
		Total	\$5,945,500.00

Potential cost savings may be realized by combining capital works for more than one structure under a single contract. The Town should also consider the needs of the road network when determining priorities for the structures. By combining road and structure works, the Town can potentially realize additional cost savings and reduce construction disruptions to the public.

These estimated costs are in 2016 Canadian dollars without allowance for inflation and based on our limited visual observations during the study, and may not necessarily include every improvement which can, or may need to be made to each structure. The final estimated costs for a structure rehabilitation

or replacement will vary based on a detailed assessment, results of various investigations, or changes to the proposed scope of work during detailed design. A detailed summary of all culvert needs can be found in Appendix B.

3.3 Study Updating

The basic information assembled in this study, particularly with respect to inventory and construction needs, is subject to continual change. To ensure the reliability of the base data, a system of updating is advised to be conducted every five (5) years, and should include the following:

- An updating of the OSIM inspection forms for structures which were improved; and
- Identification of new deficiencies which have not been apparent with updates to the OSIM inspection forms and the provision of estimated costs for improvements required addressing those deficiencies.

The study content can remain effective for the next ten (10) years with the implementation of these update procedure.

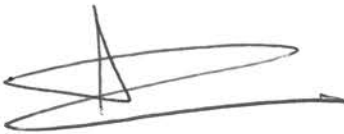
Closure

We trust that this report is sufficient for your requirements at this time; however, please do not hesitate to contact us for any questions or clarifications regarding this report.

Electronic copies of all files for this report can be found on a CD in a sleeve at the end of this report.

Yours truly,

DILLON CONSULTING LIMITED



Patrick E. Robitaille, P. Eng.
Project Manager



Hossam Bakr, E.I.T.

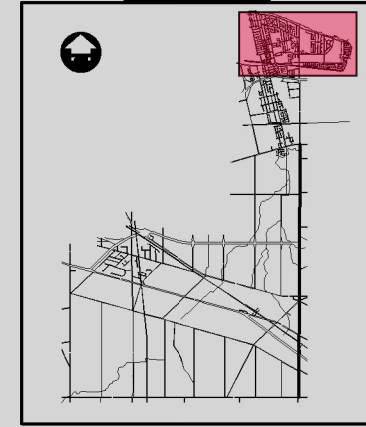
Appendix A

Location Plans

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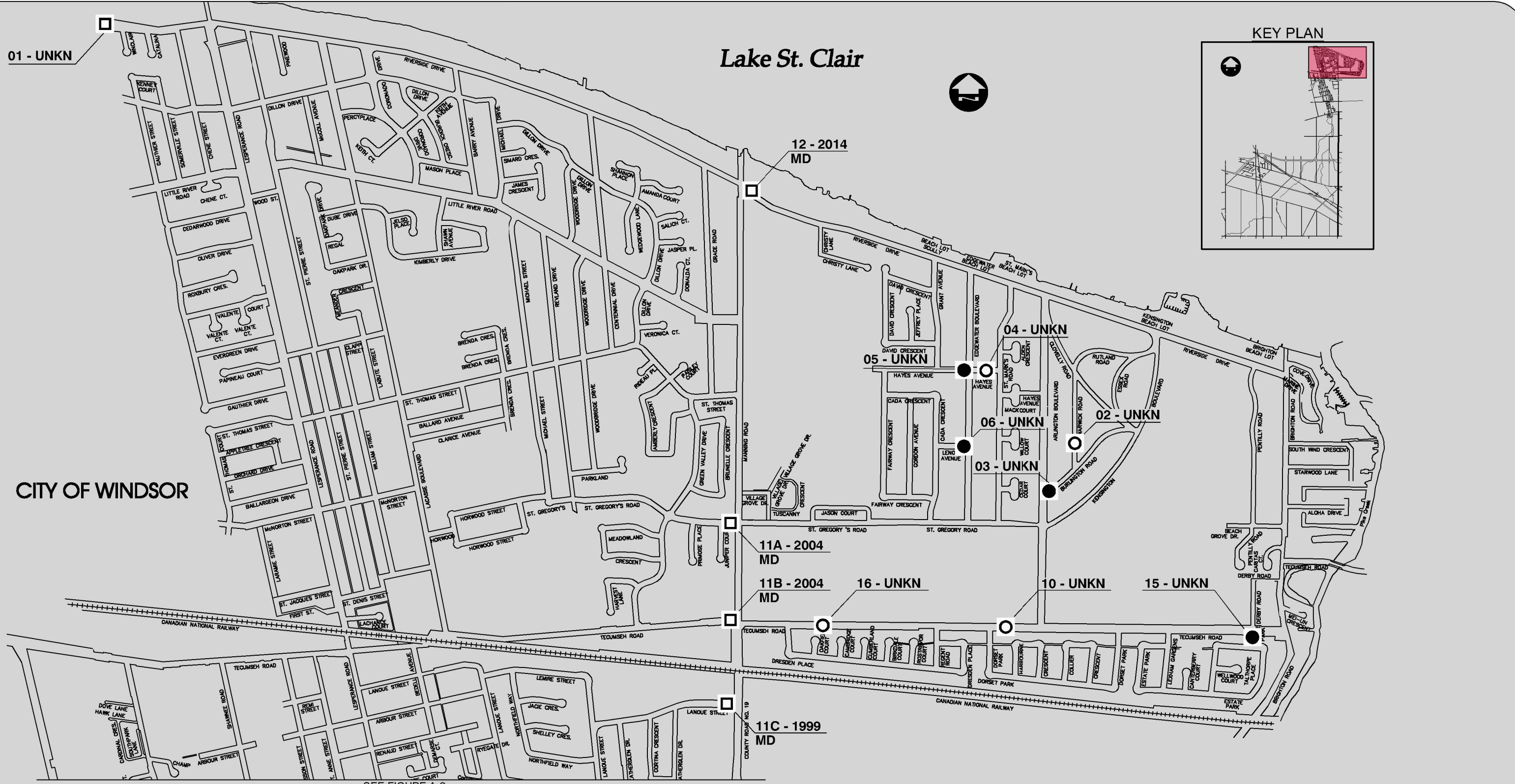
Lake St. Clair

KEY PLAN



12 - 2014 MD

CITY OF WINDSOR



SEE FIGURE A-2

TOWN OF TECUMSEH

2016 Culvert Needs Study
Structures with Spans ≤ 3.0 m

STRUCTURE LOCATIONS

FIGURE A-1



CULVERT TYPES:

- NO ACCESSIBILITY
- CORRUGATED STEEL PIPE ARCH
- CORRUGATED STEEL PIPE
- CONCRETE BOX CULVERT
- CONCRETE PIPE
- CONCRETE OPEN FOOT RIGID FRAME

TIME FRAMES / RECOMMENDED WORK

- < 1 YEAR REHAB OR REPLACE
- NO RECOMMENDED WORK
- 1 TO 5 YEARS REHAB OR REPLACE
- ROADSIDE SAFETY CONCERN
- 6 TO 10 YEARS REHAB OR REPLACE

STRUCTURE NUMBER: **00 - 0000**
 YEAR CONSTRUCTED: **MD**
 MUNICIPAL DRAIN

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MAP/DRAWING INFORMATION
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 IT INDICATES APPROXIMATE LOCATION FOR THE INSPECTED
 CULVERTS AND SHOULD BE SURVEYED FOR EXACT LOCATIONS.
 CREATED BY: HMB
 CHECKED BY: PER
 DESIGNED BY: NCO



PROJECT: 15-2977
 STATUS: DRAFT (REV. 2)
 DATE: October 2016



SEE FIGURE A-1

SEE FIGURE A-3

SEE FIGURE A-3

TOWN OF TECUMSEH
2016 Culvert Needs Study
Structures with Spans ≤ 3.0 m

STRUCTURE LOCATIONS

FIGURE A-2



CULVERT TYPES:

- ⊗ NO ACCESSIBILITY
- CORRUGATED STEEL PIPE ARCH
- CORRUGATED STEEL PIPE
- CONCRETE BOX CULVERT
- CONCRETE PIPE
- ▭ CONCRETE OPEN FOOT RIGID FRAME

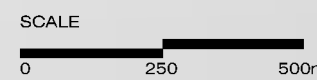
TIME FRAMES / RECOMMENDED WORK

- < 1 YEAR REHAB OR REPLACE
- NO RECOMMENDED WORK
- 1 TO 5 YEARS REHAB OR REPLACE
- ▲ ROADSIDE SAFETY CONCERN
- 6 TO 10 YEARS REHAB OR REPLACE

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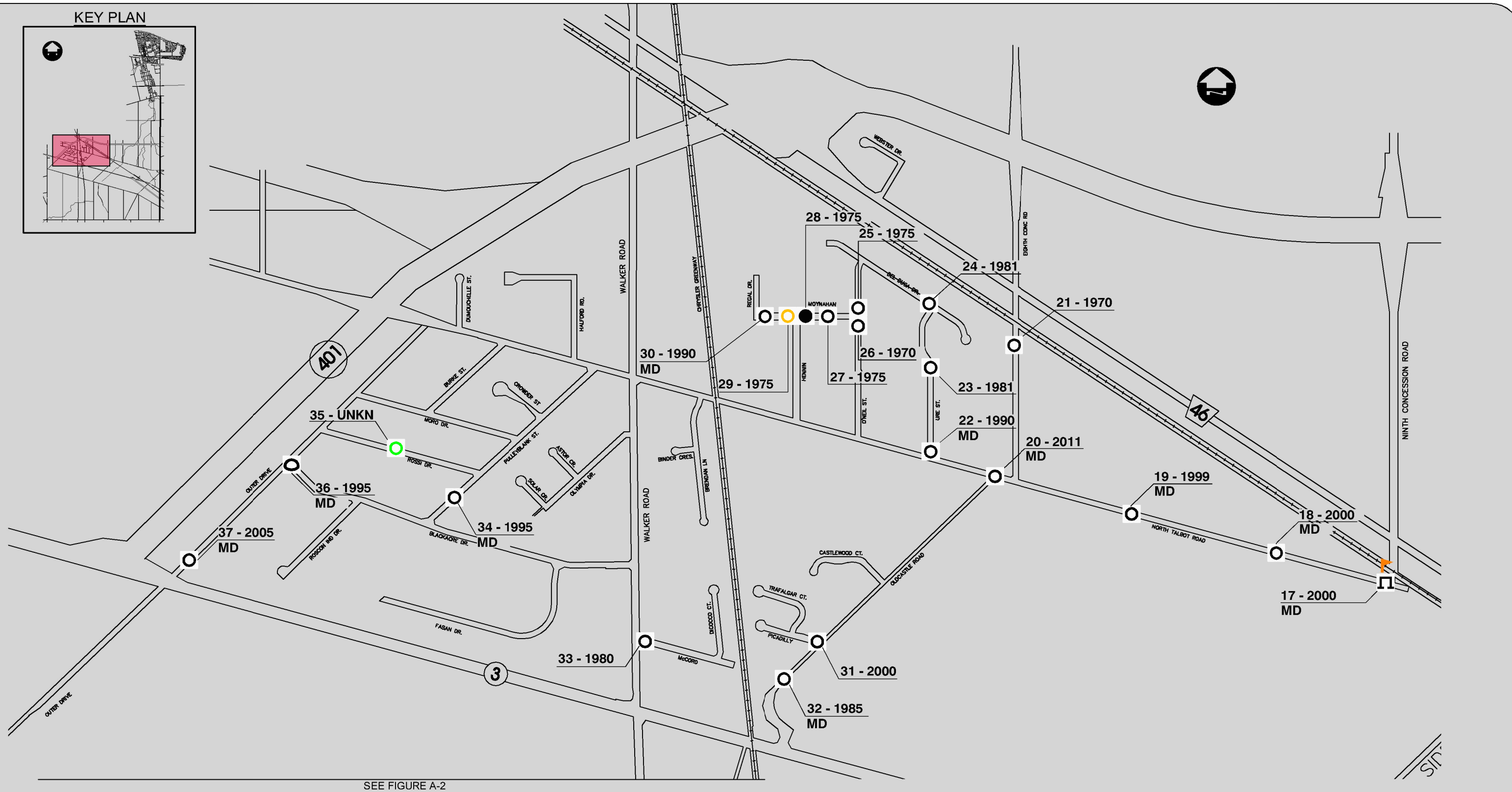
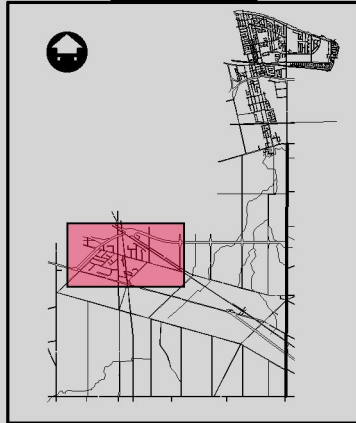
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DESIGNED BY: NCO



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DATE: October 2016

KEY PLAN



SEE FIGURE A-2

TOWN OF TECUMSEH
2016 Culvert Needs Study
Structures with Spans ≤ 3.0 m

STRUCTURE LOCATIONS

FIGURE A-3



CULVERT TYPES:

- ⊗ NO ACCESSIBILITY
- CORRUGATED STEEL PIPE ARCH
- CORRUGATED STEEL PIPE
- CONCRETE BOX CULVERT
- CONCRETE PIPE
- CONCRETE OPEN FOOT RIGID FRAME

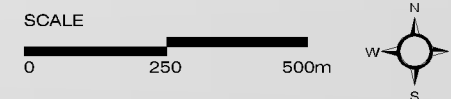
TIME FRAMES / RECOMMENDED WORK

- < 1 YEAR REHAB OR REPLACE
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- 1 TO 5 YEARS REHAB OR REPLACE
- 6 TO 10 YEARS REHAB OR REPLACE
- ▲ ROADSIDE SAFETY CONCERN

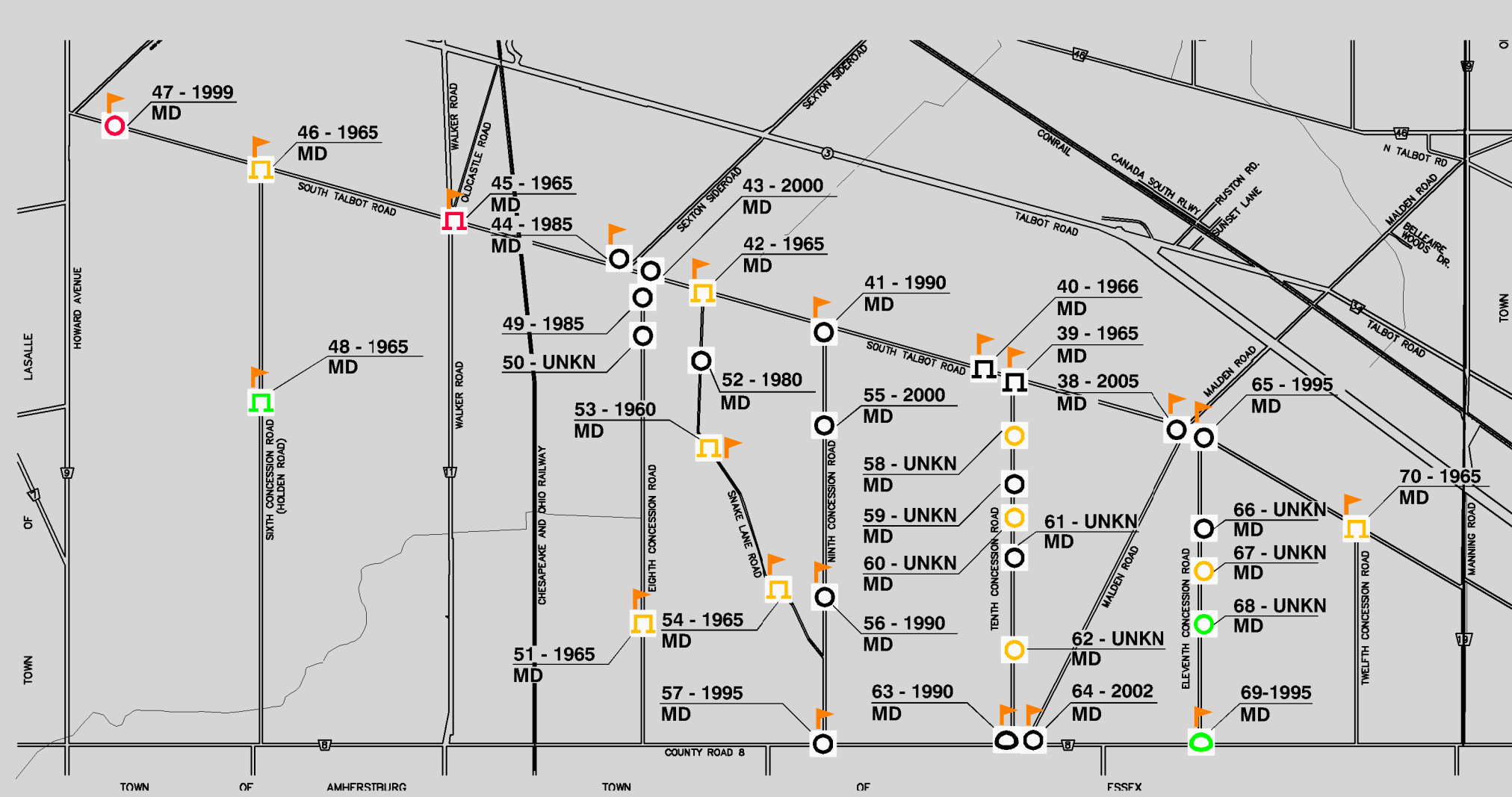
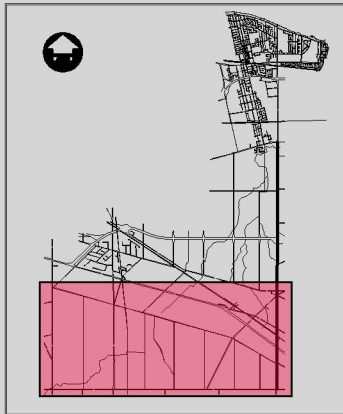
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DATE: October 2016



TOWN OF TECUMSEH

2016 Culvert Needs Study
Structures with Spans ≤ 3.0 m

STRUCTURE LOCATIONS

FIGURE A-4

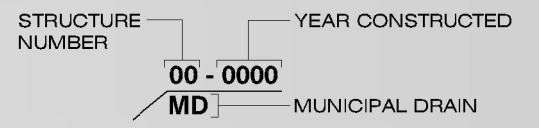


CULVERT TYPES:

⊗ NO ACCESSIBILITY	○ CORRUGATED STEEL PIPE ARCH
○ CORRUGATED STEEL PIPE	□ CONCRETE BOX CULVERT
● CONCRETE PIPE	▭ CONCRETE OPEN FOOT RIGID FRAME

TIME FRAMES / RECOMMENDED WORK

■ < 1 YEAR REHAB OR REPLACE	■ NO RECOMMENDED WORK
■ 1 TO 5 YEARS REHAB OR REPLACE	▶ ROADSIDE SAFETY CONCERN
■ 6 TO 10 YEARS REHAB OR REPLACE	



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DESIGNED BY: NCO



PROJECT: 15-2977
STATUS: DRAFT (REV. 2)
DATE: October 2016

Appendix B

Summary of Construction Needs and Probable Costs

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs		
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item
01	01	Riverside Dr. E.	0.37 km west from Lesperance Road	N/A	Non-Rigid Box Culvert	4.6	4.6	--	12.5	Unknown	The culvert barrel is buried under the road and filled with earth work. A camera inspection was conducted in September. The inspection showed voids at the top corners. The existing condition of the structure presents no hazard concerns to the moving traffic.	No work is necessary		
02	18	Warwick Rd.	0.10 km north from Burlington Road	N/A	Corrugated Steel Pipe	--	--	0.30	6.2	Unknown	Existing manholes with cast iron cover at the eastern Inlet causing Limited inspection. Wearing surface was observed with medium progressive edge cracks over the culvert section and along both approaches. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Partially inaccessible (further inspection is required)		
03	17	Burlington Rd.	At intersection with Arlington Blvd.	N/A	Concrete Pipe Culvert	--	--	0.25	12.5	Unknown	The asphalt surface was severely cracked over the culvert and at both approaches. Split in the culvert section at the road north edge causing a pothole at the road surface. Although, the Town advised that no budgets will be assigned to this location, it is recommended to complete a temporary repair for the existing pothole for safety concerns. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Full replacement with future road repairs		Not Included
04	04	Hayes Ave.	Eastern intersection with Edgewater Blvd.	N/A	Corrugated Steel Pipe	--	--	0.40	20.0	Unknown	Existing manholes with cast iron cover at the northern inlet causing limited inspection. Wearing surface was observed with medium map cracking, potholes and isolated cracks. The wearing surface deficiencies extend over the culvert section and along both approaches. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary		
05	05	Hayes Ave.	Western intersection with Edgewater Blvd.	N/A	Concrete Pipe	--	--	0.25	21.0	Unknown	Existing manholes with cast iron cover at the northern inlet causing limited inspection. Wearing surface is severely cracked. The wearing surface deficiencies extend over the culvert section and along both approaches. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Partially inaccessible (further inspection is required)		
06	06	Lenor Ave.	At intersection with Edgewater Blvd.	N/A	Concrete Pipe	--	--	0.30	46.8	Unknown	Existing manholes with cast iron cover at the northern inlet causing limited inspection. Wearing surface is severely cracked. The wearing surface deficiencies extend over the culvert section and along both approaches. Roadside Safety: no improvements necessary.	No work is necessary		
07	07	Desro Dr.	At intersection with Manning Rd.	East Townline Road Drain	Corrugated Steel Pipe	--	--	1.90	25.0	1985	Culvert barrel has a typical severe corrosion at the bolt connections. Moderate settlement was noted at the top of the culvert section approximately located below the road. Roadside Safety: Parallel culvert - end should be tapered to match the side slope to reduce the blunt end available for vehicles to strike.	Full replacement	1 - 5 Years	\$275,000.00
08	08	Jamsyl Dr.	At intersection with Manning Rd.	East Townline Road Drain	Corrugated Steel Pipe	--	--	1.70	30.0	1985	Severe distortion was observed at the culvert barrel below the road surface. Wide opening with light corrosion surrounding this damaged section with need to be monitored for deformation until being replaced. Roadside Safety: Parallel culvert - end should be tapered to match the side slope to reduce the blunt end available for vehicles to strike.	Full replacement	1 - 5 Years	\$330,000.00
09	09	Sylvestre Dr.	At intersection with Manning Rd.	East Townline Road Drain	Corrugated Steel Pipe	--	--	2.00	23.0	1990	Culvert barrel was observed with Light to medium corrosion at the interior exposed section, as noted at the a wide opening at the spring line, located approximately 3.0m from the north inlet. Mortar bags located at the south-east embankment is in poor condition and showing instability. Culvert barrel shall be monitored within the next five years for any increase in the noted deficiencies. Replacement of the structure is required within (1 - 5) years. Roadside Safety: Headwall is a hazard to approaching vehicles - multiple culverts/headwalls at driveways north and south of this culvert mean adding guiderail would do little to make the road safer.	Full replacement	1 - 5 Years	\$253,000.00

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs		
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item
10	10	Tecumseh Rd. E.	1.0 km east from Manning Rd.	N/A	Corrugated Steel Pipe	--	--	0.45	12.5	Unknown	Limited inspection - Light corrosion at the bottom half of the culvert barrel. Culvert north inlet is lightly corroded and distorted. Wearing surface with wide transverse cracks over the culvert and at both approaches. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary		
11.A 11.B 11.C	11.A 11.B 11.C	Manning Rd. Manning Rd. Manning Rd.	At intersection with St. Gregory's Road At intersection with Tecumseh Rd. East At intersection with Lanoue St.	East Townline Road Drain	Precast Rigid Box Culvert	2.4	1.9	--	1300.0	2004 2004 1999	The structure is in good condition. It extends across multiple intersections (St. Gregory's Rd, Tecumseh Rd. E., and Lanoue St.) on the side of Manning Road (County Road 19). This structure is built among Manning Road development - Phase 1. Roadside Safety: no improvements necessary.	No work is necessary		
12	72	Riverside Dr.	At intersection with Manning Rd.	East Townline Road Drain	Precast Rigid Box Culvert	3.0	1.8	--	141.2	2014	The structure was recently built in 2014. It was inaccessible at the time of inspection. Therefore, the inspection was limited to the accessible of the culvert section. Roadside Safety: no improvements necessary.	No work is necessary		
13	24	Sylvestre Dr.	At Exit from County Rd. 22	Cyr Drain Outlet	Corrugated Steel Pipe	--	--	0.7	21.0	2002	Generally, the accessible elements of the structure were in good condition. culvert barrel was submerged under water at the time of inspection. Waterway with moderate plant growth (plantation removal is assumed to be completed within routine maintenance). Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Fully inaccessible (further inspection is required)		
14	22	Intersection Rd.	At intersection with Banwell Rd.	N/A	Corrugated Steel Pipe	--	--	0.5	42.0	1990	Limited inspection due to the culvert length - The accessible portion of the culvert barrel was severely corroded with heavy loss along the bottom surface at the spring level. Wearing surface was observed with longitudinal, traversal and medium progressive edge cracks extending along the approaches. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Full replacement	1 - 5 Years	\$231,000.00
15	15	Estate Park	At intersection with Tecumseh Rd. E.	N/A	Concrete Pipe Culvert	--	--	0.28	25.5	Unknown	Limited Inspection - Existing manholes with cast iron cover at both the Inlet and Outlet. All accessible elements were found in good condition. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary		
16	16	Tecumseh Rd. E.	0.30 km east from Manning Rd.	N/A	Corrugated Steel Pipe	--	--	1.20	18.0	Unknown	Light corrosion at the bottom half of the culvert barrel. Wearing surface was observed with two (2) potholes over the culvert section, wide transverse cracks and medium progressive edge cracks at south approach. Stop Sign is required to be placed at the intersection. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary		
17	66	North Talbot Rd.	At the transition from N Talbot Rd.	9th Concession Drain	Non-Rigid Frame	1.9	2.4	--	10.0	2000	Minor concrete spalling at the northern headwall. Wearing surface was observed with wide progressive edge and transverse cracks over the culvert section and along the west approach. Plant growth at the north elevation requires maintenance. Roadside Safety: The culvert headwall so close to the intersection radius is a hazard. Guide rail not appropriate. Consider widening culvert when this culvert is replaced.	No work is necessary		
18	65	North Talbot Rd.	1.10 km east from Oldcastle Rd.	Talbot McCarthy and Relief Drain	Corrugated Steel Pipe	--	--	1.25	13.7	2000	Light corrosion in the bottom half of the culvert barrel. Wearing surface with wide transverse and longitudinal cracks over the culvert section, and severe progressive edge cracks at north approach. Light plant growth at the waterway (plantation removal is assumed to be completed within routine maintenance). Roadside Safety: Westbound shoulder is wide and flat on a low speed road, mitigating the hazard of the headwall. There is no eastbound shoulder and the culvert drops off immediately. However, the constant roadside ditch with steep side slopes is similar to the roadside at the culvert. Guide rail at the culvert would provide no improvement. No improvements are practical	No work is necessary		

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs		
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item
19	64	North Talbot Rd.	0.60 km east from Oldcastle Rd.	Washbrook Drain	Corrugated Steel Pipe	--	--	1.2	20.0	1999	Culvert barrel edges are distorted at southern outlet. New patched strip of 4.50m width was observed at the wearing surface over the culvert section. Wide progressive edge cracks observed at both sides of the approaches. The waterway were blocked with moderate plant growth on both road sides (plantation removal is assumed to be completed within routine maintenance). Roadside Safety: Shoulders and side slopes are wide and relatively flat for low speed road. no improvements necessary.	No work is necessary		
20	63	Oldcastle Rd.	At intersection with North Talbot Rd.	Washbrook Drain	Corrugated Steel Pipe	--	--	1.5	170.0	2011	It was built in 2011, inspection was limited due to the high water level. However, it was reported by the town that the structure is standing in good condition. Record drawing was provided by the Town for reporting. Roadside Safety: no improvements necessary.	No work is necessary		
21	30	Concession Rd. 8	0.60 km north from North Talbot Rd.	N/A	Corrugated Steel Pipe	--	--	0.6	4.5	1970	Existing manholes caused limited inspection of the structure. Record drawings was provided by the town for reporting. Roadside Safety: no improvements necessary.	No work is necessary		
22	62	Ure Street	At intersection with North Talbot Rd.	Robinson Drain	Corrugated Steel Pipe	--	--	0.45	33.5	1990	The structure is in good condition. Existing manhole with cast iron cover at the eastern Inlet causing limited inspection Roadside Safety: no improvements necessary.	Partially inaccessible (further inspection is required)		
23	61	Ure Street	0.30 km north from North Talbot Rd.	N/A	Corrugated Steel Pipe	--	--	0.9	17.7	1981	The structure is assumed to be in good condition. Existing manhole with cast iron cover at the eastern Inlet causing limited inspection. Wide transverse cracks were observed at the wearing surface over the culvert section. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Partially inaccessible (further inspection is required)		
24	60	Delduca Dr.	West of intersection with Ure Street	N/A	Corrugated Steel Pipe	--	--	0.6	15.3	1981	The culvert barrel is in good condition. Severe map cracking was spreading at the wearing surface over the culvert section and along both approaches. Object Marker Signs needs to be installed. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary		
25	28	O'Neil Dr.	North from the intersection with Moynahan St	N/A	Corrugated Steel Pipe	--	--	0.3	25.0	1975	Existing manholes caused limited inspection of the structure. Record drawings was provided by the town for reporting. Roadside Safety: no improvements necessary.	No work is necessary		
26	31	O'Neil Dr.	South from the intersection with Moynahan St	N/A	Corrugated Steel Pipe	--	--	0.4	25.0	1970	Existing manholes caused limited inspection of the structure. Record drawings was provided by the town for reporting. Roadside Safety: no improvements necessary.	No work is necessary		
27	59	Moynahan St.	0.12 km west from O'Neil Dr.	N/A	Corrugated Steel Pipe	--	--	0.6	19.0	1975	Wearing surface over the culvert section was observed with wide traverse cracks, and medium progressive edge cracks. The culvert was submerged underwater which caused limited inspection of the culvert barrel. The waterways on both road sides were blocked with extensive plant growth (plantation removal is assumed to be completed within routine maintenance). Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Fully inaccessible (further inspection is required)		

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs			
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item	
28	58	Moynahan St.	West of intersection with Hennin Street	N/A	Concrete Pipe Culvert	--	--	0.4	12.5	1975	Limited Inspection - Two different materials were used for this culvert. The concrete section under the road was in good condition. However, the corrugated steel sections under the shoulders were severely corroded. Wide traverse cracks and medium progressive edge cracks were extending over the culvert section. Plants growing at the waterway require maintenance. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary			
29	57	Moynahan St.	East of intersection with Hennin Street	N/A	Corrugated Steel Pipe	--	--	0.4	12.5	1975	The structure is in poor condition. Culvert barrel is severely corroded. Wide cracking at the wearing surface was observed over the culvert section. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Full replacement	1 - 5	Years	\$110,000.00
30	56	Moynahan St.	0.10 km west from Hennin Street	7th Concession Drain	Corrugated Steel Pipe	--	--	0.9	12.5	1990	Culvert barrel is moderately corroded. Randomly placed concrete blocks are used for end treatment with need to be monitored. Wearing surface was observed with wide traverse cracks extending over the culvert section. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary			
31	55	Picadilly Ave.	At the intersection with Oldcastle Rd.	N/A	Corrugated Steel Pipe	--	--	0.8	26.0	2000	Limited inspection - Existing manholes with cast iron cover at both the inlet and outlet. Wearing surface with excessive cracking. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Fully inaccessible (further inspection is required)			
32	54	Oldcastle Rd.	1.10 km south from North Talbot Rd.	Downing and Branch Drain	Corrugated Steel Pipe	--	--	0.8	14.0	1985	Limited inspection - Existing manholes with cast iron cover at the western Inlet. Culvert edges bended at the eastern inlet. Wearing surface with excessive cracking, and waterways with excessive plant growth blocking the water flow at the eastern elevation (plantation removal is assumed to be completed within routine maintenance). Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Partially inaccessible (further inspection is required)			
33	53	McCord Lane	At the intersection with Walker Rd.	N/A	Corrugated Steel Pipe	0.7	--	--	45.5	1980	Limited inspection - Assumed to be generally in good condition. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary			
34	29	Pulleyblank	0.70 km south from North Talbot Rd.	Wolfe Drain	Corrugated Steel Pipe	--	--	1.5	28.0	1995	Generally, the structure is in good condition. Wide transverse and longitudinal cracks in the asphalt over the culvert. Roadside Safety: Culvert ends are well outside of the clear zone - no improvements necessary.	No work is necessary			
35	--	Rossi Dr.	0.30 km east from Outer Dr.	N/A	Corrugated Steel Pipe	--	--	0.6	14.6	Unknown	Culvert is only accessible through manholes at both ends. The record drawings were provided by the Town for reporting, and a camera inspection was done. The video records showed: Joint displacement and a wide opening, located: 6.0m and 10.30m from the south inlet, respectively. However, the rest of the barrel length is in good condition. It is recommended to anticipate full replacement within 6 - 10 Years (Monitor in interim) Roadside Safety: no improvements necessary.	Full replacement	6 - 10	Years	\$125,000.00
36	50	Blackacre Dr.	At intersection with Outer Drive	Wolfe Drain	Corrugated Steel Pipe Arch	1.8	1.2	--	292.0	1995	Limited inspection to the culvert barrel due to the structure length. Roadside Safety: no improvements necessary.	No work is necessary			
37	49	Outer Dr.	At intersection with Outer Drive Connector	Collins/HWY#3	Corrugated Steel Pipe	--	--	1.0	38.0	2005	No work is recommended Roadside Safety: No hazard within clear zone due to the presence of guide rail - no improvements necessary..	No work is necessary			

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs		
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item
38	38	Malden Rd.	At the intersection with South Talbot Rd.	South Talbot Road Drain East	Corrugated Steel Pipe	--	--	2.2	70.1	2005	The structure is in good condition with minor cracking at the wearing surface over the culvert section. Roadside Safety: Parallel culvert - end should be tapered to match the side slope to reduce the blunt end available for vehicles to strike. (Not considered practical and cost is not included).	No work is necessary		
39	39	Concession Rd. 10	At the intersection with South Talbot Rd.	South Talbot Road Drain East	Non-Rigid Frame	1.6	1.6	--	7.9	1965	Culvert structure was identified with narrow horizontal cracking at the headwalls, and light map cracking at the wearing surface at the south approach. Waterway with moderate plant growth (plantation removal is assumed to be completed within routine maintenance). Roadside Safety: Concrete headwalls are a hazard that vehicles should be protected from. Guide rail may be warranted on South Talbot Road at this location whether this culvert is rehabilitated or replaced. If the culvert is replaced a widened culvert would reduce the risk associated with the headwalls perpendicular to Concession Road 10. At a minimum, Wb-33 object marker signs should be erected at the ends of each headwall due to their proximity to the existing edge of pavement. The need for guide rail should be confirmed during detailed design.	Roadside safety improvement needs	1 - 5 Years	\$50,000.00
40	101	South Talbot Rd.	0.10 km west from Concession Rd. 10	West Branch of Desisle Drain	Non-Rigid Frame	1.7	2.0	--	10.4	Unknown	The structure is in good condition. Wearing surface was observed with wide transverse crack over the culvert section. Light plant growth at north embankment (Plantation removal assumed to be completed within routine maintenance). Roadside Safety: There is no eastbound shoulder and the culvert drops off immediately. However, the constant roadside ditch with steep side slopes is similar to the roadside at the culvert. Guide rail at the culvert would provide no improvement. No action is recommended. The north end of the structure is a hazard within the clear zone. Guide rail is not feasible.	No work is necessary		
41	75	Concession Rd. 9	At the intersection with South Talbot Rd.	South Talbot Road Drain	Corrugated Steel Pipe	--	--	1.1	18.6	1990	Light corrosion at the bottom half of the culvert barrel. Wearing surface with various deficiencies; potholes; medium to wide isolated cracks; and medium progressive edge cracks. Roadside Safety: Parallel culvert - end should be tapered to match the side slope to reduce the blunt end available for vehicles to strike.	No work is necessary		
42	79	Snake Lane Rd.	At the intersection with South Talbot Rd.	South Talbot Road Drain	Non-Rigid Frame Open Footing Culvert	1.8	1.8	--	9.8	1965	Structure is in fair to poor condition. Concrete spalling at culvert soffit and side walls, wingwalls, and headwalls. spreaded medium alkali aggregate reaction cracks as well as light scaling. Wearing surface with potholes, medium isolated cracks, and medium edge cracks over the culvert section and along both approaches. Roadside Safety: Concrete headwalls are a hazard that vehicles should be protected from. Guide rail may be warranted on South Talbot Road at this location whether this culvert is rehabilitated or replaced. If the culvert is replaced a widened culvert would reduce the risk associated with the headwalls perpendicular to Snake Lane Road. At a minimum, Wb-33 object marker signs should be erected at the ends of each headwall due to their proximity to the existing edge of pavement. The need for guide rail should be confirmed during detailed design.	Rehabilitation needs: Engineering (Design, Tender, Fish Relocation, CA and CO) \$60,000.00 Testing material allowance \$4,000.00 Asphalt full replacement (Related to deck repairs) & waterproofing \$12,500.00 Concrete repairs \$70,000.00 Embankments & Streams (Slope & Scour protection) \$22,000.00 Roadside safety improvements \$25,000.00 Total \$193,500.00 Estimated full replacement cost (for comparison purpose). (possible cost saving if combined with Structures Nos. 53 and 54) \$550,000.00	1 - 5 Years	
43	67	South Talbot Rd.	At the intersection with Concession Rd. 8	8th Concession Road Drain	Corrugated Steel Pipe	--	--	1.0	120.0	2000	Light corrosion at the bottom half of the culvert barrel. Medium scour was observed at the northern waterway. Roadside Safety: no improvements necessary.	No work is necessary		
44	43	Sexton Side Rd.	At the intersection with South Talbot Rd.	8th Concession Road Drain	Corrugated Steel Pipe	--	--	1.2	36.6	1985	No work is recommended Roadside Safety: The relatively flat side slopes at the east end of the culvert provides a forgiving roadside. The culvert could be tapered to the side slope to minimize the blunt end available for impact. (Cost is not included)	No work is necessary		

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs		
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item
45	44	South Talbot Rd.	At the intersection with Walker Rd.	Old Castle Road Drain	Non-Rigid Frame Open Footing Culvert	2.4	1.4	--	7.5	1965	Culvert needs full replacement. Large spalling in the deck soffit, severe scaling on the culvert sides, corroded and damaged reinforcement, and opening in the soffit. Dillon is in process of preparing design drawings for replacement. Steel plates have been installed over deck for temporary repair of the deck until structure can be replaced. Roadside Safety: Roadside safety improvements to be incorporated in replacement design.	Full replacement (currently in design by Dillon)	< 1 Year	\$455,000.00
46	46	South Talbot Rd.	At the intersection with Holden Rd.	South Talbot Road Drain and Shreve Drain	Non-Rigid Frame Open Footing Culvert	1.9	1.2	--	10.3	1965	Concrete spalling at the northern headwall, exposed and corroded reinforcement. Apparent scouring of footing along the original section. Asphalt surface with severe raveling over the culvert section, potholes on the south side, wide longitudinal and traversal cracks extends over both approaches. Although rehabilitation is an option, due to the size of the structure; full replacement was recommended as the most practical long term solution. Roadside Safety: The perpendicular and parallel concrete headwalls are hazards that vehicles should be protected from. A widened culvert or guide rail should be considered on westbound South Talbot Road at this location. Guiderail will be difficult to install due to the narrow shoulder and the steep side slope. Maintain the Wb-33 object marker sign in the interim.	Full replacement	1 - 5 Year	\$473,000.00
47	47	South Talbot Rd.	0.36 km east from County Rd. 9	Benson Drain	Corrugated Steel Pipe	--	--	1.4	13.5	1999	The structure is in poor condition and replacement is recommended. Culvert barrel is severely corroded with heavy loss at the bottom surface below the spring line. The concrete blocks used for end treatment need full replacement. Wearing surface with potholes over the culvert section, in addition to longitudinal and traversal cracks extending along both approaches. Roadside Safety: The perpendicular ditch is a hazard to motorists. Consider flattening the slope perpendicular to the westbound lane. A widened culvert should be considered when this culvert is replaced, if possible.	Full replacement	< 1 Year	\$225,000.00
48	45	Holden Rd.	1.35 km south from South Talbot Rd.	Holden Outlet Drain	Non-Rigid Frame Open Footing Culvert	2.4	2.1	--	8.0	1965	Concrete spalling were identified at headwalls on both road sides with exposed reinforcement on western headwall. The structure end extensions were added to the original structure. Roadside Safety: Guide rail not feasible since there is no shoulder on Holden Road. Culvert should be widened to the west when replaced to mitigate the perpendicular ditch hazard. Consider flattening slopes perpendicular to road in the interim. Options are limited on the east due to the constant deep roadside ditch in close proximity to the road.	Full replacement	6 - 10 Years	\$550,000.00
49	68	Concession Rd. 8	At the intersection with South Talbot Rd.	N/A	Corrugated Steel Pipe (East) Polyethylene (West)	--	--	1.2 0.45	4.3 12.3	1985	A camera inspection was conducted in September. The video recording revealed that culvert 49 has two different sections and pipe types; east from 8th Concession Road a C.S.P of 1.2m diameter is used, then continue west with a polyethylene pipe of 0.45m diameter. The bottom of the C.S.P below the spring line is lightly corroded. However, the polyethylene pipe was found in good conditions. Roadside Safety: no improvements necessary.	No work is necessary		
50	102	Concession Rd. 8	0.35 km south from South Talbot Rd.	N/A	Corrugated Steel Pipe	--	--	0.6	19.7	Unknown	The culvert barrel was observed with light corrosion at the bottom half. Wearing surface over the culvert section with medium transverse crack, and moderate flushing. Also, medium progressive edge cracking was observed over the culvert section and along both approaches. Light plant growth was observed at the west side of the road (plantation removal is assumed to be completed within routine maintenance). Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary..	No work is necessary		
51	42	Concession Rd. 8	2.5 km south from South Talbot Rd.	Webster Drain	Non-Rigid Frame Open Footing Culvert	2.5	2.2	--	9.6	1965	Concrete spalling were identified at the deck soffit with exposed and corroded reinforcement. Slippery wearing surface over the culvert and along approaches. Roadside Safety: Exposed structure proximity to road is hazardous. Culvert should be widened to increase the shoulder width. Guide rail is not feasible at the existing culvert due to the lack of shoulders, but should be considered in the future at this location.	Rehabilitation needs: Engineering (Design, Tender, Fish Relocation, CA and CO) \$60,000.00 Material testing allowance \$4,000.00 Asphalt full replacement (Related to deck repairs) & Waterproofing \$30,000.00 Concrete repairs \$30,000.00 Embankments & Streams (Slope & Scour protection) \$9,000.00 Total \$133,000.00 Estimated full replacement cost (for comparison purpose) \$660,000.00	1 - 5 Years	

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs			
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item	
52	78	Snake Lane Rd.	0.55 km south from South Talbot Rd.	Snake Lane Drain	Corrugated Steel Pipe	--	--	0.6	13.3	1980	Typical corrosion at the barrel bolted connections. distorted edge at the east elevation. Wearing surface was observed with patched potholes. Settlement was also observed at the wearing surface over the culvert section. Excessive plant growth is blocking the stream along both sides of the road (Plantation removal assumed to be completed within routine maintenance). Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary..	No work is necessary			
53	77	Snake Lane Rd.	1.2 km south from South Talbot Rd.	9th Line Drain	Non-Rigid Frame Open Footing Culvert	1.5	2.6	--	7.6	1960	Several wide cracks at the headwalls. Large concrete spalling at the culvert soffit and end treatments with exposed and corroded reinforcement. Slippery wearing surface over the culvert section and along both approaches. Roadside Safety: Structure is a roadside safety hazardous. Culvert should be widened to increase the shoulder width. Guide rail is not feasible at the existing culvert due to the lack of shoulders.	Full replacement (possible cost saving if combined with Structures Nos. 42 and 54)	1 - 5	Years	\$495,000.00
54	76	Snake Lane Rd.	2.15 km south from South Talbot Rd.	Webster Drain	Non-Rigid Frame Open Footing Culvert	2.0	2.4	--	10.0	1965	The structure is in poor condition. Large spalling at soffit with exposed and corroded reinforcement. Severe scour below the foundation and erosion at the culvert walls. Settlement at the asphalt surface over the culvert section, and slippery surface along both approaches. Waterway with excessive plant growth on both road sides (Plantation removal assumed to be completed within routine maintenance) and scour at the embankment. Roadside Safety: Structure is a roadside safety hazardous. Culvert should be widened to increase the shoulder width. Guide rail is not feasible at the existing culvert due to the lack of shoulders.	Full replacement (possible cost saving if combined with Structures Nos. 42 and 53)	1 - 5	Years	\$540,000.00
55	74	Concession Rd. 9	0.90 km south from South Talbot Rd.	9th Line Drain	Corrugated Steel Pipe	--	--	0.8	11.3	2000	Lightly corroded culvert barrel with distorted edges at the east elevation inlet. Settlement at the asphalt surface where distorted section at the culvert barrel was observed from below. Wearing surface was also observed with flushing. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary			
56	73	Concession Rd. 9	1.75 km south from South Talbot Rd.	Webster Drain	Corrugated Steel Pipe	--	--	1.3	11.3	1990	Generally, the structure is in good condition, wearing surface was identified with severe flushing. Waterways with excessive plant growth blocking the flow at the East side of the road. Roadside Safety: The ends of the culvert are very close to the edge of pavement since there are no shoulders. While this is a hazard, this condition is not very different than the rest of Concession Road 9 due to the steep ditch side slopes. Signage needs to be installed. Guide rail would not improve the overall roadside safety in this case.	No work is necessary			
57	41	Concession Rd. 9	At the intersection with County Rd. 8	Snake Lane Drain	Corrugated Steel Pipe	--	--	2.6	25.9	1995	The structure is in good condition with minor deficiencies at the wearing surface over the culvert section. Roadside Safety: Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.	Roadside safety improvement needs	1 - 5	Years	\$50,000.00
58	--	Concession Rd. 10	2.35 km north from County Rd. 8	McPherson Drain & J.C. Smith Drain	Corrugated Steel Pipe	--	--	0.4	13.5	Unknown	The inspection of the culvert was limited due to the high water level. The east end was covered under the heavy plant growth. Drainage Engineer Report: Fair with solid bottom, pipe underwater. Replace and lower to accommodate new design grades. Replace with new 750mm smooth wall concrete pipe. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Full replacement (based upon drainage report recommendations)	1 - 5	Years	\$125,000.00

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs		
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item
59	--	Concession Rd. 10	1.95 km north from County Rd. 8	McPherson Drain & J.C. Smith Drain	Corrugated Steel Pipe	--	--	0.2	13.5	Unknown	The drain pipe is in poor condition. During the field inspection, it was noted by the neighbor that it is no longer functioning. A covered manhole exists at the west end. Drainage Engineer Report: Poor, crushed down to 50mm opening, pipe ends rusting badly. This is likely an old tile that comes from the farm property at 410-01800 on the west side of the road. Pipe not needed, brick up both ends and abandon. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary		
60	--	Concession Rd. 10	1.8 km north from County Rd. 8	McPherson Drain & J.C. Smith Drain	Corrugated Steel Pipe	--	--	0.45	13.5	Unknown	The culvert is found in very poor condition. A full length split was observed at the spring line. Drainage Engineer Report: Fair, with corroded and damaged bottom and crushed sections that appear crushed. Replace and lower to accommodate new design grades. Replace with new 600mm smooth wall concrete pipe. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Full replacement (based upon drainage report recommendations)	1 - 5 Years	\$125,000.00
61	--	Concession Rd. 10	1.6 km north from County Rd. 8	McPherson Drain & J.C. Smith Drain	Concrete Pipe (East) Corrugated Steel Pipe	--	--	0.45 0.6	13.3	Unknown	Limited inspection - The drain pipe is in poor condition, where accessible. It is clogged at one end (East), and connected to a steel corrugated pipe on the other (West). Drainage Engineer Report: Crushed, filled with sediment. This is likely an old tile that comes from the farm property at 410-02000 on the west side of the road? Currently seems to tie into the enclosure at MN's 6655-6645. Pipe not needed, brick up both ends and abandon. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary		
62	--	Concession Rd. 10	0.75 km north from County Rd. 8	McPherson Drain & J.C. Smith Drain	Corrugated Steel Pipe	--	--	0.6	13.3	Unknown	The bottom half of the culvert barrel is moderately corroded. The water flow is partially blocked with debris and the heavy plants growth at both ends. The drains needs to be cleared of the excessive plants. Drainage Engineer Report: Fair, with corroded bottom and crushed sections that appear crushed. Replace and lower to accommodate new design grades. Replace with new 900mm smooth wall concrete pipe. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Full replacement (based upon drainage report recommendations)	1 - 5 Years	\$125,000.00
63	36	Concession Rd. 10	At the intersection with County Rd. 8	Colchester Townline Drain	Corrugated Steel Pipe Arch	2.8	2.1	--	27.5	1990	The structure is in good condition. Wearing surface has cracking on both approaches. Roadside Safety: Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.	Roadside safety improvement needs	1 - 5 Years	\$50,000.00
64	35	Malden Rd.	At the intersection with County Rd. 8	Colchester Townline Drain	Corrugated Steel Pipe	2.8	2.1	--	27.5	2002	The structure is in good condition. Wearing surface at the north approach has major deficiencies and is recommended to be fully replaced. Roadside Safety: Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.	Roadside safety improvement needs	1 - 5 Years	\$50,000.00
65	37	Concession Rd. 11	At the intersection with South Talbot Rd.	South Talbot Road Drain East	Corrugated Steel Pipe	--	--	1.85	16.8	1995	The culvert barrel edges were distorted at the east elevation, and bolted connections are lightly corroded. Light corrosion of barrel at the spring line. Wearing surface was observed with severe alligator cracks over the culvert section, and map cracking and longitudinal crack at the north approach. Roadside Safety: Parallel culvert - end should be tapered to match the side slope to reduce the blunt end available for vehicles to strike. (not considered practical - improve with eventual replacement within ten (10) years)	No work is necessary		

Summary of Construction Needs and Probable Costs

Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Type	Dimensions				Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Capital Needs / Construction Costs			
						Width (m)	Height (m)	Dia. (m)	Length (m)			Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work Item	
66	--	Concession Rd. 11	0.75 km south from South Talbot Rd.	East McPherson Drain & Santo Drain	Clay Pipe (East) Big O (West)	--	--	0.2	12.6	Unknown	Drain pipe has gaps between the segments. The plants at the west inlets needs to be cleaned as it is blocking the water flow. Drainage Engineer Report: Pipe identified as good condition and shall remain in place. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	No work is necessary (based upon drainage report recommendations)			
67	--	Concession Rd. 11	1.0 km south from South Talbot Rd.	East McPherson Drain & Santo Drain	Corrugated Steel Pipe	--	--	0.6	12.6	Unknown	Existing pipe is in poor condition with need to be fully replaced. Culvert barrel was observed with moderate to severe corrosion. The bottom half is filled with sedimentation. Excessive plant growth needs to be repaired as part of the routine maintenance.. Drainage Engineer Report: Pipe identified as poor condition and is slated to be replaced with a 600mm aluminized CSP as part of the Drainage Works (Early 2017). Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Full replacement (based upon drainage report recommendations)	1 - 5	Years	\$115,000.00
68	--	Concession Rd. 11	1.3 km south from South Talbot Rd.	East McPherson Drain & Santo Drain	Corrugated Steel Pipe	--	--	0.45	12.6	Unknown	Existing pipe is in fair condition with distorted west end. The bottom half below the spring line is moderately corroded. Excessive plant growth needs to be repaired as part of the routine maintenance. It is recommended to anticipate full replacement within 6 - 10 Years due to corrosion. (Monitor in interim) Drainage Engineer Report: Pipe identified as fair condition and shall be cleaned/flushed and remain in place. Roadside Safety: Culvert diameter less than 1.0m - no improvements necessary.	Full replacement	6 - 10	Years	\$115,000.00
69	33	Concession Rd. 11	At the intersection with County Rd. 8	Colchester Townline Drain	Corrugated Steel Pipe Arch	2.4	1.8	--	13.0	1995	Culvert barrel was observed with moderate corrosion around the bolts, and lightly corroded haunches at the bottom. Wearing surface with wide transverse cracks over the culvert. Monitor structure for further corrosion loss. Roadside Safety: Concrete headwalls are a hazard that vehicles should be protected from. Guide rail may be warranted on County Road 8 at this location whether this culvert is rehabilitated or replaced. If the culvert is replaced a widened culvert would reduce the risk associated with the headwalls perpendicular to Concession Road 11. At a minimum, Wb-33 object marker signs should be erected at the ends of each headwall due to their proximity to the existing edge of pavement. The need for guide rail should be confirmed during detailed design.	Full replacement	6 - 10	Years	\$606,000.00
70	34	Concession Rd. 12	At the intersection with South Talbot Rd.	South Talbot Road Drain East	Non-Rigid Frame Open Footing Culvert	2.45	1.15	--	10.1	1965	Concrete spalling was indicated at the deck soffit with exposed and corroded reinforcement. Wearing surface was observed with potholes on both road sides over the culvert section, moderate flushing at south approach, and patched strip of approximate area of 4.50 Sq.m. Roadside Safety: Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended on South Talbot Road. Guide rail installation will be complicated by the narrow shoulder and steep side slopes. A widened culvert should be considered if culvert is replaced to reduce risk on Concession Road 12.	Rehabilitation needs: Engineering (Design, Tender, Fish Relocation, CA and CO) \$60,000.00 Material testing allowance \$4,000.00 Asphalt full replacement (Related to deck repairs) & Waterproofing \$24,000.00 Concrete repairs \$22,000.00 Embankments & Streams (Slope/Erosion protection) \$11,000.00 Roadside safety improvements (where feasible) \$25,000.00 Total \$146,000.00	1 - 5	Years	\$60,000.00
												Estimated full replacement cost (for comparison purpose)			\$560,000.00
71	27	Odessa Dr.	At intersection with County Rd. 42	Klonyke Drain and Branch Drain	Corrugated Steel Pipe	--	--	1.1	19.0	1985	Generally, the structure is in good condition. Patched strip was observed over the culvert section and at the south approach. Light plant growth was noted at the waterway on both road sides. Roadside Safety: Culvert ends are well outside of the clear zone - no improvements necessary.	No work is necessary			

Appendix C

OSIM Inspection Forms and Photos

Inventory Data:

Structure Number	01		
Hwy/Road Name	Riverside Drive East		
Structure Location	0.37 km West from Lesperance Road		
Structure Type			
Latitude	42° 19' 57"	Longitude	-82° 53' 45"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	4.6 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	5.2 (m)	Posted Speed	50 No. of Lanes 2
Overall Str. Width	10.8 (m)	AADT	% Trucks
Total Deck Area	23.920 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	0.0 (km)
Fill on Structure	0.3 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	No Truck (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 22, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Sunny, Probability of rain 1%
Temperature	-6 (-2/-8) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	A buried and the barrel is filled with earth work. Wearing surface was found in poor condition with sealed cracks in both longitudinal and traverse direction. A camera inspection was conducted in September. This inspection showed voids at the top corners. The existing condition of the structure presents no hazard concern to the moving traffic.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	2
Element Type:	Stop Sign / No Truck	Total Quantity:	2
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	2	Fair
			Poor*
Comments: In Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Sidewalk and Handrail over North Outlet (Looking West)



Photograph 3 – South Elevation



Photograph 4 – Wearing Surface over Culvert (Looking South)

Inventory Data:

Structure Number	02 (Formerly 18)		
Hwy/Road Name	Warwick Road		
Structure Location	0.10 km North from Burlington Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 19' 4.116"	Longitude	-82° 51' 15.912"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.30 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	5.0 (m)	Posted Speed	30 No. of Lanes 2
Overall Str. Width	6.2 (m)	AADT	% Trucks
Total Deck Area	1.500 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	5.0 (m)	Detour Length Around Bridge	1.3 (km)
Fill on Structure	0.40 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - Existing manholes with cast iron cover at the eastern Inlet causing . Wearing surface was observed with medium progressive edge cracks over the culvert section and along both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	No Signs	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: A speed limit sign is located at both entrance of the road						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	5.0 m		
Element Name:	Barrels	Width:	0.3 m (Dia.)		
Location:		Height:			
Material:	Corrugated Steel	Count:			
Element Type:		Total Quantity:	4.7 Sq.m		
Environment:		Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments: Limited Inspection - Covered Manhole at East Inlet - Accessible portion appeared to be in good condition.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts	Length:	m		
Element Name:	Inlet Components	Width:	m		
Location:	East Side	Height:	m		
Material:	Cast-in-place concrete	Count:			
Element Type:		Total Quantity:	Sq.m		
Environment:		Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments: Limited Inspection - Covered Manhole					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams	Length:			
Element Name:	Embankments	Width:			
Location:		Height:			
Material:		Count:	3		
Element Type:		Total Quantity:	3		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.3 m	
Element Name:	Wearing Surface		Width:	5.0 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	1.5 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			1.5	
Comments: - Moderate Alligator cracks - Moderate Ravelling					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
		Asphalt repairs			

Element Group:	Approaches		Length:	3.0 m	
Element Name:	Wearing Surface		Width:	5.0 m	
Location:	North - South		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	30.0 Sq.m	
Environment:	Moderate		Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5.0	20.0	5.0
Comments: - Moderate Alligator cracks - Moderate Ravelling					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
		Asphalt repairs			

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: Covered water Stream, East from the Warwick Road					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – West Elevation



Photograph 4 – Wearing Surface over Culvert (Looking West)

Inventory Data:

Structure Number	03 (Formerly 17)		
Hwy/Road Name	Burlington Road		
Structure Location	At intersection with Arlington Blvd.		
Structure Type	Concrete Pipe Culvert		
Latitude	42° 18' 58.6074"	Longitude	-82° 51' 20.4834"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.25 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	9.5 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	12.5 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	2.375 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	9.5 (m)	Detour Length Around Bridge	1.0 (km)
Fill on Structure	0.25 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input checked="" type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Split in the culvert section at the road north edge causing a pothole at the road surface. Severely cracked asphalt surface over the culvert and at both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:	Stop Sign	Total Quantity:	1
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1	Fair
			Poor*
Comments: In Excellent Conditions			
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	12.5 m		
Element Name:	Barrels		Width:	0.25 (Inner) / 0.4 (Outer) m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	9.80 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.0		1.80	
Comments: Split in the culvert barrel section at the road edges, causing a hole at the road surface at the North edge of the culvert.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	1				
Comments: In Excellent Conditons						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	4				
Comments: In Excellent Conditons						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	0.4 m		
Element Name:	Wearing Surface		Width:	9.5 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	3.8 Sq.m		
Environment:	Moderate		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			2.0	1.8	
Comments: - Wide map cracking - Open pothole over the culvert section (North Edge)						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	9.5 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	114.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		50.0	50.0	14.0	
Comments: Potholes, and wide transverse and longitudinal cracks at both approaches						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at East approach



Photograph 7 – Water Stream (Arlington Blvd. Road East Side - Looking North)



Photograph 8 – Water Stream (Arlington Blvd. Road East Side - Looking South)

Inventory Data:

Structure Number	04		
Hwy/Road Name	Hayes Avenue		
Structure Location	Eastern intersection with Edgewater Blvd.		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 19' 12.648"	Longitude	-82° 51' 31.3194"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.4 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	9.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	20.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	3.600 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	9.0 (m)	Detour Length Around Bridge	1.0 (km)
Fill on Structure	0.90 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input checked="" type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Existing manholes with cast iron cover at the northern inlet causing limited inspection. Wearing surface was observed with medium map cracking, potholes and isolated cracks. The wearing surface deficiencies extend over the culvert section and along both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:	Stop Sign	Total Quantity:	1
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	Exc.	Good
		Fair	Poor*
		1	
Comments: In Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	
		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	20.0 m	
Element Name:	Barrels		Width:	0.4 m (Dia.)	
Location:			Height:		
Material:	Corrugated Steel		Count:		
Element Type:			Total Quantity:	25.1 Sq.m	
Environment:			Limited Inspection	<input checked="" type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		25.1		
Comments: Limited Inspection - Covered Manhole at North					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	m	
Element Name:	Inlet Components		Width:	m	
Location:	North Side		Height:	m	
Material:	Corrugated Steel		Count:		
Element Type:	Rounded Manhole		Total Quantity:	Sq.m	
Environment:			Limited Inspection	<input checked="" type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments: Limited Inspection - Covered Manhole					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:	South Outlet		Height:		
Material:			Count:	2	
Element Type:			Total Quantity:	2	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.4 m		
Element Name:	Wearing Surface		Width:	9.0 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	3.6 Sq.m		
Environment:	Moderate		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.0	2.6		
Comments: - Medium Longitudinal and Transverse cracks.						
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.7 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	80.40 Sq.m		
Environment:	Moderate		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		18.0	50.0	12.40	
Comments: - Medium Longitudinal and Transverse cracks. - Map cracking at WBL - Pothole at the WBL						
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Covered water stream, North from Hayes Avenue						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Culvert Barrel



Photograph 3 – North Inlet Manhole



Photograph 4 – North Inlet



Photograph 5 – South Elevation



Photograph 6 – Wearing Surface over Culvert (Looking South)

Inventory Data:

Structure Number	05		
Hwy/Road Name	Hayes Avenue		
Structure Location	Eastern of intersection with Edgewater Blvd.		
Structure Type	Concrete Pipe Culvert		
Latitude	42° 19' 12.6834"	Longitude	-82° 51' 32.1114"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.25 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	10.3 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	21.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	2.575 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	10.3 (m)	Detour Length Around Bridge	1.0 (km)
Fill on Structure	0.90 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input checked="" type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Existing manholes with cast iron cover at the northern inlet causing limited inspection. Wearing surface is severely cracked. The wearing surface deficiencies extend over the culvert section and along both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:	Stop Sign	Total Quantity:	1
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1	Fair
			Poor*
Comments: In Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:	
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	21.0 m		
Element Name:	Barrels		Width:	0.25 (Inner) / 0.40 (Outer) m (Dia.)		
Location:			Height:			
Material:	Precast concrete		Count:			
Element Type:	Concrete Pipe Culvert		Total Quantity:	16.5 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		16.5			
Comments: Limited Inspection - Covered Manhole at North						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	m		
Element Name:	Inlet Components		Width:	m		
Location:	North Side		Height:	m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Rounded Manhole		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered Manhole						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:	South Outlet		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.4 m		
Element Name:	Wearing Surface		Width:	10.3 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	4.15 Sq.m		
Environment:	Severe		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				4.15	
Comments: - Wide Longitudinal and Transverse cracks. - Severe map cracking at WBL						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.7 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	80.40 Sq.m		
Environment:	Severe		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			40.2	40.2	
Comments: - Wide Longitudinal and Transverse cracks. - Severe map cracking at both approach						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	1				
Comments: Covered water stream, North from Hayes Avenue						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – North Inlet Manhole



Photograph 4 – North Inlet



Photograph 5 – South Elevation



Photograph 6 – Water Stream (Edgewater Road West Side – Looking South)



Photograph 7 – Wearing Surface at East Approach



Photograph 8 – Wearing Surface at West Approach

Inventory Data:

Structure Number	06		
Hwy/Road Name	Lenore Avenue		
Structure Location	At intersection with Edgewater Blvd.		
Structure Type	Concrete Pipe Culvert		
Latitude	42° 19' 3.792"	Longitude	-82° 51' 32.5434"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.30 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	12.1 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	46.8 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	3.630 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	12.1 (m)	Detour Length Around Bridge	<input type="text" value="1.3"/> (km)
Fill on Structure	0.60 (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="Unknown"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input checked="" type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Existing manholes with cast iron cover at the northern inlet causing limited inspection. Wearing surface is severely cracked. The wearing surface deficiencies extend over the culvert section and along both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:	Stop Sign	Total Quantity:	1
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	Exc.	Good
		Fair	Poor*
		1	
Comments: In Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	
		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	46.8 m		
Element Name:	Barrels		Width:	0.3 (Inner) / 0.4 (Outer) m (Dia.)		
Location:			Height:			
Material:	Precast concrete		Count:			
Element Type:			Total Quantity:	44.1 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		44.1			
Comments: Limited Inspection - Covered Manhole at North						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	m		
Element Name:	Inlet Components		Width:	m		
Location:	North Side		Height:	m		
Material:	Cast-in-place concrete		Count:			
Element Type:			Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered Manhole						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:	South Outlet		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Decks		Length:	0.4 m		
Element Name:	Wearing Surface		Width:	12.1 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	4.85 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4.85			
Comments: An area of approx. 18.0 Sq.m of the asphalt have been replaced						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.7 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	80.4 Sq.m		
Environment:	Severe		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			40.2	40.2	
Comments: Recently, area of approx. 18.0 Sq.m of the asphalt have been replaced - Severe map cracking at both approach						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			1		
Comments: Covered water stream, North from Hayes Avenue						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel



Photograph 3 – North Inlet Manhole



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at East Approach

Inventory Data:

Structure Number	<input type="text" value="07"/>		
Hwy/Road Name	<input type="text" value="Desro Drive"/>		
Structure Location	<input type="text" value="At intersection with Manning Road (CR 19)"/>		
Structure Type	<input type="text" value="Corrugated Steel Pipe"/>		
Latitude	<input type="text" value="42° 18' 14.004"/>	Longitude	<input type="text" value="-82° 52' 11.172"/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="1.9"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	<input type="text" value="12.0"/> (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="25.0"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="22.800"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="12.0"/> (m)	Detour Length Around Bridge	<input type="text" value="1.5"/> (km)
Fill on Structure	<input type="text" value="0.6"/> (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1985"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Culvert barrel has a typical severe corrosion at the bolt connections. Settlement was noted at the top of the culvert section located approximately below the road.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	25.0 m		
Element Name:	Barrels		Width:	1.9 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	149.2 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		37.0	82.0	30.2	
Comments: Culvert barrel has a typical severe corrosion at the bolt connections. Settlement is noticed at the top of the culvert section approximately located below the road. A wide split at the new extension of the culvert length.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.9 m		
Element Name:	Wearing Surface		Width:	12.0 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	22.8 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.0		0.8	
Comments: - Minor edge cracks.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	12.0 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	144.0 Sq.m		
Environment:	Moderate		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		140.0		4.0	
Comments: - Minor edge cracks at West approach.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	North - South		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			1	
Comments: Excessive plant growth along the water stream, with recommendation to be shaved.					
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	4	
Element Type:			Total Quantity:	4	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:			Height:		
Material:	Masonry		Count:	2	
Element Type:	Hand laid Riprap		Total Quantity:	2	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			2	
Comments: In Fair Condition, Located at the North Inlet					
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking East)



Photograph 2 – Culvert Barrel Looking North



Photograph 3 – Bending and Settlement at the Barrel Top



Photograph 4 – Typical Corrosion at Bolted Connections



Photograph 5 – North Elevation



Photograph 6 – South Elevation



Photograph 7 – Wearing Surface over Culvert (Looking North)



Photograph 8 – Wearing Surface at West Approach



Photograph 9 – Water Stream (Manning Road West Side - Looking North)



Photograph 10 – Water Stream (Manning Road West Side - Looking South)

Inventory Data:

Structure Number	08		
Hwy/Road Name	Jamsyl Drive		
Structure Location	At intersection with Manning Road (CR 19)		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 18' 6.2994"	Longitude	-82° 52' 11.64"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.7 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	21.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	30.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	35.700 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	21.0 (m)	Detour Length Around Bridge	1.3 (km)
Fill on Structure	0.60 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1985	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Severe damage is noted at the culvert barrel below the road surface (Wide Opening), and light corrosion surrounding this opening.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	30.0 m		
Element Name:	Barrels		Width:	1.7 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	160.2 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		123.2	21.0	16.0	
Comments: - Severe damage is noted at the culvert barrel below the road surface (Wide Opening). - Light corroded surface surrounding the opening.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	m		
Element Name:	Inlet Components		Width:	m		
Location:	North Side		Height:	m		
Material:			Count:			
Element Type:	N/A		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: The Culvert edge is bended.						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.7 m		
Element Name:	Wearing Surface		Width:	21.0 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	35.7 Sq.m		
Environment:	Bengin		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	35.7				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	21.0 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	252.0 Sq.m		
Environment:	Severe		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	252.0				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Light plant growth along the water stream at the North side, with recommendation to be shaved						
Recommended Work:	<input checked="" type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input checked="" type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:	North/South Side		Height:		
Material:			Count:	2	
Element Type:			Total Quantity:	2	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1	1	
Comments: In good condition at North, and fair at South.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel Looking North



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking North)



Photograph 6 – Wearing Surface at West Approach



Photograph 7 – Water Stream (Manning Road West Side - Looking North)



Photograph 8 – Water Stream (Manning Road West Side - Looking South)

Inventory Data:

Structure Number	<input type="text" value="09"/>		
Hwy/Road Name	<input type="text" value="Sylvestre Drive"/>		
Structure Location	<input type="text" value="At intersection with Manning Road (CR 19)"/>		
Structure Type	<input type="text" value="Corrugated Steel Pipe"/>		
Latitude	<input type="text" value="42° 17' 54.0594"/>	Longitude	<input type="text" value="-82° 52' 12.3954"/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="2.0"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	<input type="text" value="12.5"/> (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="23.0"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="25"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="12.5"/> (m)	Detour Length Around Bridge	<input type="text" value="1.6"/> (km)
Fill on Structure	<input type="text" value="0.60"/> (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1990"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Moderate corrosion is noted at the culvert barrel below the road surface, and medium scattered corrosion at the culvert haunches. a wide opening the spring line approximately 3.0 m from the North inlet. Mortar bags located at the south-east portion of the outlet was observed in poor condition and unstable. Culvert barrel shall be monitored within the next five years for any increase in the noted deficiencies. Replacement of the structure is required within ten years.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts	Length:	23.0 m		
Element Name:	Barrels	Width:	2.0 m (Dia.)		
Location:		Height:			
Material:	Corrugated Steel	Count:			
Element Type:		Total Quantity:	144.5 Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		79.45	43.35	21.7
Comments: - Moderate scattered corrosion along the interior exposed surface. a wide opening the spring line approximately 3.0 m from the North inlet.					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts	Length:	6.0 m		
Element Name:	Inlet Components	Width:	0.35 m		
Location:	North Side	Height:	2.15 m		
Material:	Precast concrete	Count:			
Element Type:	Mortar Bags	Total Quantity:	12.9 Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		10.0	2.9	
Comments: In Good Condition					
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
Monitor for deformation and settlement.					

Element Group:	Culverts	Length:	6.0 m		
Element Name:	Outlet Components	Width:	0.35 m		
Location:	South Side	Height:	2.15 m		
Material:	Precast concrete	Count:			
Element Type:	Mortar Bags	Total Quantity:	12.9 Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		10.9	2.0	
Comments: Mortar bags located at the South-East portion of the outlet was observed in poor condition and unstable					
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
Monitor for deformation and settlement.					

Element Group:	Decks		Length:	2.0 m		
Element Name:	Wearing Surface		Width:	12.5 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	25.0 Sq.m		
Environment:	Bengin		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	25.0				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	12.5 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	150.0 Sq.m		
Environment:	Severe		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	150.0				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Light plants growth along the water stream at both the North and South sides.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	4	
Element Type:			Total Quantity:	4	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel Top (Looking South)



Photograph 3 – Culvert Barrel Side (Looking South)



Photograph 4 – Culvert Barrel Connection



Photograph 5 – North Elevation



Photograph 6 – South Elevation



Photograph 7 – Wearing Surface over Culvert (Looking North)



Photograph 8 – Wearing Surface at West Approach



Photograph 9 – Water Stream (Manning Road West Side - Looking North)



Photograph 10 – Water Stream (Manning Road West Side - Looking South)

Inventory Data:

Structure Number	<input type="text" value="10"/>		
Hwy/Road Name	<input type="text" value="Tecumseh Rd. E"/>		
Structure Location	<input type="text" value="1.00 km East from Manning Rd."/>		
Structure Type	<input type="text" value="Corrugated Steel Pipe"/>		
Latitude	<input type="text" value="42° 18' 42.444"/>	Longitude	<input type="text" value="-82° 51' 26.892"/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="0.45"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	<input type="text" value="6.7"/> (m)	Posted Speed	<input type="text" value="50"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="12.5"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="3.015"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="6.7"/> (m)	Detour Length Around Bridge	<input type="text" value="1.3"/> (km)
Fill on Structure	<input type="text" value="1.2"/> (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="Unknown"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - Light corrosion at the bottom half of the culvert barrel. Culvert North inlet is lightly corroded and bended. Wearing surface with wide transverse cracks over the culvert and at both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:	School Crossing Sign	Total Quantity:	1
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	Exc.	Good
		Fair	Poor*
		1	
Comments: In Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:	
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	12.5 m		
Element Name:	Barrels		Width:	0.45 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	17.7 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		12.40	5.30		
Comments: Light corrosion at the bottom half of the culvert barrel. Culvert North inlet is lightly corroded and bended.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	m		
Element Name:	Outlet Components		Width:	m		
Location:	South Side		Height:	m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Rectangular Manhole		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered Manhole						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:	North Side		Height:			
Material:	Cast-in-place concrete		Count:	3		
Element Type:			Total Quantity:	3		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		3			
Comments: In Good Condition. Manhole located at the south outlet						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	0.45 m	
Element Name:	Wearing Surface		Width:	6.7 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	3.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2.4		0.6
Comments: - Wide Transverse Cracks.					
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	6.7 m	
Location:	East - West		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	80.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		73.7		6.7
Comments: - Wide Transverse Cracks at East approach					
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	North - South		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	1			
Comments: Covered water stream, South of the Warwick Road					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Inlet



Photograph 5 – South Inlet Manhole



Photograph 6 – Wearing Surface over Culvert (Looking East)



Photograph 7 – Wearing Surface at East Approach

Inventory Data:

Structure Number	11 (A, B, and C)		
Hwy/Road Name	Manning Road		
Structure Location	0.24 km North from St. Gregory's Road		
Structure Type	Rigid Frame Box Culvert		
Latitude	42° 19' 50.1816"	Longitude	-82° 52' 11.028"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.9 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input checked="" type="checkbox"/> Collector <input type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	12.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	25.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	22.800 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	12.0 (m)	Detour Length Around Bridge	<input type="text" value="N/A"/> (km)
Fill on Structure	0.6 (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1985"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The structure is in good condition. It extends across multiple intersections (St. Gregory's Rd, Tecumseh Rd. E., and Lanoue St.) on the side of Manning Road (County Road 22). This structure is built among Manning Road development - Phase 1.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	Various			
Element Type:	Signs	Total Quantity:	Various			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Multiple Signs at different Locations						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	1300 m		
Element Name:	Soffit - Inside Boxes		Width:	2.4 m		
Location:			Height:	1.9 m		
Material:	Precast concrete		Count:			
Element Type:			Total Quantity:	11,180 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		11,180			
Comments: In Good Conditions. Limited Inspection - South Inlet is Closed						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	Var. m		
Element Name:	Wearing Surface		Width:	2.4 m		
Location:			Height:			
Material:	Asphalt		Count:	Multiple		
Element Type:			Total Quantity:	Multiple		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: This structure passes across multiple intersections (Amy Croft Dr., Lanoue St., Tecumseh Rd. E, and St. Gregory's Rd) on the side of Manning Road (County Road 22). Generally in Good condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	(Varies) m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	Multiple		
Element Type:			Total Quantity:	Multiple		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: In Good Condition.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			1		
Comments: Drain is out of alignment.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:	South Inlet		Height:			
Material:	Masonry		Count:	2		
Element Type:	Hand laid Riprap		Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2			
Comments: In Good Condition.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert inside Box



Photograph 3 – South Elevation



Photograph 4 – Water Stream (Manning Road West Side - Looking South)

Inventory Data:

Structure Number	12 (Formerly 72)		
Hwy/Road Name	Hayes Avenue		
Structure Location	Eastern intersection with Edgewater Blvd.		
Structure Type	Rigid Frame Box Culvert		
Latitude	42° 19' 34"	Longitude	-82° 52' 05"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	3.0 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	116 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	20.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	348 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	VAR. (m)	Detour Length Around Bridge	0.0 (km)
Fill on Structure	VAR. (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2014	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

This structure was recently built in 2014 within Manning Road Improvements, Phase 1
Reference PN. (12-6301-1000)

Field Inspection Information:

Date of Inspection	January 22, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Sunny, Probability of rain 1%
Temperature	-6 (-2/-8) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	This structural was built in 2014, Both inlets of this structure were locked. therefore, there was no possibility to conduct a detailed inspection. However, the exposed parts of the structure were found in excellent condition.
Date of Next Inspection	

Element Data:

Element Group:	Culverts	Length:	116 m			
Element Name:	Barrels	Width:	3.0 m			
Location:		Height:	1.8 m			
Material:	Precast concrete	Count:				
Element Type:		Total Quantity:	1113.6 Sq.m			
Environment:		Limited Inspection	<input checked="" type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1113.6				
Comments: Limited inspection. Barrel is assumed to be in Excellent Condition.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Western Culvert Inlet (Looking North)



Photograph 2 – Water Stream (Looking South)



Photograph 3 – Western Culvert Inlet (Inside Box – Limited Inspection)

Inventory Data:

Structure Number	13 (Formerly 24)		
Hwy/Road Name	Sylvestre Drive		
Structure Location	At Exit from County Road 22		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 18' 22.7514"	Longitude	-82° 52' 42.132"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.7 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	11.0 (m)	Posted Speed	30 No. of Lanes 2
Overall Str. Width	21.0 (m)	AADT	% Trucks
Total Deck Area	7.700 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	11.0 (m)	Detour Length Around Bridge	1.1 (km)
Fill on Structure	0.6 - 1.5 (m)	Direction of Structure	N
Skew Angle	17° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2002	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	February 3, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Probability of rain 55%
Temperature	10 (12 / -1) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Generally, the accessible elements of the structure is in good condition. Culvert barrel was submerged under water and inspection was limited. Waterway with moderate plant growth.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Speed Limit (30 km/h)	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	21.0 m		
Element Name:	Barrels		Width:	0.7 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	46.2 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	--	--	--	--	
Comments: Limited inspection - Culvert was submerged underwater.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	0.7 m		
Element Name:	Wearing Surface		Width:	11.0 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	7.7 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		7.7			
Comments: Generally, the asphalt surface is in Good Condition. Lines need to be re-painted						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	11.0 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	132.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		73.2			
Comments: Wide transverse crack along the North approach						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Plant growth along the water stream South of County Road 22, with recommendations to be shaved.						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Road over Culvert (Looking East)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking West)



Photograph 6 – Wearing Surface at North Approach



Photograph 7 – Water Stream (CR 22 Road South Side - Looking East)



Photograph 8 – Water Stream (CR 22 Road South Side - Looking West)

Inventory Data:

Structure Number	14 (Formerly 22)		
Hwy/Road Name	Intersection Road		
Structure Location	At intersection with Banwell Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 17' 32.0634"	Longitude	-82° 53' 48.084"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.5 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	17.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	42.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	8.500 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	17.0 (m)	Detour Length Around Bridge	4.0 (km)
Fill on Structure	1.0 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1990	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 1, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 1%
Temperature	1 (6 / -1) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited Inspection - The structure is in poor condition. Culvert barrel is severely corroded with heavy loss along the bottom surface at the spring level. Wearing surface was observed with longitudinal, traversal and medium progressive edge cracks extending along the approaches,
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign.	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	42.0 m		
Element Name:	Barrels		Width:	0.5 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	66.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		19.8	33.0	13.2	
Comments: The Structure is found in Poor Condition. Culvert barrel is severely corroded causing a cut along the bottom surface at the spring level. Edges are bended at the North inlet						
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Decks		Length:	0.5 m		
Element Name:	Wearing Surface		Width:	17.0 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	8.5 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5.0	2.5		
Comments: - Longitudinal crack over the culvert section - Medium Progressive edge cracks at the South edge of Intersection Road						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	17.0 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	204.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		150.0	54.0		
Comments: - Medium map cracking at both approaches - Medium Progressive edge cracks at the South edge of Intersection Road						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – Wearing Surface over Culvert (Looking South)



Photograph 5 – Wearing Surface at East Approach (Looking South)



Photograph 6 – Wearing Surface at East Approach (Looking West)

Inventory Data:

Structure Number	15		
Hwy/Road Name	Estate Park		
Structure Location	At intersection with Tecumseh Road East		
Structure Type	Concrete Pipe Culvert		
Latitude	42° 18' 40.896"	Longitude	-82° 50' 48.5874"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.28 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	9.5 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	25.5 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	2.660 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	9.5 (m)	Detour Length Around Bridge	<input type="text" value="1.1"/> (km)
Fill on Structure	1.5 (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - Existing manholes with cast iron cover at both the Inlet and Outlet.
Date of Next Inspection	

Element Data:

Element Group:	Signs		Length:		
Element Name:	Signs		Width:		
Location:			Height:		
Material:			Count:	1	
Element Type:	Stop Sign		Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:				Perform. Deficiencies	
Condition Data:	Units	Exc.	Good	Fair	Poor*
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1			
Comments: In Excellent Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	25.5 m		
Element Name:	Barrels		Width:	0.28 (Inner) / 0.33 (Outer) m (Dia.)		
Location:			Height:			
Material:	Precast concrete		Count:			
Element Type:	Concrete Pipe Culvert		Total Quantity:	22.5 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.5			
Comments: Limited Inspection - Covered Manhole at both Inlet/Outlet						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	m		
Element Name:	Inlet Components		Width:	m		
Location:	East Side		Height:	m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Rectangular Manhole		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered Manhole						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	m		
Element Name:	Outlet Components		Width:	m		
Location:	West Side		Height:	m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Rectangular Manhole		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered Manhole						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.33 m		
Element Name:	Wearing Surface		Width:	9.5 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	3.1 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		3.1			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	9.5 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	114.0 Sq.m		
Environment:	Severe		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		114.0			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Manhole



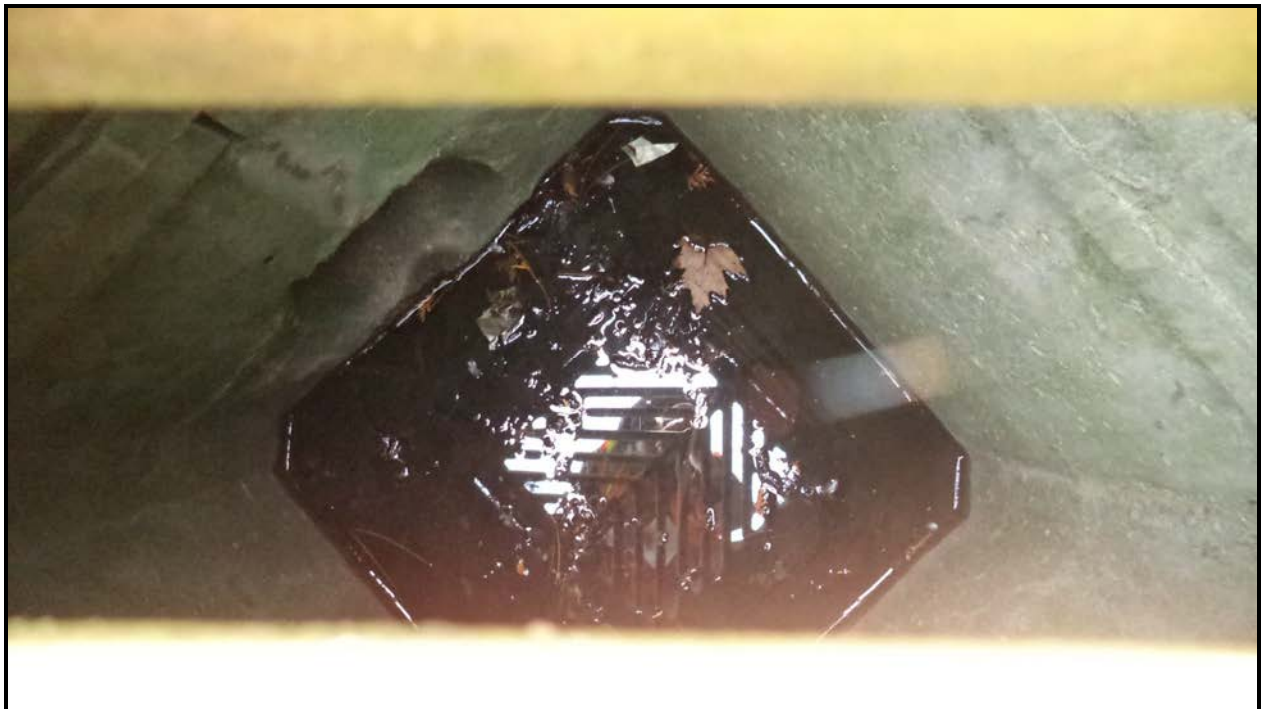
Photograph 3 – East Inlet



Photograph 4 – East Inlet Manhole



Photograph 5 – West Outlet



Photograph 6 – West Outlet Manhole



Photograph 7 – Wearing Surface over Culvert (Looking East)



Photograph 8 – Wearing Surface at South Approach

Inventory Data:

Structure Number	16		
Hwy/Road Name	Tecumseh Road East		
Structure Location	0.30 km East from Manning Road (County Road 19)		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 18' 43.7034"	Longitude	82° 51' 55.9434"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.2 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	10.5 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	18.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	12.600 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	10.5 (m)	Detour Length Around Bridge	0.0 (km)
Fill on Structure	1.2 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 2, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Fog, Probability of precipitation 61%
Temperature	-1 (6 / 4) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Light corrosion at the bottom half of the culvert barrel. Wearing surface was observed with two (2) potholes over the culvert section, wide transverse cracks and Medium progressive edge cracks at south approach. Stop Sign is required to be placed at the intersection.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:		Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Stop Sign is required to be placed. - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input checked="" type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
		Install STOP Sign				

Element Group:	Culverts		Length:	18.0 m		
Element Name:	Barrels		Width:	0.3 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	17.0 Sq.m		
Environment:	Moderate		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		13.6	3.4		
Comments: Light corrosion at the bottom half of the culvert barrel.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Decks		Length:	0.3 m		
Element Name:	Wearing Surface		Width:	10.5 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	3.15 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2.5		0.65	
Comments: Two (2) potholes located over the culvert						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Asphalt repair			

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	10.5 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	126.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		100	20	6	
Comments: - Wide transverse cracks - Medium progressive edge cracks at the South approach						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Asphalt repair			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:		Count:	1			
Element Type:		Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	1				
Comments: In Excellent Condition						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:		Count:	4			
Element Type:		Total Quantity:	4			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	4				
Comments: In Excellent Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:	North - South		Height:			
Material:	Masonry	Count:	2			
Element Type:	Hand Laid Riprap	Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: In Excellent Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking West)



Photograph 6 – Wearing Surface at South Approach



Photograph 7 – Water Stream (Tecumseh Rd East, North Side - Looking East)

Inventory Data:

Structure Number	17 (Formerly 66)		
Hwy/Road Name	North Talbot Road		
Structure Location	at the transition from North Talbot Road to Concession Road 9		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 13' 51.924"	Longitude	-82° 55' 53.0034"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.90 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	50 No. of Lanes 2
Overall Str. Width	10.0 (m)	AADT	% Trucks
Total Deck Area	13.680 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	8.0 (km)
Fill on Structure	0.50 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2000	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 27, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Probability of Snow 3%
Temperature	0 (1 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Minor concrete spalling at the northern headwall. Wearing surface was observed with wide progressive edge and transverse cracks over the culvert section and along the west approach. Plant growth at the north elevation requires maintenance.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	2
Element Type:	Hazard Marker Signs	Total Quantity:	2
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	2	Fair
			Poor*
Comments: - Existing Sign in Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	10.0 m	
Element Name:	Soffit - Inside Boxes		Width:	1.9 m	
Location:			Height:	1.8 m	
Material:	Cast-in-place concrete		Count:		
Element Type:			Total Quantity:	55.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		55.0		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.0 / 2.5 m	
Element Name:	Inlet Components		Width:	0.3 m	
Location:	North Side		Height:	2.4 m	
Material:	Cast-in-place concrete		Count:	2	
Element Type:	Wingwall		Total Quantity:	8.1 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5.6	1.0	1.5
Comments: Concrete Spalls at the top of the wingwalls					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.5 m	
Element Name:	Outlet Components		Width:	0.3 m	
Location:	North Side		Height:	0.6 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Headwall		Total Quantity:	1.5 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.25		0.25
Comments: Concrete Spalls at the corner due to vehicle movement.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	3.6 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	South Side		Height:	2.4 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	13.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		13.0			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	1.9 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	South Side		Height:	0.6 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	1.15 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.15			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.9 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	13.7 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		9.45	2.0	2.25	
Comments: - Wide transverse cracks - Light map cracking - Severe alligator at the road North side						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Asphalt repairs		

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	86.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		68.9	13.0	4.50	
Comments: - Wide Progressive edge cracks on both sides at the West approach. - East approach is in excellent condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	
			Asphalt repairs			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Minor Plant growth blocking the water flow, and large stone at the Northern waterway. recommended to be shaved						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	
			Drain repairs			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	5		
Element Type:			Total Quantity:	5		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at West Approach



Photograph 7 – Water Stream (North Talbot Road North Side - Looking North)



Photograph 8 – Water Stream (North Talbot Road South Side - Looking East)

Inventory Data:

Structure Number	18 (Formerly 65)		
Hwy/Road Name	North Talbot Road		
Structure Location	1.10 km East from Oldcastle Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 55.5954"	Longitude	-82° 56' 7.98"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.25 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	50 No. of Lanes 2
Overall Str. Width	13.7 (m)	AADT	% Trucks
Total Deck Area	9 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	3.9 (km)
Fill on Structure	0.80 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2000	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 27, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Probability of Snow 3%
Temperature	0 (1 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Light corrosion in the bottom half of the culvert barrel. Wearing surface with wide transverse and longitudinal cracks over the culvert section, and sever progressive edge cracks at north approach. Light plant growth at the waterway.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	2			
Element Type:	Speed Limit / Maximum Weight	Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2			
Comments: - Existing signs are in good condition. located at both road ends (N Talbot Rd.) - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	13.7 m		
Element Name:	Barrels		Width:	1.25 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	53.80 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		43.0	10.8		
Comments: Light corrosion at the bottom half of the pipe culvert						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	8.40 m		
Element Name:	Inlet Components		Width:	0.60 m		
Location:	North Side		Height:	2.70 m		
Material:	Precast concrete		Count:			
Element Type:	Mortar Bags		Total Quantity:	22.70 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.7			
Comments: In good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	8.40 m		
Element Name:	Outlet Components		Width:	0.60 m		
Location:	South Side		Height:	2.70 m		
Material:	Precast concrete		Count:			
Element Type:	Mortar Bags		Total Quantity:	22.70 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.7			
Comments: In good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.25 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	9.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5.0	3.0	1.0
Comments: - Moderate map cracking over the culvert - Severe progressive edge cracks at the road North side					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
		Asphalt repairs			

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:	East - West		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	86.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		61.0	15.0	10.4
Comments: - Longitudinal & Transverse cracks over the culvert - Severe progressive edge cracks at the road North side					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
		Asphalt repairs			

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	North - South		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: Light plant growth on the waterway Northern road side					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
		Drain maintenance			

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	5	
Element Type:			Total Quantity:	5	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:			Height:		
Material:	Masonry		Count:	1	
Element Type:	Hand laid Riprap		Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1		
Comments: In good Condition, located at the embankment facing the culvert South elevation					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking East)



Photograph 6 – Wearing Surface at East Approach



Photograph 7 – Water Stream (North Talbot Road North Side - Looking North)



Photograph 8 – Water Stream (North Talbot Road South Side - Looking South)

Inventory Data:

Structure Number	19 (Formerly 64)		
Hwy/Road Name	North Talbot Road		
Structure Location	0.60 km East from Oldcastle Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 0.9954"	Longitude	-82° 56' 30.228"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.20 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	7.20 (m)	Posted Speed	50 No. of Lanes 2
Overall Str. Width	20.0 (m)	AADT	% Trucks
Total Deck Area	8.640 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.20 (m)	Detour Length Around Bridge	(km)
Fill on Structure	1.50 (m)	Direction of Structure	E
Skew Angle	23° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1999	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 27, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Probability of Snow 3%
Temperature	0 (1 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Generally, Culvert barrel edges are distorted at southern outlet. New patched strip of 4.50 m width was observed at the wearing surface over the culvert section. Wide progressive edge cracks at both sides of the approaches. The waterway were blocked with moderate plant growth on both road sides.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	2			
Element Type:	Speed Limit / Maximum Weight	Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2			
Comments: - Existing signs are in good condition. located at both road ends (N Talbot Rd.) - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	20.0 m	
Element Name:	Barrels		Width:	1.20 m (Dia.)	
Location:			Height:		
Material:	Corrugated Steel		Count:		
Element Type:	Multi-Plate CSP		Total Quantity:	75.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		68.0	7.4	
Comments: In Good condition with distored edges at the Southern outlet.					
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	4.5 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	32.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		32.4		
Comments: In good condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:			Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	86.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		40.9	35.5	10.0
Comments: - Wide progressive edge cracks on both sides of the approaches - split crack between the new asphalt over culvert and approaches					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
			Asphalt repairs		

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	North - South		Height:		
Material:		Count:	2		
Element Type:		Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:				Perform. Deficiencies	
Condition Data:	Units	Exc.	Good		Fair
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			1	1
Comments: The waterway is blocked with plants on both sides and severly on the South outlet.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:		Count:	4		
Element Type:		Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:				Perform. Deficiencies	
Condition Data:	Units	Exc.	Good		Fair
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			4	
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:	South Side		Height:		
Material:	Masonry	Count:	2		
Element Type:	Hand laid Riprap	Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:				Perform. Deficiencies	
Condition Data:	Units	Exc.	Good		Fair
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			2	
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking South)



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking East)



Photograph 6 – Wearing Surface at East Approach



Photograph 7 – Water Stream (North Talbot Road North Side - Looking North)



Photograph 8 – Water Stream (North Talbot Road South Side - Looking West)

Inventory Data:

Structure Number	20 (Formerly 63)		
Hwy/Road Name	Oldcastle Road		
Structure Location	At intersection with North Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 06.57" N	Longitude	82° 56' 53.52" W
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.5 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	22.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	170 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	33 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	22.0 (m)	Detour Length Around Bridge	6.9 (km)
Fill on Structure	1.5 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2011	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 27, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Probability of Snow 3%
Temperature	0 (1 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The culvert barrel was submerged under water. A camera inspection was not possible to be conducted. The Town advised the structure is expected to be in good condition since it was built recently.
Date of Next Inspection	

Element Data:

Element Group:		Length:				
Element Name:		Width:				
Location:		Height:				
Material:		Count:				
Element Type:		Total Quantity:				
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road view (Oldcastle) over Culvert (Looking North)



Photograph 2 – Manhole, East Side of Oldcastle Road at the Intersection



Photograph 3 – Road condition at North Talbot Road



Photograph 4 – East Elevation

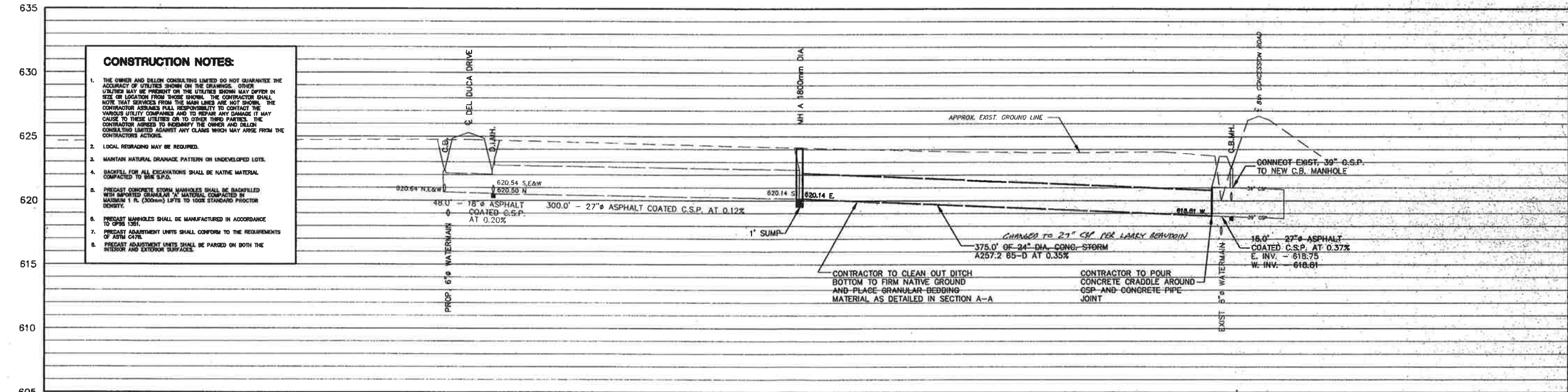
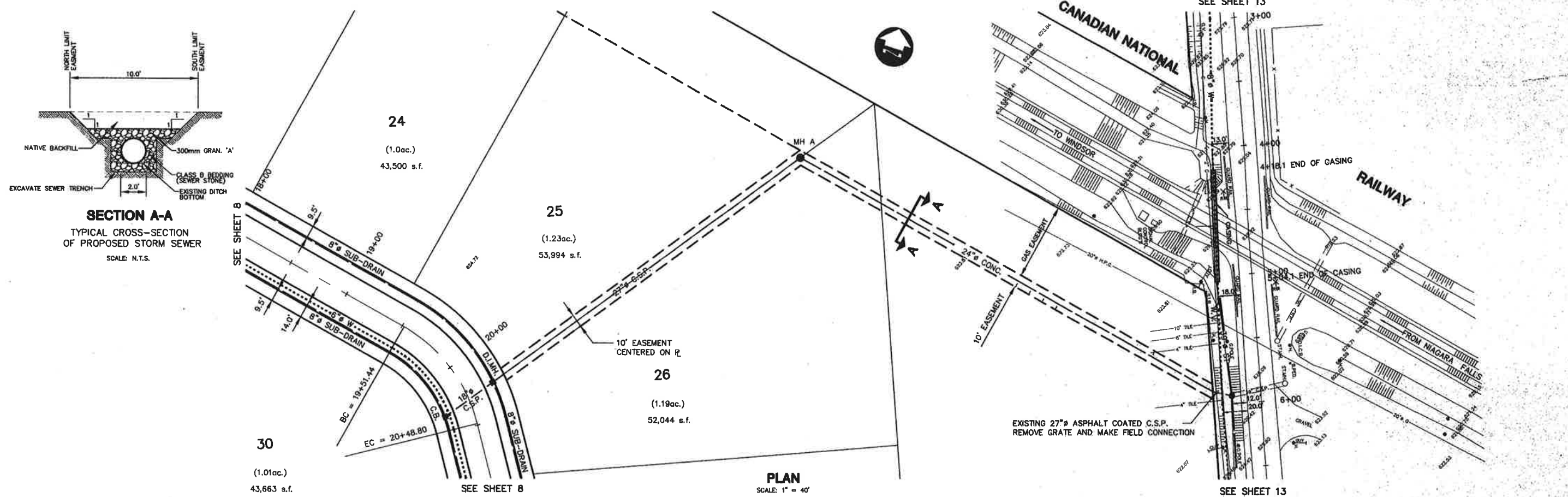
Inventory Data:

Structure Number	21 (Formerly 30)		
Hwy/Road Name	8th Concession Road		
Structure Location	0.60 km north from North Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 24" N	Longitude	82° 56' 49" W
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.6 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	-- (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	4.320 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	<input type="text" value="5.2"/> (km)
Fill on Structure	-- (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1970"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:



- CONSTRUCTION NOTES:**
1. THE OWNER AND DILLON CONSULTING LIMITED DO NOT GUARANTEE THE ACCURACY OF UTILITIES SHOWN ON THE DRAWINGS. OTHER UTILITIES MAY BE PRESENT ON THE UTILITIES SHOWN MAY DIFFER IN SIZE OR LOCATION FROM THOSE SHOWN. THE CONTRACTOR SHALL NOTE THAT SERVICES FROM THE MAIN LINES ARE NOT SHOWN. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES AND TO REPAIR ANY DAMAGES IT MAY CAUSE TO THESE UTILITIES OR TO OTHER THIRD PARTIES. THE CONTRACTOR AGREES TO INDEMNIFY THE OWNER AND DILLON CONSULTING LIMITED AGAINST ANY CLAIMS WHICH MAY ARISE FROM THE CONTRACTOR'S ACTIONS.
 2. LOCAL REGRADING MAY BE REQUIRED.
 3. MAINTAIN NATURAL DRAINAGE PATTERN ON UNDEVELOPED LOTS.
 4. BACKFILL FOR ALL EXCAVATIONS SHALL BE NATIVE MATERIAL COMPACTED TO 95% S.P.D.
 5. PRECAST CONCRETE STORM MANHOLES SHALL BE BACKFILLED WITH IMPORTED GRANULAR "A" MATERIAL COMPACTED BY MAXIMUM 1 ft. (300mm) LIFTS TO 100% STANDARD PROCTOR DENSITY.
 6. PRECAST MANHOLES SHALL BE MANUFACTURED IN ACCORDANCE TO CPRI 1361.
 7. PRECAST ADJUSTMENT UNITS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C478.
 8. PRECAST ADJUSTMENT UNITS SHALL BE PARDED ON BOTH THE INTERIOR AND EXTERIOR SURFACES.

<p>M. M. DILLON LIMITED</p> <p>DATE</p>		<p>DEL DUCA INDUSTRIAL PARK LIMITED</p> <p>WINDSOR ONTARIO</p>		<p>DILLON Consulting Engineers - Planners Environmental Scientists</p>		<p>DESIGN T.L.D. DRAWN R.J.Z. CHECKED A.M.G. APPROVED L.J.M. DATE 20 JUNE 90</p>		<p>DEL DUCA INDUSTRIAL PARK</p> <p>PLAN AND PROFILE EASEMENT</p>		<p>PROJECT NO. 2757-02</p> <p>SHEET NO. 12</p>	
<p>0 40' 0</p> <p>HORIZONTAL VERTICAL</p>				<p>NO. REVISIONS DATE BY SCALE AS SHOWN</p>		<p>2. ENCLOSE DITCH 08/04/88 (70) M.O.B. 1. AS PER ENGINEER'S REVIEW 13/7/90 (L.L.) F.P.R.</p>		<p>AS SHOWN</p>		<p>2757-SHE-004</p>	

Inventory Data:

Structure Number	Structure 62		
Hwy/Road Name	Ure Street		
Structure Location	At intersection with North Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 9.492"	Longitude	-82° 57' 4.068"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.45 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	17.7 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	33.5 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	7.965 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	17.7 (m)	Detour Length Around Bridge	<input type="text" value="1.8"/> (km)
Fill on Structure	0.6 (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1990"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 1, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 1%
Temperature	1 (6 / -1) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited Inspection - The structure is assumed to be in good condition. Existing manhole with cast iron cover at the eastern Inlet
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Conditions. - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	33.5 m		
Element Name:	Barrels		Width:	0.45 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	47.4 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		47.4			
Comments: Limited inspection (partially accessible). The structure is assumed to be in good condition.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	m		
Element Name:	Inlet Components		Width:	m		
Location:	East Side		Height:	m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Rectangular Manhole		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered Manhole						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:	West Side		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2			
Comments: In good Conditions						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	0.45 m	
Element Name:	Wearing Surface		Width:	17.7 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	8.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.0		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	17.7 m	
Location:	North - South		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	212.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		212.4		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: Covered waterway East from Ure Street					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking West)



Photograph 6 – Wearing Surface over Culvert (Looking East)

Inventory Data:

Structure Number	23 (Formerly 61)		
Hwy/Road Name	Ure Street		
Structure Location	0.30 km North from North Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 19.716"	Longitude	-82° 57' 3.3114"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.9 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	8.8 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	17.7 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	7.920 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	8.8 (m)	Detour Length Around Bridge	<input type="text" value="1.8"/> (km)
Fill on Structure	1.1 (m)	Direction of Structure	<input type="text" value="NW"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1981"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 1, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 1%
Temperature	1 (6 / -1) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Generally, the structure is assumed to be in good condition. Existing manhole with cast iron cover at the eastern Inlet causing limited inspection. Wide transverse cracks were observed at the wearing surface over the culvert section.t.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	17.7 m		
Element Name:	Barrels		Width:	0.9 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	50.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		50.0			
Comments: In Good Conditions						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	m		
Element Name:	Inlet Components		Width:	m		
Location:	East Side		Height:	m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Rectangular Manhole		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered Manhole						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:	West Side		Height:			
Material:	Masonry		Count:	1		
Element Type:	Hand Laid Riprap		Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1			
Comments: In Good Conditions						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	0.9 m	
Element Name:	Wearing Surface		Width:	8.8 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	7.9 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		6.0	1.9	
Comments: The asphalt surface has wide transverse crack over the culvert section.					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
			Asphalt Repair		

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	8.8 m	
Location:	North - South		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	105.6 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		105.6		
Comments: In Good Conditions					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: Covered waterway East from Ure Street					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	4				
Comments: In Excellent Conditions						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:	West Side		Height:			
Material:	Masonry		Count:			
Element Type:	Hand Laid Riprap		Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface at West Approach



Photograph 6 – Water Stream (Ure Street West Side - Looking West)

Inventory Data:

Structure Number	24 (Formerly 60)		
Hwy/Road Name	Delduca Drive		
Structure Location	West of the intersection with Ure Street		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 27.852"	Longitude	-82° 57' 2.6994"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.6 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	8.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	15.25 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	4.800 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	8.0 (m)	Detour Length Around Bridge	1.8 (km)
Fill on Structure	0.70 (m)	Direction of Structure	NW
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1981	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 1, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 1%
Temperature	1 (6 / -1) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The culvert barrel is in good condition. However, severe map cracking was spreading over the culvert section, and along both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	15.25 m		
Element Name:	Barrels		Width:	0.5 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	24.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		24.0			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	1				
Comments: Not active						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	6		
Element Type:			Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	6				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	0.5 m	
Element Name:	Wearing Surface		Width:	8.0 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	4.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.5	2.5	
Comments: The asphalt surface has a moderate map cracking over the culvert section.					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
			Asphalt Repair		

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	8.0 m	
Location:	East - West		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	96.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		30.0	48.0	18.0
Comments: The asphalt surface has a moderate map cracking along both approaches.					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
			Asphalt Repair		

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at West Approach

Inventory Data:

Structure Number	25 (Formerly 28)		
Hwy/Road Name	O'Neil Dr.		
Structure Location	North from the intersection with Moynahan Street		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 26"	Longitude	-82° 57' 14"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.3 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	25 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	2.160 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	1.8 (km)
Fill on Structure	0.6 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1975	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

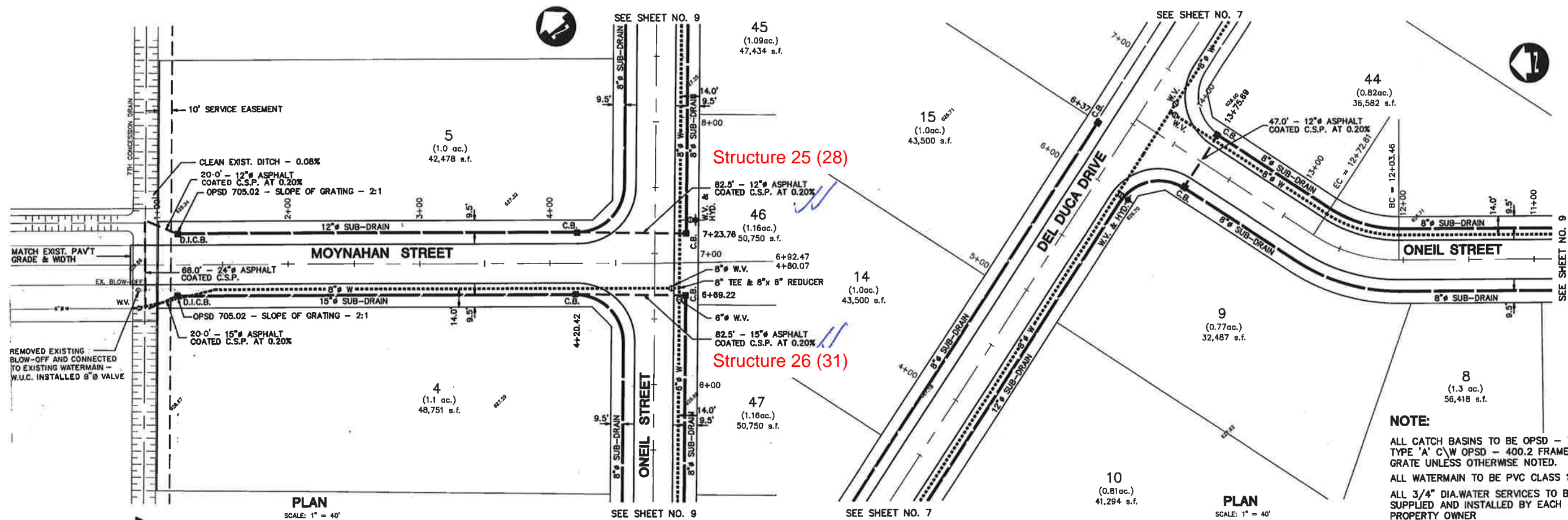
Date of Inspection	February 1, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 1%
Temperature	1 (6 / -1) Celsius

Overall Structure Notes:

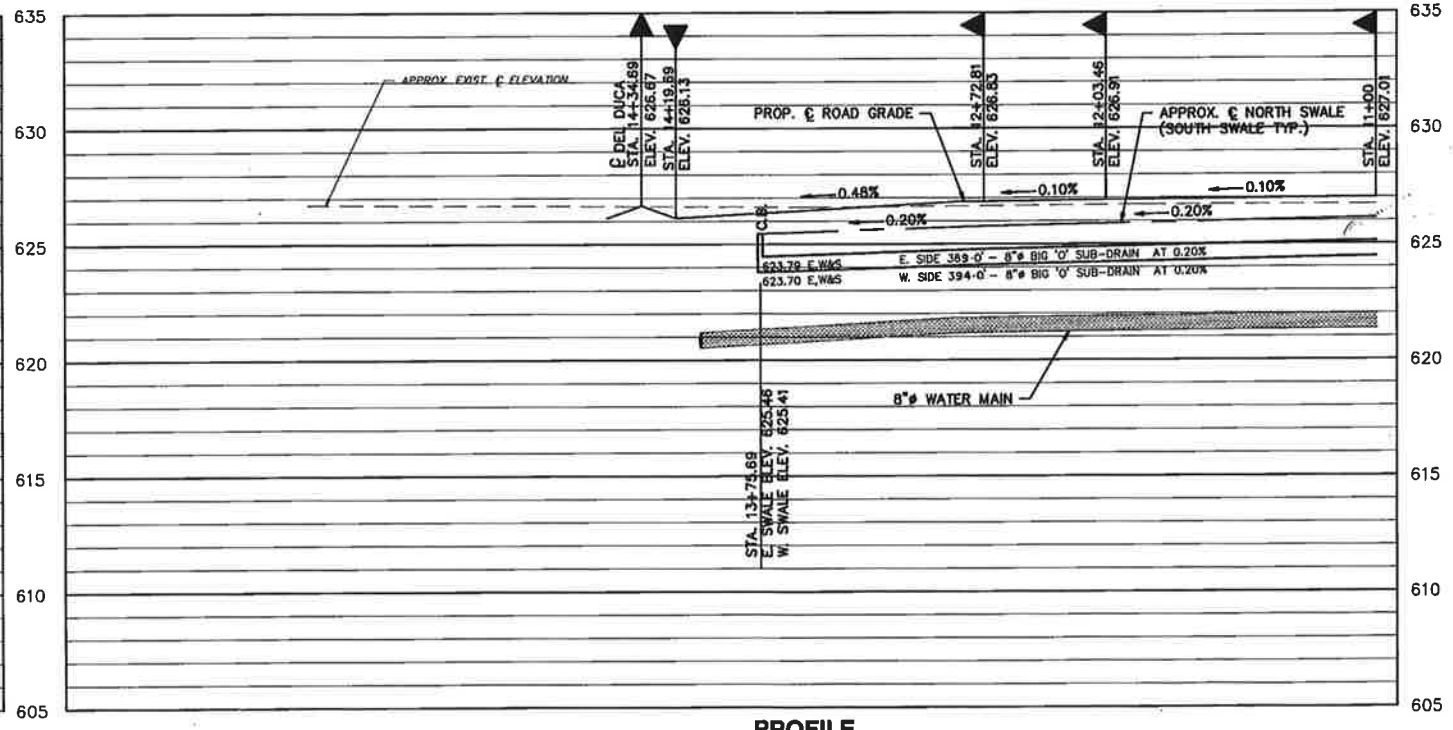
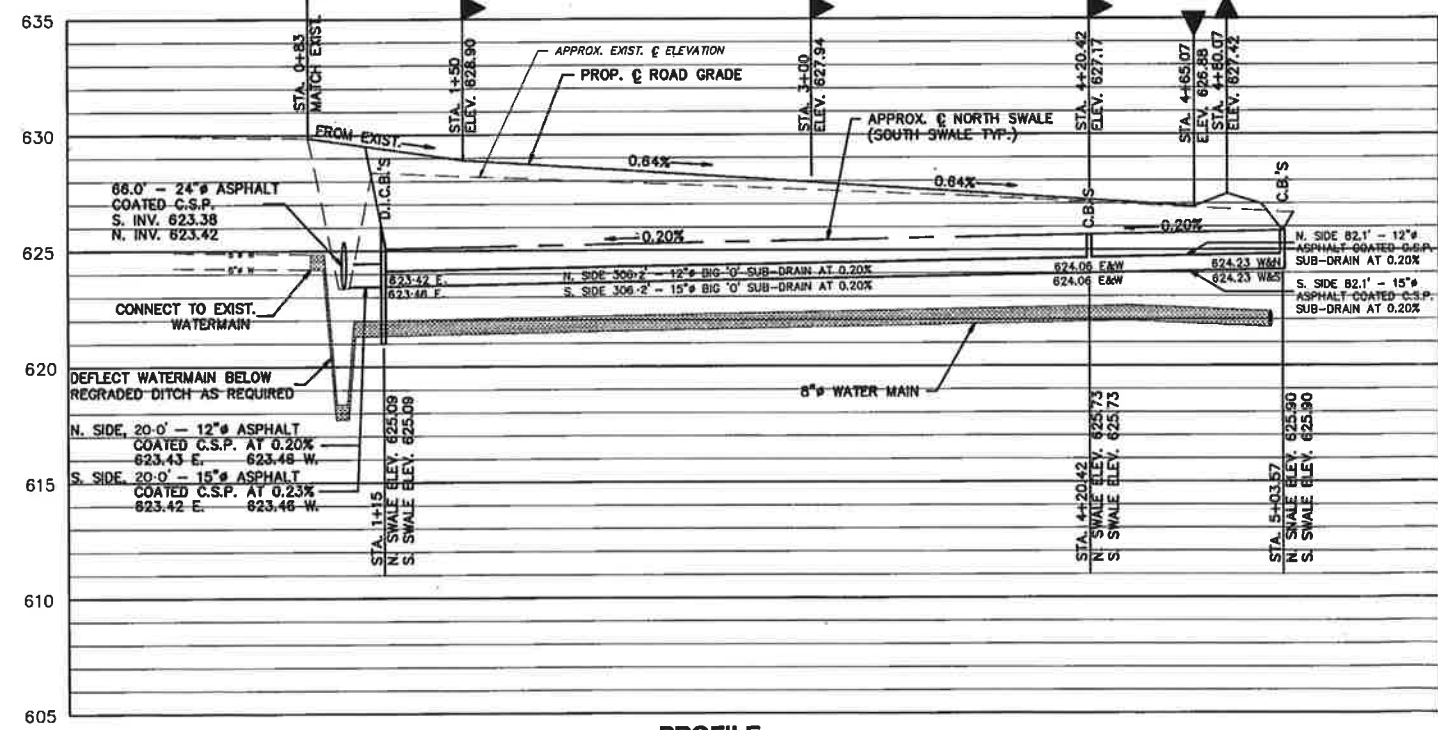
Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - The structure was buried under the road. Record drawings was provided by the Town for reporting.
Date of Next Inspection	

Element Data:

Element Group:		Length:				
Element Name:		Width:				
Location:		Height:				
Material:		Count:				
Element Type:		Total Quantity:				
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



NOTE:
 ALL CATCH BASINS TO BE OPSD - 705.02 TYPE 'A' C/W OPSD - 400.2 FRAME & GRATE UNLESS OTHERWISE NOTED.
 ALL WATERMAIN TO BE PVC CLASS 150 ALL 3/4" DIA. WATER SERVICES TO BE SUPPLIED AND INSTALLED BY EACH PROPERTY OWNER



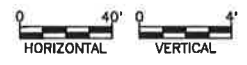
PROFILE
 SCALE: 1" = 40' HOR.
 1" = 4' VERT.

PROFILE
 SCALE: 1" = 40' HOR.
 1" = 4' VERT.

RECORD DRAWING

RECORD DRAWING
 M. M. DILLON LIMITED
 17 JULY 1990
 DATE

DEL DUCA INDUSTRIAL PARK LIMITED



DILLON
 Consulting Engineers - Planners
 Environmental Scientists

NO.	REVISIONS	DATE	BY	SCALE
2.	RECORD DRAWING	1 APRIL 1991	L.J.M.	AS SHOWN
1.	AS PER TOWNSHIP ENGINEER'S REVIEW	13/7/90	L.J.M.	AS SHOWN

DEL DUCA INDUSTRIAL PARK
PLAN AND PROFILE
ONEIL AND MOYNAHAN STREETS

PROJECT NO.
2757-02
 SHEET NO.
10
 OF

Inventory Data:

Structure Number	26 (Formerly 31)		
Hwy/Road Name	O'Neil Dr.		
Structure Location	South from the intersection with Moynahan Street		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 9.492"	Longitude	-82° 57' 4.068"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.4 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	25 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	2.880 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	<input type="text" value="1.25"/> (km)
Fill on Structure	0.6 (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1970"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

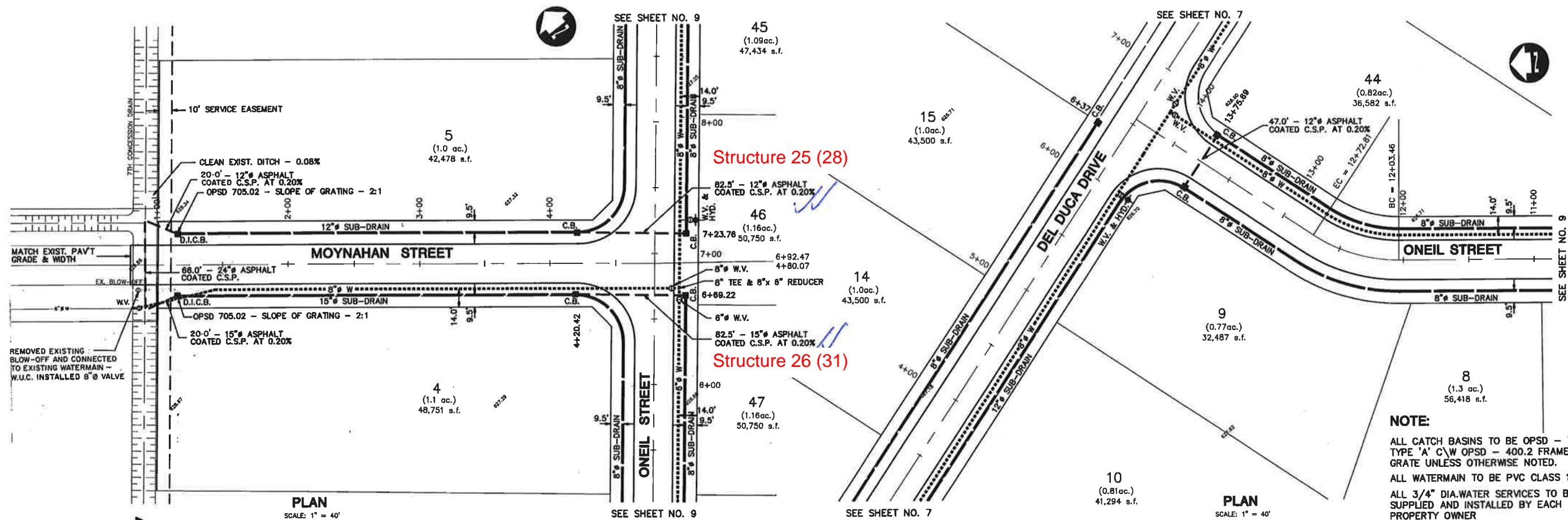
Date of Inspection	February 1, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 1%
Temperature	1 (6 / -1) Celsius

Overall Structure Notes:

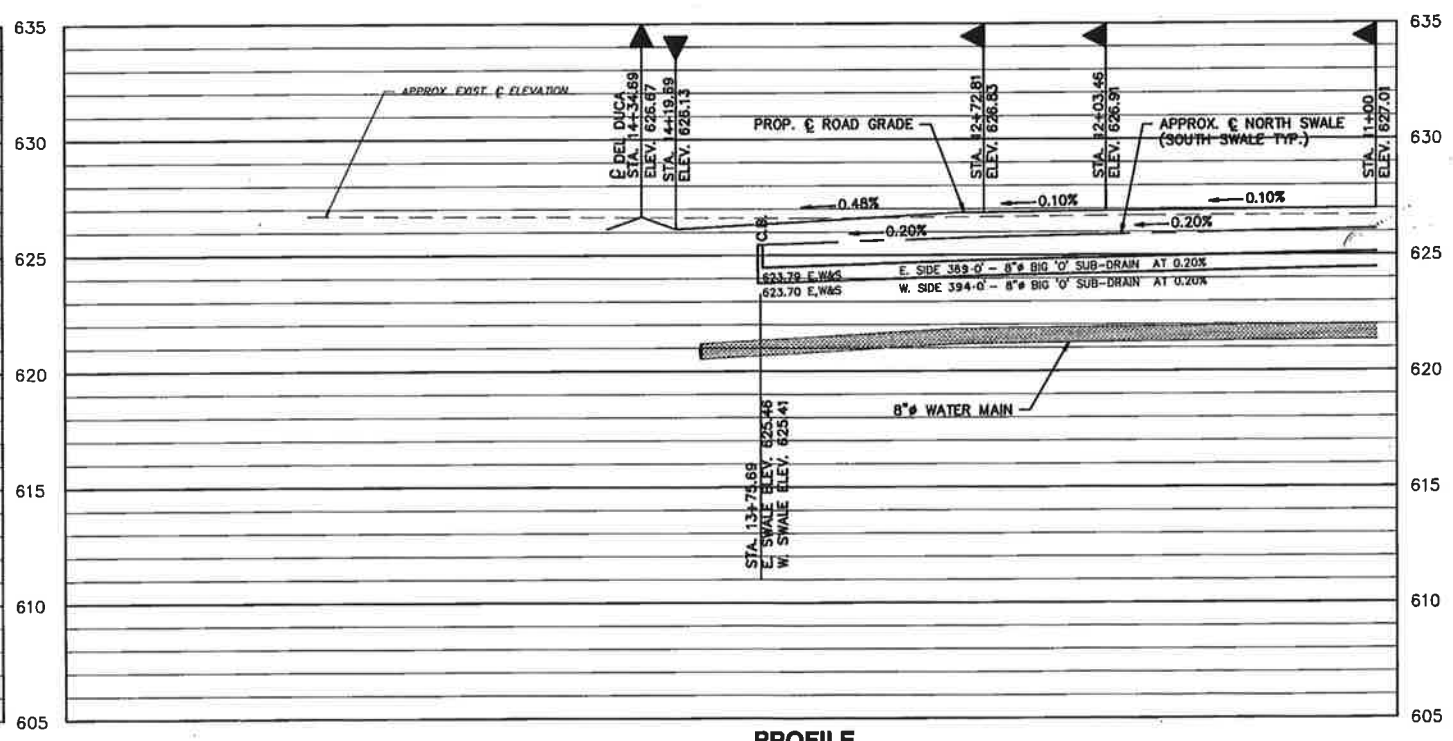
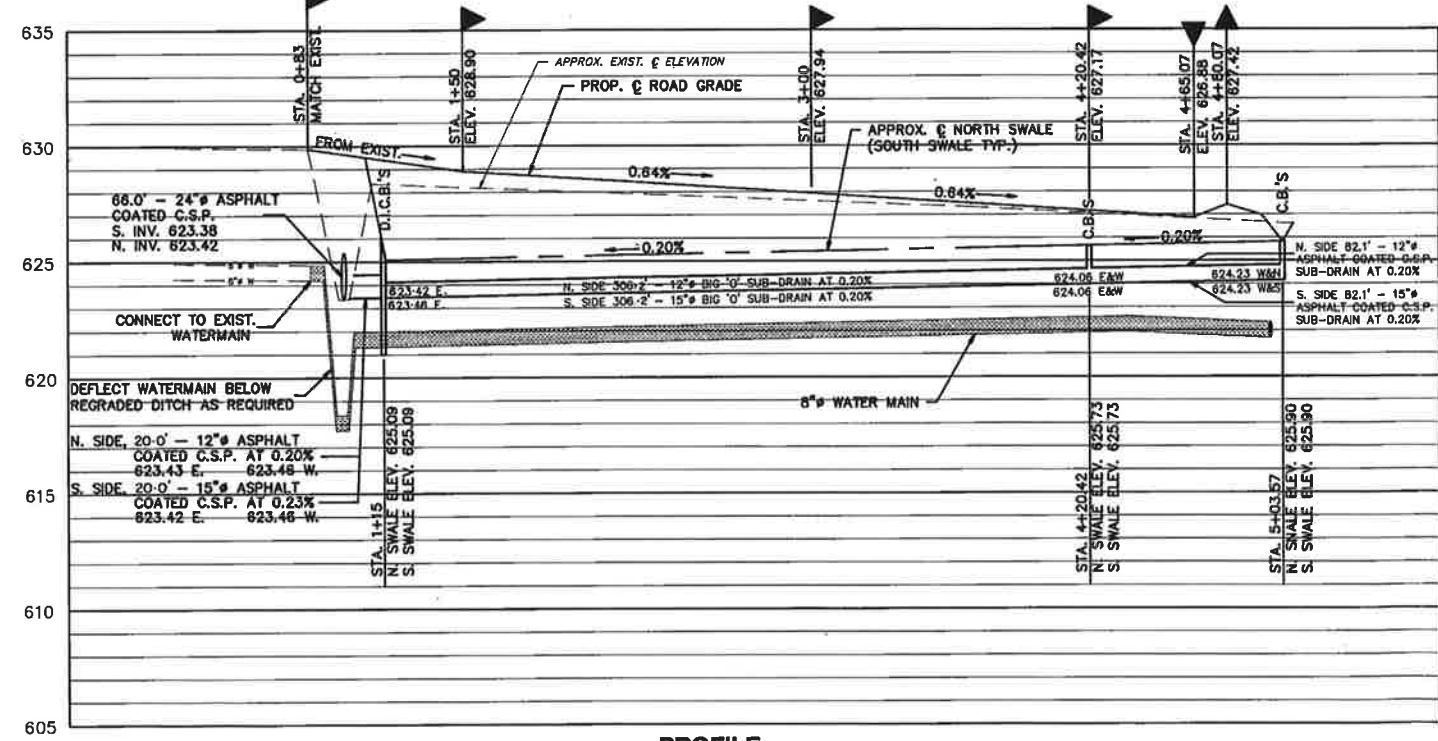
Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - The structure was buried under the road. Record drawings was provided by the Town for reporting.
Date of Next Inspection	

Element Data:

Element Group:		Length:				
Element Name:		Width:				
Location:		Height:				
Material:		Count:				
Element Type:		Total Quantity:				
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:		Perform. Deficiencies				
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



NOTE:
 ALL CATCH BASINS TO BE OPSD - 705.02 TYPE 'A' C/W OPSD - 400.2 FRAME & GRATE UNLESS OTHERWISE NOTED.
 ALL WATERMAIN TO BE PVC CLASS 150 ALL 3/4" DIA. WATER SERVICES TO BE SUPPLIED AND INSTALLED BY EACH PROPERTY OWNER



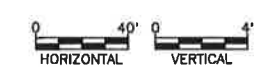
PROFILE
 SCALE: 1" = 40' HOR.
 1" = 4' VERT.

PROFILE
 SCALE: 1" = 40' HOR.
 1" = 4' VERT.

RECORD DRAWING

RECORD DRAWING
 PROFESSIONAL ENGINEER
 M. M. DILLON LIMITED
 17 JULY 1990
 DATE

DEL DUCA INDUSTRIAL PARK LIMITED
 WINDSOR ONTARIO



DILLON
 Consulting Engineers - Planners
 Environmental Scientists

DESIGN	T.L.D.
DRAWN	R.J.Z.
CHECKED	A.M.G.
APPROVED	L.J.M.
DATE	6 JUNE 90
BY	T.L.D.
SCALE	AS SHOWN
NO.	REVISIONS
DATE	BY
1 APRIL 1991	G.O.M. (S.J.V.)
13/7/90	(T.L.D.) (F.P.B.)

DEL DUCA INDUSTRIAL PARK
PLAN AND PROFILE ONEIL AND MOYNAHAN STREETS

PROJECT NO. 2757-02
 SHEET NO. 10
 OF 2757SH0.0W0

Inventory Data:

Structure Number	27 (Formerly 59)		
Hwy/Road Name	Moynahan Street		
Structure Location	0.12 km West from O'Neil Drive		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 26.16"	Longitude	-82° 57' 19.188"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.6 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	19.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	4.320 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	<input type="text" value="1.3"/> (km)
Fill on Structure	1.5 (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1975"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 29, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Sunny, Probability of Rain 1%
Temperature	-2 (-1 / -5) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The asphalt surface has wide traverse cracks extending over the culvert section, and medium progressive edge cracks. Limited inspection - The culvert was submerged underwater, further investigation is required.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	19.0 m		
Element Name:	Barrels		Width:	0.6 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	35.8 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Inaccessible - Culvert was submerged underwater.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	6		
Element Type:			Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		6			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:	North Side		Height:			
Material:	Masonry		Count:	1		
Element Type:	Hand Laid Riprap		Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			1		
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Decks		Length:	0.6 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	4.3 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.4	1.5		
Comments: Wide longitudinal and traverse cracks extending over the culvert section.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Asphalt Repair			

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	86.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		60.0	26.4		
Comments: - Wide traverse cracks extending over the culvert section. - Medium Progressive edge cracks on both edges.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Asphalt Repair			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			1		
Comments: Excessive plant growth along the water stream						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Drain Maintenance			



Photograph 1 – Road over Culvert (Looking East)



Photograph 2 – Culvert Inlet at South Elevation



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface over Culvert (Looking East)

Inventory Data:

Structure Number	28 (Formerly 58)		
Hwy/Road Name	Moynahan Street		
Structure Location	West of the intersection with Hennin Street		
Structure Type			
Latitude	42° 14' 26.3034"	Longitude	-82° 57' 23.4714"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.40 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	12.5 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	2.880 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	<input type="text" value="1.3"/> (km)
Fill on Structure	0.90 (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1975"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 29, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Sunny, Probability of Rain 1%
Temperature	-2 (-1 / -5) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Wearing surface over the culvert section was observed with wide traverse cracks, and medium progressive edge cracks. The culvert was submerged underwater which caused limited inspection of the culvert barrel. The waterways on both road sides were blocked with extensive plant growth.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	12.5 m		
Element Name:	Barrels		Width:	0.4 m		
Location:			Height:			
Material:	Corrugated Steel - Concrete		Count:			
Element Type:			Total Quantity:	15.7 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		9.5	3.2	3.0	
Comments: Limited inspection However, the corrugated steel section is in poor condition with severe corrosion.						
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:	North - South sides		Height:			
Material:			Count:	5		
Element Type:			Total Quantity:	5		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Decks		Length:	0.4 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	2.9 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.4	1.5	
Comments: Wide longitudinal and traverse cracks extending over the culvert section.					
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:	
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:	East - West		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	86.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		60.0	26.4	
Comments: - Wide traverse cracks extending over the culvert section. - Medium Progressive edge cracks on both edges.					
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:	
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking North)



Photograph 6 – Wearing Surface at West Approach

Inventory Data:

Structure Number	29 (Formerly 57)		
Hwy/Road Name	Moynahan Street		
Structure Location	East of the intersection with Hennin Street		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 26.34"	Longitude	-82° 57' 24.336"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.40 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	12.5 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	2.880 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	<input type="text" value="N/A"/> (km)
Fill on Structure	0.90 (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1975"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 29, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Sunny, Probability of Rain 1%
Temperature	-2 (-1 / -5) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The structure is in poor condition. Culvert barrel is severely corroded. Wide cracking at the wearing surface was observed over the culvert section.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	12.5 m	
Element Name:	Barrels		Width:	0.4 m	
Location:			Height:		
Material:	Corrugated Steel		Count:		
Element Type:			Total Quantity:	15.7 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				15.7
Comments: The Structure is in Poor Condition. Culvert barrel is severely corroded.					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	1.8 m	
Element Name:	Inlet Components		Width:	0.4 m	
Location:	North Side		Height:	1.3 m	
Material:	Precast concrete		Count:		
Element Type:	Irregular Concrete Blocks		Total Quantity:	2.35 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			1.85	0.5
Comments: In Fair to Poor Condition - Loose blocks					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	3.0 m	
Element Name:	Outlet Components		Width:	0.4 m	
Location:	South Side		Height:	1.3 m	
Material:	Precast concrete		Count:		
Element Type:	Irregular Concrete Blocks		Total Quantity:	3.9 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			3.1	0.8
Comments: In Fair to Poor Condition - Loose blocks					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.4 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	2.9 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.4	1.5	
Comments: Wide traverse cracks extending over the culvert section.					
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:	East - West		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	86.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		86.4		
Comments: - Wide traverse cracks extending over the culvert section. - Medium Progressive edge cracks on both edges.					
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	North - South		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: Light plants growth at the South water stream					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	5		
Element Type:			Total Quantity:	5		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking East)



Photograph 2 – Culvert Barrel top at South Inlet



Photograph 3 – Culvert Barrel Bottom at South Inlet



Photograph 4 – Culvert Inlet at South Elevation



Photograph 5 – North Elevation



Photograph 6 – South Elevation



Photograph 7 – Wearing Surface over Culvert (Looking South)



Photograph 8 – Water Stream (Moyanahan Street South Side - Looking South)

Inventory Data:

Structure Number	30 (Formerly 56)		
Hwy/Road Name	Moynahan Street		
Structure Location	0.10 km West from Hennin Street		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 26.5554"	Longitude	-82° 57' 28.728"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.90 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	12.5 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	6.480 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	<input type="text" value="N/A"/> (km)
Fill on Structure	0.90 (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1990"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 29, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Sunny, Probability of Rain 1%
Temperature	-2 (-1 / -5) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input checked="" type="checkbox"/> 6 to 10 years
Overall Comments	Culvert barrel is moderately corroded. Randomly placed concrete blocks are used for end treatment. Wearing surface was observed with wide traverse cracks extending over the culvert section. It is recommended to assume replacement will be required in 6 - 10 Years.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	12.5 m	
Element Name:	Barrels		Width:	0.9 m	
Location:			Height:		
Material:	Corrugated Steel		Count:		
Element Type:			Total Quantity:	35.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.85	26.55	
Comments: The Structure is in Fair Condition. Culvert barrel is moderately corroded.					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	4.5 m	
Element Name:	Inlet Components		Width:	0.4 m	
Location:	North Side		Height:	1.6 m	
Material:	Precast concrete		Count:		
Element Type:	Irregular Concrete Blocks		Total Quantity:	7.2 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			7.2	
Comments: In Fair Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	4.5 m	
Element Name:	Outlet Components		Width:	0.4 m	
Location:	South Side		Height:	1.6 m	
Material:	Precast concrete		Count:		
Element Type:	Irregular Concrete Blocks		Total Quantity:	7.2 Sq.m	
Environment:	Moderate		Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			7.2	
Comments: In Fair Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.9 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	6.5 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		3.6	3.6		
Comments: Wide traverse cracks extending over the culvert section.						
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input checked="" type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	86.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		86.4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at East Approach



Photograph 7 – Water Stream (Moynahan Street East Side - Looking East)

Inventory Data:

Structure Number	31 (Formerly 55)		
Hwy/Road Name	Picadilly Ave.		
Structure Location	At the Intersection with Oldcastle Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 47.496"	Longitude	-82° 57' 22.6434"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.80 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	13.0 (m)	Posted Speed	50 No. of Lanes 2
Overall Str. Width	26.0 (m)	AADT	% Trucks
Total Deck Area	10.400 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	13.0 (m)	Detour Length Around Bridge	N/A (km)
Fill on Structure	0.60 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2000	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 22, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Sunny, Probability of rain 1%
Temperature	-6 (-2/-8) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - Existing manholes with cast iron cover at both the Inlet and Outlet. Wearing surface with excessive cracking.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:		Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - No Signs, buried structure with two (2) covered manholes at both inlets						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	26.0 m		
Element Name:	Barrels	Width:	0.60 m		
Location:		Height:			
Material:	Corrugated Steel	Count:			
Element Type:	Multi-Plate CSP	Total Quantity:	7.35 Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments: Limited Inspection - - Covered Manholes					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts	Length:	m		
Element Name:	Inlet Components	Width:	m		
Location:	North Side	Height:	m		
Material:		Count:			
Element Type:		Total Quantity:	Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments: Limited Inspection - Covered Manhole					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts	Length:	m		
Element Name:	Outlet Components	Width:	m		
Location:	South Side	Height:	m		
Material:		Count:			
Element Type:		Total Quantity:	Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments: Limited Inspection - Covered Manhole					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.60 m		
Element Name:	Wearing Surface		Width:	13.0 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	7.80 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4.30	3.50		
Comments: In Fair Condition (All Cracks are filled) - Medium Progressive Edge Cracks						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	13.0 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	156.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		29.0	110.0	17.0	
Comments: - East Approach: - Map Cracking - Medium Progressive Edge Cracks						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Asphalt Repairs		

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (at South Inlet)



Photograph 3 – North Inlet



Photograph 4 – South Inlet



Photograph 5 – Wearing Surface over Culvert (Looking West)



Photograph 6 – Wearing Surface at East Approach (Looking East)

Inventory Data:

Structure Number	32 (Formerly 54)		
Hwy/Road Name	Oldcastle Road		
Structure Location	1.10 km South from North Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 42.9234"	Longitude	-82° 57' 28.872"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.80 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.70 (m)	Posted Speed	50 No. of Lanes 2
Overall Str. Width	14.0 (m)	AADT	% Trucks
Total Deck Area	5.360 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.70 (m)	Detour Length Around Bridge	4.60 (km)
Fill on Structure	0.60 (m)	Direction of Structure	N
Skew Angle	32° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1985	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 22, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Sunny, Probability of rain 1%
Temperature	-6 (-2/-8) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - Existing manholes with cast iron cover at the western Inlet. Culvert edges bended at the eastern inlet. Wearing surface with excessive cracking, and waterways with excessive plant growth blocking the water flow at the eastern elevation.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:		Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - No Signs, burried structure with One (1) covered manholes at the Western Outlet						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	14.0 m			
Element Name:	Barrels	Width:	0.60 m			
Location:		Height:				
Material:	Corrugated Steel	Count:				
Element Type:	Multi-Plate CSP	Total Quantity:	3.95 Sq.m			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered Manholes and condition is unknown.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	m			
Element Name:	Inlet Components	Width:	m			
Location:	East Side	Height:	m			
Material:		Count:				
Element Type:		Total Quantity:	Sq.m			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Structure is submerged below water spring and condition is unknown.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	m			
Element Name:	Outlet Components	Width:	m			
Location:	West Side	Height:	m			
Material:		Count:				
Element Type:		Total Quantity:	Sq.m			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: Limited Inspection - Covered manhole and condition is unknown.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	0.60 m		
Element Name:	Wearing Surface		Width:	6.70 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	4.00 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		0.50	2.00	1.50	
Comments: In Fair Condition (All Cracks are filled) - Medium Progressive Edge Cracks						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Asphalt Repairs			

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.70 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	80.40 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		18.0	50.0	12.40	
Comments: North and South Approaches - Map Cracking - Longitudinal and Traversal Cracks - Medium Progressive Edge Cracks						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Asphalt Repairs			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East Side		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			2		
Comments: Excessive plant growth along the water stream on the East Side blocking the water flow, with recommendation to be shaved.						
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			



Photograph 1 – Road over Culvert (Looking East)



Photograph 2 – Road over Culvert (Looking North)



Photograph 3 – East Inlet



Photograph 4 – West Outlet



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Water Stream (Oldcastle Road East Side - Looking North)

Inventory Data:

Structure Number	33 (Formerly 53)		
Hwy/Road Name	McCord Lane		
Structure Location	At intersection with Walker Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 49.764"	Longitude	-82° 57' 49.8594"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.7 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	23.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	45.5 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	16.100 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	23.0 (m)	Detour Length Around Bridge	<input type="text" value="N/A"/> (km)
Fill on Structure	0.8 (m)	Direction of Structure	<input type="text" value="E"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1980"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 29, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Sunny, Probability of Rain 1%
Temperature	-2 (-1 / -5) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - In Good Conditions.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:	Stop Sign	Total Quantity:	1
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1	Fair
			Poor*
Comments: In Excellent Conditions			
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	45.5 m		
Element Name:	Barrels		Width:	0.7 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	100.0 q.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		100.0			
Comments: Limited inspection and assumed to be in generally in good condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:	South Side		Height:			
Material:	Masonry		Count:	1		
Element Type:	Hand Laid Riprap		Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1			
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.7 m		
Element Name:	Wearing Surface		Width:	23.0 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	16.1 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		16.1			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	23.0 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	276.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		276.0			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Wearing Surface at East Approach



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Water Stream (McCord Lane South Side - Looking South)

Inventory Data:

Structure Number	34 (Formerly 29)		
Hwy/Road Name	Pulleyblank Street		
Structure Location	0.7 km South from North Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 6.684"	Longitude	82° 58' 17.1114"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.5 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	28.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	10.800 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	1.6 (km)
Fill on Structure	0.8 (m)	Direction of Structure	E
Skew Angle	30° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1995	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 29, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Sunny, Probability of Rain 1%
Temperature	-2 (-1 / -5) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Generally, the structure is in good condition. Wide transverse and longitudinal cracks in the asphalt over the culvert.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	28.0 m	
Element Name:	Barrels		Width:	1.5 m	
Location:			Height:		
Material:	Corrugated Steel		Count:		
Element Type:	Multi-Plate CSP		Total Quantity:	132.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		132.0		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	16.0 m	
Element Name:	Inlet Components		Width:	0.75 m	
Location:	East Side		Height:	2.3 m	
Material:	Precast concrete		Count:		
Element Type:	Mortar Bags with Top Beam		Total Quantity:	36.8 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		36.8		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	20.0 m	
Element Name:	Outlet Components		Width:	0.75 m	
Location:	West Side		Height:	2.3 m	
Material:	Precast concrete		Count:		
Element Type:	Mortar Bags with Top Beam		Total Quantity:	46.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		46.0		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.5 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	10.8 Sq.m		
Environment:	Bengin		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		7.0		3.8	
Comments: - Wide longitudinal and transverse cracks over the culvert						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
		Asphalt Repairs				

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	86.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: In Good Conditons						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
		Asphalt Repairs				

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: In Good Conditons						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

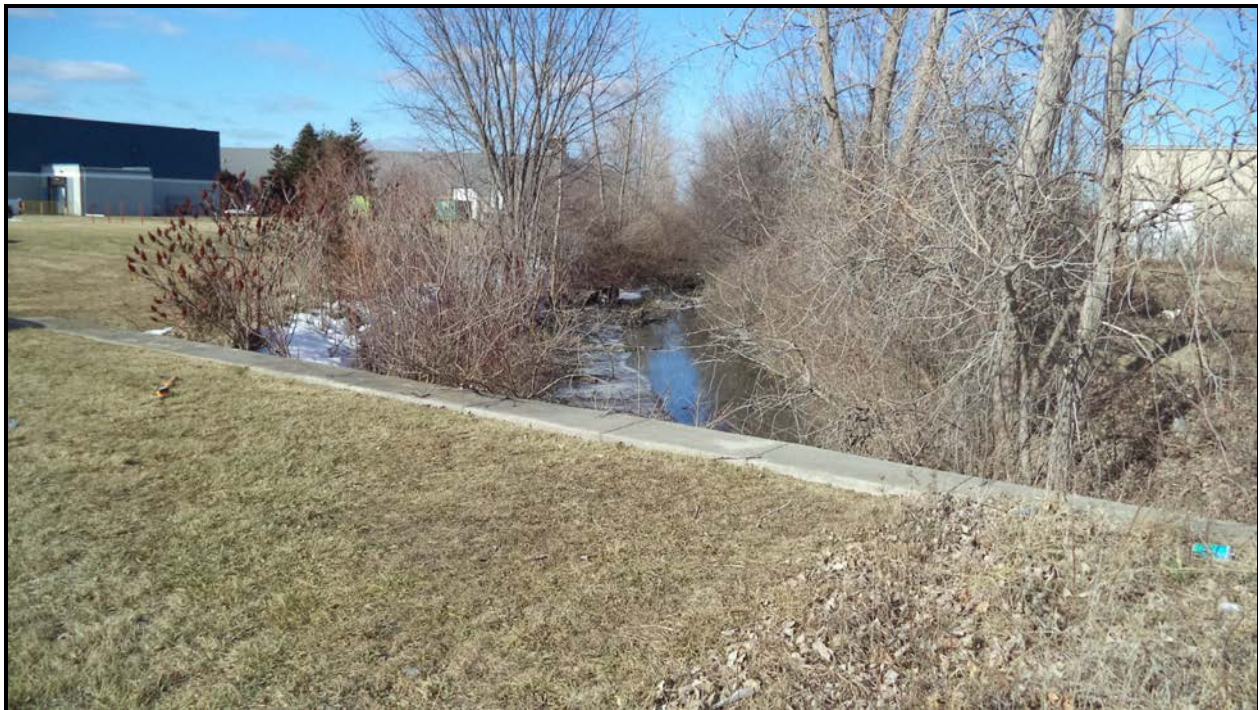
Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	16.0 m		
Element Name:	Inlet Components		Width:	0.75 m		
Location:	East side		Height:	0.30 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	21.6 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		21.6			
Comments: In good condition.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	22.0 m		
Element Name:	Outlet Components		Width:	0.75 m		
Location:	West side		Height:	0.30 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	22.7 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.7			
Comments: In good condition.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at South Approach



Photograph 7 – Water Stream (Pulleyblank Street East Side - Looking East)



Photograph 8 – Water Stream (Pulleyblank Street West Side - Looking West)

Inventory Data:

Structure Number	36 (Formerly 50)		
Hwy/Road Name	Blackacre Drive		
Structure Location	At intersection with Outer Drive		
Structure Type	Corrugated Steel Pipe Arch		
Latitude	42° 14' 11.6154"	Longitude	-82° 58' 44.3634"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.8 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	15.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	292 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	27 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	15.0 (m)	Detour Length Around Bridge	1.65 (km)
Fill on Structure	1.7 (m)	Direction of Structure	NW
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1995	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 29, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Sunny, Probability of Rain 1%
Temperature	-2 (-1 / -5) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection to the culvert barrel due to the structure length. Culvert condition assumed to be good.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	292 m	
Element Name:	Barrels		Width:	1.8 m	
Location:			Height:	1.2 m	
Material:	Corrugated Steel		Count:		
Element Type:			Total Quantity:	1743.0 q.m	
Environment:			Limited Inspection	<input checked="" type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1743.0		
Comments: Limited inspection - Culvert assumed in good condition.					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	m	
Element Name:	Inlet Components		Width:	m	
Location:	North Side		Height:	m	
Material:			Count:		
Element Type:	N/A		Total Quantity:	Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	5.7 m	
Element Name:	Outlet Components		Width:	0.4 m	
Location:	South Side		Height:	2.0 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Mortar Bags with Top Headwall		Total Quantity:	11.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		11.4		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Decks			Length:	1.8 m
Element Name:	Wearing Surface			Width:	15.0 m
Location:				Height:	
Material:	Asphalt			Count:	
Element Type:				Total Quantity:	27.0 Sq.m
Environment:				Limited Inspection	<input type="checkbox"/>
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	27.0			
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Approaches			Length:	6.0 m
Element Name:	Wearing Surface			Width:	15.0 m
Location:	East - West			Height:	
Material:	Asphalt			Count:	2
Element Type:				Total Quantity:	180.0 Sq.m
Environment:				Limited Inspection	<input type="checkbox"/>
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		180.0		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams			Length:	
Element Name:	Streams and Waterways			Width:	
Location:	North - South			Height:	
Material:				Count:	1
Element Type:				Total Quantity:	1
Environment:				Limited Inspection	<input type="checkbox"/>
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:	North Side		Height:			
Material:	Masonry		Count:	1		
Element Type:	Hand Laid Riprap		Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Water Stream (Blackacre Drive North Side - Looking North)



Photograph 6 – Water Stream (Blackacre Drive South Side - Looking South)

Inventory Data:

Structure Number	37 (Formerly 49)		
Hwy/Road Name	Outer Drive		
Structure Location	At intersection with Outer Drive Connector		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 59.3034"	Longitude	-82° 59' 3.0474"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.0 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	12.0 (m)	Posted Speed	50 No. of Lanes 2
Overall Str. Width	38.0 (m)	AADT	% Trucks
Total Deck Area	12 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	12.0 (m)	Detour Length Around Bridge	6.0 (km)
Fill on Structure	2.0 (m)	Direction of Structure	NW
Skew Angle	51° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2005	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 29, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Sunny, Probability of Rain 1%
Temperature	-2 (-1 / -5) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	In Excellent Condition
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:	Speed Limit	Total Quantity:	1
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1	Fair
			Poor*
Comments: - Existing Sign in Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	38.0 m		
Element Name:	Barrels		Width:	1.0 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	119.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	119.4				
Comments: In Excellent Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	m		
Element Name:	Inlet Components		Width:	m		
Location:	NE Side		Height:	m		
Material:			Count:			
Element Type:	N/A		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	m		
Element Name:	Outlet Components		Width:	m		
Location:	SW Side		Height:	m		
Material:			Count:			
Element Type:	N/A		Total Quantity:	Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.0 m	
Element Name:	Wearing Surface		Width:	12.0 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	12.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		12.0		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	12.0 m	
Location:	North - South		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	144.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		144.0		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	4	
Element Type:			Total Quantity:	4	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:	East - West Inlets		Height:		
Material:	Masonry		Count:	2	
Element Type:	Hand Laid Riprap		Total Quantity:	2	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface over Culvert (Looking North)



Photograph 7 – Water Stream (Outer Drive West Side – Looking West)

Inventory Data:

Structure Number	<input type="text" value="38"/>		
Hwy/Road Name	<input type="text" value="Malden Road"/>		
Structure Location	<input type="text" value="At the intersection with South Talbot Rd"/>		
Structure Type	<input type="text" value="Corrugated Steel Pipe"/>		
Latitude	<input type="text" value="42° 12' 2.8434"/>	Longitude	<input type="text" value="-82° 54' 0.8634"/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="2.20"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	<input type="text" value="70.10"/> (m)	Posted Speed	<input type="text" value="80"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="70.10"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="154.220"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="15.25"/> (m)	Detour Length Around Bridge	<input type="text"/> (km)
Fill on Structure	<input type="text" value="0.60"/> (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="2005"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="5.0"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The structure is in good condition with minor cracking at the wearing surface over the culvert section. This structure is marked with roadside safety concern where parallel culvert should be tapered to match the side slope to reduce the blunt end available for vehicles to strike.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	2			
Element Type:	Stop, Single maximum weight Signs	Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	70.10 m		
Element Name:	Barrels		Width:	2.20 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	266.50 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	266.50				
Comments: In Excellent Condition, Recently Replaced						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	2.20 m		
Element Name:	Wearing Surface		Width:	15.25 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	33.55 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		28.0	5.55		
Comments: - Medium Transverse Crack - Medium Longitudinal Crack						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	15.25 m		
Location:			Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	183.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		173.0	10.0		
Comments: - Edge Cracks (South Approach) - Medium Longitudinal Crack						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:		Count:	1		
Element Type:		Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:				Perform. Deficiencies	
Condition Data:	Units	Exc.	Good		Fair
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			1	
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:		Count:	4		
Element Type:		Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:				Perform. Deficiencies	
Condition Data:	Units	Exc.	Good		Fair
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			4	
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:			Height:		
Material:	Masonry	Count:	4		
Element Type:	Hand laid Riprap	Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:				Perform. Deficiencies	
Condition Data:	Units	Exc.	Good		Fair
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			4	
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Road over Culvert (Looking West)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking West)



Photograph 6 – Wearing Surface over Culvert (Looking West)



Photograph 7 – Wearing Surface at South Approach (Looking South)



Photograph 8 – Water Stream (Malden Road East Side – Looking West)



Photograph 9 – Water Stream (Malden Road West Side – Looking West)

Inventory Data:

Structure Number	39		
Hwy/Road Name	Concession Road 10		
Structure Location	At the intersection with South Talbot Rd.		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 12' 16.4514"	Longitude	-82° 54' 55.116"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.60 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.90 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	7.90 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	12.640 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.90 (m)	Detour Length Around Bridge	6.5 (km)
Fill on Structure	0.40 (m)	Direction of Structure	N
Skew Angle	15° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1965	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Culvert structure was identified with narrow horizontal cracking at the headwalls, and light map cracking at the wearing surface at the south approach. Waterway with moderate plant growth. The culvert is marked with roadside safety concerns. where the concrete headwalls are a hazard that vehicles should be protected from.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	7.9 m	
Element Name:	Soffit - Inside Boxes		Width:	1.6 m	
Location:			Height:	1.6 m	
Material:	Cast-in-place concrete		Count:		
Element Type:			Total Quantity:	38.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		38.0		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	3.7 / 4.2 m	
Element Name:	Inlet Components		Width:	0.3 m	
Location:	East Side		Height:	2.1 m	
Material:	Cast-in-place concrete		Count:	2	
Element Type:	Wingwall		Total Quantity:	16.6 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		16.6		
Comments: Generally, in Good Condition with minor narrow horizontal crack					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	1.6 m	
Element Name:	Outlet Components		Width:	0.3 m	
Location:	East Side		Height:	0.5 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Headwall		Total Quantity:	0.8 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		0.80		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	4.3 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	West Side		Height:	2.1 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	18.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		18.0			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	1.6 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	West Side		Height:	0.5 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	0.8 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		0.8			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.6 m		
Element Name:	Wearing Surface		Width:	7.9 m		
Location:			Height:			
Material:	Cast-in-place concrete		Count:			
Element Type:			Total Quantity:	12.6 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		10.0	2.6		
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:	North - South		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	86.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		80.0	6.4		
Comments: Light map cracking on road sides on the South approach						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			1		
Comments: Moderate plant growth at the watercourse.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	8		
Element Type:			Total Quantity:	8		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Wearing Surface over Culvert (Looking East)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking East)



Photograph 6 – Wearing Surface at South Approach



Photograph 7 – Water Stream (Concession Road 10 West Side – Looking West)

Inventory Data:

Structure Number	40 (Formerly 101)		
Hwy/Road Name	South Talbot Road		
Structure Location	0.1 km West from Concession Road 10		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 12' 17.7474"	Longitude	-82° 54' 59.112"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.7 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	10.40 (m)	AADT	% Trucks
Total Deck Area	12.240 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	8.3 (km)
Fill on Structure	0.40 (m)	Direction of Structure	E
Skew Angle	0 (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Generally, the structure is in good condition. Wearing surface was observed with wide transverse crack over the culvert section. Light plant growth at north embankment. Regarding the roadside safety; there is no eastbound shoulder and the culvert drops off immediately. Adding guide rail is not feasible, and improvements can be applied upon structure replacement.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Hazard Marker Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	1.7 m	
Element Name:	Soffit - Inside Boxes		Width:	10.4 m	
Location:			Height:	2.0 m	
Material:	Cast-in-place concrete		Count:		
Element Type:			Total Quantity:	59.25 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		57.25	2.0	
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Culverts		Length:	3.0 m	
Element Name:	Inlet Components		Width:	0.3 m	
Location:	South Side		Height:	2.5 m	
Material:	Cast-in-place concrete		Count:	2	
Element Type:	Wingwall		Total Quantity:	15.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		15.0		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Culverts		Length:	1.7 m	
Element Name:	Outlet Components		Width:	0.3 m	
Location:	South Side		Height:	0.5 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Headwall		Total Quantity:	0.85 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		0.85		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Decks		Length:	1.7 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	12.25 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.45	3.8	
Comments: Wide traversal crack over the culvert section					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
		Asphalt repair			

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:	East - West		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	86.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		86.4		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	North - South		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: Light plant growth, with recommendation to be shaved					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
		Drain maintenance			

Element Group:	Embankments & Streams			Length:	
Element Name:	Embankments			Width:	
Location:				Height:	
Material:				Count:	5
Element Type:				Total Quantity:	5
Environment:				Limited Inspection	<input type="checkbox"/>
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			5	
Comments: In Fair Condition. Embankments are lacking erosion protection.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
Erosion protection.					

Element Group:				Length:	
Element Name:				Width:	
Location:				Height:	
Material:				Count:	
Element Type:				Total Quantity:	
Environment:				Limited Inspection	<input type="checkbox"/>
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:				Length:	
Element Name:				Width:	
Location:				Height:	
Material:				Count:	
Element Type:				Total Quantity:	
Environment:				Limited Inspection	<input type="checkbox"/>
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Culvert inside Box (Looking North)



Photograph 3 – North Elevation



Photograph 4 – South Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface over Culvert (Looking South)



Photograph 7 – Water Stream (S. Talbot Road South Side - Looking West)



Photograph 8 – Water Stream (S. Talbot Road North Side - Looking West)

Inventory Data:

Structure Number	41 (Formerly 75)		
Hwy/Road Name	Concession Road 9		
Structure Location	At the intersection with South Talbot Rd		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 30.9594"	Longitude	-82° 55' 53.616"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.10 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	8.50 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	18.60 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	9.350 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	8.50 (m)	Detour Length Around Bridge	8.3 (km)
Fill on Structure	1.20 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1990	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Light corrosion at the bottom half of the culvert barrel. Wearing surface with various deficiencies; Potholes; Medium to wide isolated cracks; and medium progressive edge cracks.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: -In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	18.6 m		
Element Name:	Barrels		Width:	1.10 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	64.3 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		51.4	12.9		
Comments: Light corrosion at the bottom half of the culvert barrel.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Decks		Length:	1.10 m		
Element Name:	Wearing Surface		Width:	8.50 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	9.35 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		6.25	2.0	1.1	
Comments: - Medium transverse and longitudinal cracks. - Medium progressive edge cracks over the culvert.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
						Asphalt Repair

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	8.5 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	102.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		66.5	25.5	10.0	
Comments: - Medium transverse and longitudinal cracks at both Approaches, and pothole at North approach. - Medium progressive edge cracks side edges.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
						Asphalt Repair

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	3	
Element Type:			Total Quantity:	3	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		3		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	8	
Element Type:			Total Quantity:	8	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:			Height:		
Material:	Masonry		Count:	2	
Element Type:	Hand laid Riprap		Total Quantity:	2	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			2	
Comments: In Fair Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel (West Elevation)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking North)



Photograph 6 – Wearing Surface at North Approach (Looking East)



Photograph 7 – Water Stream (Concession Road 9 East Side – Looking East / South)



Photograph 8 – Water Stream (Concession Road 9 West Side – Looking West)

Inventory Data:

Structure Number	42 (Formerly 79)		
Hwy/Road Name	Snake Lane Road		
Structure Location	At the intersection with South Talbot Rd.		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 12' 40.8234"	Longitude	-82° 56' 33.756"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.8 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	9.8 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	12.960 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	6.3 (km)
Fill on Structure	0.40 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1965	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11 / 3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input checked="" type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Concrete spalling at culvert soffit and side walls, wingwalls, and headwalls. spreaded medium alkali aggregate reaction cracks as well as light scaling. Wearing surface with potholes, medium isolated cracks, and medium edge cracks over the culvert section and along both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	2			
Element Type:	Stop Sign, Hazard Marker Sign	Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1			1	
Comments: - The object marker sign is broken and needs replacement. - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:				
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year		

Element Group:	Culverts		Length:	9.8 m		
Element Name:	Soffit - Inside Boxes		Width:	1.8 m		
Location:			Height:	1.8 m		
Material:	Cast-in-place concrete		Count:			
Element Type:			Total Quantity:	53.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		27.5	15.3	10.2	
Comments: Concrete spalls at soffit and side walls with exposed and light corroded reinforcement, and medium scaling						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	3.0 / 4.8 m		
Element Name:	Inlet Components		Width:	0.3 m		
Location:	East Side		Height:	2.4 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	18.75 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		10.0	5.0	3.75	
Comments: Concrete spalls at the culvert edges, and Severe alkali aggregate reaction, and medium scaling						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	1.8 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	East Side		Height:	0.6 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	1.1 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			0.5	0.6	
Comments: Severe concrete spalls at the Headwall top surface, and medium scaling						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	3.0 / 4.8 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	West Side		Height:	2.4 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	18.75 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		11.25	2.5	5.0	
Comments: Concrete spalls at the culvert edges with water leak signs						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	1.8 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	West Side		Height:	0.6 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	1.1 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			0.5	0.6	
Comments: Severe concrete spalls at the Headwall top surface with exposed reinforcement, and medium scaling						
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.8 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	13.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.0	3.0	2.0	
Comments: - Light map cracking and pothole - Medium progressive edge cracks at South approach - Light Flushing Surface						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	86.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		38.4	24.0	24.0	
Comments: - Pothole at the North approach - Medium progressive edge cracks at South approach - Light Flushing Surface						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	1				
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	4				
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	9.8 m		
Element Name:	Deck Top		Width:	2.4 m		
Location:			Height:			
Material:	Cast-in-place concrete		Count:			
Element Type:			Total Quantity:	23.5 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			11.75	11.75	
Comments: Limited inspection - Deck top condition is assumed based on the condition of the asphalt wearing surface on top.						
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	
Concrete patch repair						

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

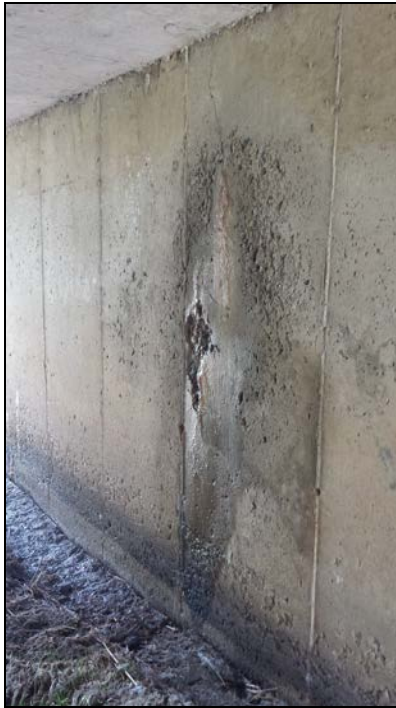
Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert inside Boxes



Photograph 3 – South Abutment wall



Photograph 4 – Typical scaling and honeycombing at both walls



Photograph 5 – East Elevation



Photograph 6 – Headwall (East Elevation)



Photograph 7 – West Elevation



Photograph 8 – Headwall (West Elevation)



Photograph 9 – Wearing Surface over Culvert (Looking West)



Photograph 10 – Wearing Surface at South Approach (Looking North)



Photograph 11 – Water Stream (South Talbot Road South Side - Looking East)



Photograph 12 – Water Stream (South Talbot Road South Side - Looking West)

Inventory Data:

Structure Number	43 (Formerly 67)		
Hwy/Road Name	South Talbot Road		
Structure Location	At the intersection with Concession Road 8		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 45.432"	Longitude	-82° 56' 52.7994"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.00 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	9.75 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	120 (m)	AADT	% Trucks
Total Deck Area	9.750 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	9.75 (m)	Detour Length Around Bridge	8.80 (km)
Fill on Structure	1.25 (m)	Direction of Structure	E
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2000	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Light corrosion at the bottom half of the culvert barrel. Medium scour was observed at the northern waterway.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:		Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	120.0 m		
Element Name:	Barrels		Width:	1.0 m (Dia.)		
Location:	North - South		Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	377.0 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		302.0	75.0		
Comments: Light corrosion at the bottom half of the culvert barrel						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:			
Element Name:	Inlet Components		Width:			
Location:	North Side		Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: The Inlet is located North, Culvert No. 67 Intersect with Culvert No. 68 at the South Side of South Talbot Road						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Decks		Length:	1.0 m		
Element Name:	Wearing Surface		Width:	9.75 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	9.75 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		7.75	2.0		
Comments: - Medium transverse crack over the culvert location						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	9.75 m		
Location:			Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	117.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		102.0	15.0		
Comments: - Medium transverse crack at East approach. - Medium Progressive Edge Cracks at North approach.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>			2		
Comments: Moderate scour along the water stream at the North inlet						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	5		
Element Type:			Total Quantity:	5		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			



Photograph 1 – Road over Culvert (Looking East)



Photograph 2 – Culvert Barrel Intersection with Culvert No. 68 (Looking East)



Photograph 3 – North Elevation



Photograph 4 – North Elevation (Looking East)



Photograph 5 – Wearing Surface over Culvert (Looking West)



Photograph 6 – Wearing Surface at West Approach



Photograph 7 – Wearing Surface at Northern Road Side



Photograph 8 – Water Stream (South Talbot Road East Side – Looking East)

Inventory Data:

Structure Number	44 (Formerly 43)		
Hwy/Road Name	Sexton Side Road		
Structure Location	At the intersection with South Talbot Rd		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 46.584"	Longitude	-82° 56' 55.1034"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.20 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	36.60 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	36.60 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	43.920 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	12.20 (m)	Detour Length Around Bridge	<input type="text"/> (km)
Fill on Structure	1.00 (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	27° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The Structure is in Excellent Condition, and appears to have been replaced recently
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: -In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	36.60 m		
Element Name:	Barrels		Width:	1.20 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	41.40 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	41.40				
Comments: In Excellent Condition, Recently Replaced						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	1.20 m		
Element Name:	Wearing Surface		Width:	12.20 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	14.65 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	14.65				
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	12.20 m		
Location:			Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	146.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	146.40				
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	1				
Comments: In Excellent Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	4				
Comments: In Excellent Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:			Height:			
Material:	Masonry		Count:	6		
Element Type:	Hand laid Riprap		Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	6				
Comments: In Excellent Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Culvert Barrel (Looking East)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface at North Approach



Photograph 6 – Wearing Surface at South Approach



Photograph 7 – Water Stream (Sexton Side Road East Side – Looking East)



Photograph 8 – Water Stream (Sexton Side Road East Side – Looking West)

Inventory Data:

Structure Number	45 (Formerly 44)		
Hwy/Road Name	South Talbot Road		
Structure Location	At the Intersection with Walker Road		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 12' 59.7234"	Longitude	-82° 57' 51.4794"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.40 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	6.70 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	7.50 (m)	AADT	% Trucks
Total Deck Area	16.080 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.70 (m)	Detour Length Around Bridge	8.5 (km)
Fill on Structure	0.40 (m)	Direction of Structure	E
Skew Angle	18° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1965	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 23, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 54%
Temperature	7 (16/10) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Culvert needs full replacement - Large spalling in the deck soffit, severe scaling on the culvert sides, corroded and damaged reinforcement, and opening in the soffit. Dillon is in process of preparing design drawings for replacement. Steel plates have been installed over deck for temporary repair of the deck until structure can be replaced.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Load Limit Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	2				
Comments: Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	7.50 m				
Element Name:	Soffit - Inside Boxes	Width:	2.40 m				
Location:		Height:	1.40 m				
Material:	Cast-in-place concrete	Count:					
Element Type:		Total Quantity:	39.0 Sq.m				
Environment:		Limited Inspection	<input type="checkbox"/>				
Protection System:							
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			4.0	35.0		
Comments: - Severe scaling all over the culvert inside box - Large concrete spalling, exposed and corroded reinforcement under the EBL of South Talbot Road - Concrete hole spotted with Dia. of approximately 0.60 m							
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:			
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input checked="" type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	1.80 / 2.80 m				
Element Name:	Inlet Components	Width:	0.30 m				
Location:	South Side	Height:	1.50 m				
Material:	Cast-in-place concrete	Count:	2				
Element Type:	Wingwall	Total Quantity:	6.90 Sq.m				
Environment:		Limited Inspection	<input type="checkbox"/>				
Protection System:							
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4.90	2.0			
Comments: - Concrete spalls on the Eastern wingwalls - The Wing walls on both sides appear that they were added to the culvert original width							
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	2.40 m				
Element Name:	Inlet Components	Width:	0.30 m				
Location:	South Side	Height:	0.50 m				
Material:	Cast-in-place concrete	Count:					
Element Type:	Headwall	Total Quantity:	1.20 Sq.m				
Environment:		Limited Inspection	<input type="checkbox"/>				
Protection System:							
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.20				
Comments: - In Good Condition							
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	1.80 / 2.80 m		
Element Name:	Outlet Components		Width:	0.30 m		
Location:	North Side		Height:	1.50 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	6.90 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		6.9			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	2.40 m		
Element Name:	Outlet Components		Width:	0.30 m		
Location:	South Side		Height:	0.50 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	1.20 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.20			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	6.70 m		
Element Name:	Wearing Surface		Width:	2.40 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	16.10 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		16.1			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Approaches	Length:	6.70 m		
Element Name:	Wearing Surface	Width:	6.0 m		
Location:	East - West	Height:			
Material:	Asphalt	Count:	2		
Element Type:		Total Quantity:	80.40 Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		71		9.40
Comments: Wide Transverse crack on East Approach. The existing asphalt have been recently paved.					
Recommended Work:		<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams	Length:			
Element Name:	Streams and Waterways	Width:			
Location:	North - South	Height:			
Material:		Count:	2		
Element Type:		Total Quantity:	2		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		2		
Comments: Moderate plant growth at the South Elevation slowing down the flow					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams	Length:			
Element Name:	Embankments	Width:			
Location:		Height:			
Material:		Count:	8		
Element Type:		Total Quantity:	8		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking East)



Photograph 2 – Culvert Barrel (Looking North)



Photograph 3 – Culvert Barrel (Looking South)



Photograph 4 – Culvert Barrel (Looking South)



Photograph 5 – South Elevation



Photograph 6 – North Elevation



Photograph 7 – Wearing Surface over Culvert (Looking North)



Photograph 8 – Wearing Surface at East Approach

Inventory Data:

Structure Number	46		
Hwy/Road Name	South Talbot Road		
Structure Location	At the intersection with Holden Road		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 13' 14.4834"	Longitude	-82° 58' 51.1314"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.45 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	6.70 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	10.30 (m)	AADT	% Trucks
Total Deck Area	16.415 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.70 (m)	Detour Length Around Bridge	10.6 (km)
Fill on Structure	0.40 (m)	Direction of Structure	E
Skew Angle	18 (Degrees)	No. of Spans	1

Historical Data:

Year Built	1965	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 23, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 54%
Temperature	7 (16/10) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Concrete spalling at the Northern headwall, exposed and corroded reinforcement. Asphalt surface with severe ravelling over the culvert section, potholes on the South side, wide longitudinal and transversal cracks extends over both approaches. Although rehabilitation is an option, due to the size of the structure; full replacement was recommended as the most practical long term solution. The existing concrete headwalls are hazard that vehicles should be protected from.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Hazard Marker Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	10.3 m	
Element Name:	Soffit - Inside Boxes		Width:	1.9 m	
Location:			Height:	1.2 m	
Material:	Cast-in-place concrete		Count:		
Element Type:			Total Quantity:	44.3 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		24.0	20.3	
Comments: Generally, In Fair Condition. the ends are extension from the original culvert section. Apparent scouring of footing along the original section.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	1.5 / 3.3 m	
Element Name:	Inlet Components		Width:	0.3 m	
Location:	North Side		Height:	1.7 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Wingwall		Total Quantity:	8.2 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		3.4	2.0	2.80
Comments: Concrete spalls at the top of the wingwalls with exposed, bended and corroded reinforcement					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	1.9 m	
Element Name:	Outlet Components		Width:	0.3 m	
Location:	North Side		Height:	0.5 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Headwall		Total Quantity:	0.95 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				0.95
Comments: Concrete spalls at the top of the wingwalls with exposed, bended and corroded reinforcement					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.9 m		
Element Name:	Wearing Surface		Width:	6.7 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	12.75 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		3.0	4.0	5.75	
Comments: - Severe ravelling. - Potholes on the South side, wide. - Longitudinal and traversal cracks.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.7 m		
Location:			Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	80.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		20.0	40.0	20.4	
Comments: Asphalt surface with wide longitudinal and traversal cracks extending over both approaches.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Moderate plant growth blocking the Northern waterway, with recommendation to be shaved						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	6	
Element Type:			Total Quantity:	6	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		6		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:			Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			1	
Comments: Located at the South elevation on the Western side of the waterway. Stones are partially blocking the waterway					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Culvert Barrel (Looking North)



Photograph 3 – Culvert Barrel



Photograph 4 – Headwall at the North Elevation



Photograph 5 – North Elevation



Photograph 6 – South Elevation



Photograph 7 – Wearing Surface over Culvert (Looking South)



Photograph 8 – Wearing Surface at East Approach (Looking South)



Photograph 9 – Water Stream (South Talbot Road North Side - Looking North)



Photograph 10 – Water Stream (South Talbot Road South Side - Looking South)

Inventory Data:

Structure Number	47		
Hwy/Road Name	South Talbot Road		
Structure Location	0.36 km East from County Road 9 (Howard Ave.)		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 25.4634"	Longitude	-82° 59' 36.528"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.40 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	6.70 (m)	Posted Speed	60 No. of Lanes 2
Overall Str. Width	13.50 (m)	AADT	% Trucks
Total Deck Area	9.380 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.70 (m)	Detour Length Around Bridge	8.3 (km)
Fill on Structure	0.90 (m)	Direction of Structure	NE
Skew Angle	22° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1999	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 22, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Sunny, Probability of rain 1%
Temperature	-6 (-2/-8) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The structure is in poor condition and full replacement is recommended. Culvert barrel is severely corroded with heavy loss at the bottom surface along the spring line. The concrete blocks used for end treatment need full replacement. Wearing surface with potholes over the culvert section, in addition to longitudinal and traversal cracks extending along both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:	Stop Sign ahead (Sign)	Total Quantity:	1
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1	Fair
			Poor*
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:	
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	13.50 m		
Element Name:	Barrels		Width:	1.40 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	20.80 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			14.30	6.50	
Comments: The Structure is found in Poor Condition. Culvert barrel is severely corroded causing a cut along the bottom surface at the spring level. Replacement of the structure is required						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	N/A m		
Element Name:	Inlet Components		Width:	1.0 m		
Location:	North Side		Height:	1.40 m		
Material:	Precast concrete		Count:			
Element Type:	Irregular Concrete Blocks		Total Quantity:	22.70 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				22.7	
Comments: In Poor Condition Replacement is recommended						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.0 / 2.0 m		
Element Name:	Outlet Components		Width:	0.45 m		
Location:	South Side		Height:	1.40 m		
Material:	Precast concrete		Count:			
Element Type:	Irregular Concrete Blocks		Total Quantity:	5.60 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			5.60		
Comments: In Fair Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.40 m		
Element Name:	Wearing Surface		Width:	6.70 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	9.40 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			7.0	2.40	
Comments: In Poor Condition - Potholes, and surface settlement. - Medium Map Cracking - Severe Transverse Cracks						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.70 m		
Location:	East - West		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	80.40 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				80.4	
Comments: In Poor Condition - Longitudinal Cracks lanes median - Wide transverse Cracks						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	North - South		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		2			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	10		
Element Type:			Total Quantity:	10		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		10			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Culvert Barrel (Looking South)



Photograph 3 – Culvert Barrel



Photograph 4 – Culvert Barrel



Photograph 5 – North Elevation



Photograph 6 – South Elevation



Photograph 7 – Wearing Surface over Culvert



Photograph 8 – Wearing Surface at West Approach (Looking West)



Photograph 9 –Water Stream (South Talbot Road North Side - Looking East)



Photograph 10 –Water Stream (South Talbot Road South Side - Looking East)

Inventory Data:

Structure Number	48 (Formerly 45)		
Hwy/Road Name	Holden Road		
Structure Location	1.35 km South from South Talbot Rd.		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 12' 31.5354"	Longitude	-82° 58' 54.5154"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.40 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.0 (m)	Posted Speed	60 No. of Lanes 2
Overall Str. Width	8.0 (m)	AADT	% Trucks
Total Deck Area	14.4 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.0 (m)	Detour Length Around Bridge	10.80 (km)
Fill on Structure	0.60 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1965	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 22, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Sunny, Probability of rain 1%
Temperature	-6 (-2/-8) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input checked="" type="checkbox"/> 6 to 10 years
Overall Comments	Concrete spalling were identified at headwalls on both road sides with exposed reinforcement on western headwall. The structure end extensions were added to the original structure. Regarding the roadside safety; Adding guide rail in not feasible since there is no shoulder on Holden Road. Culvert should be widened to the west when replaced to mitigate the perpendicular ditch hazard.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	2
Element Type:	Hazard Marker Signs	Total Quantity:	2
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	2	Fair
			Poor*
Comments: - Existing Sign in Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:	
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	8.00 m		
Element Name:	Soffit - Inside Boxes		Width:	2.40 m		
Location:			Height:	2.10 m		
Material:	Cast-in-place concrete		Count:			
Element Type:			Total Quantity:	52.80 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		13.2	26.4	13.2	
Comments: A new ends on both sides were added to the original culvert section. Generally, The old section were found in good condition with minor concrete spalls at the joint with the new section. Exposed reinforcement is noticed at the West joint.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	3.30 m		
Element Name:	Inlet Components		Width:	0.30 m		
Location:	East Side		Height:	2.60 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	17.20 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4.3	8.6	4.3	
Comments: - Concrete spalls at the North Side - Moderate Alkali-Aggregate Reaction						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.40 m		
Element Name:	Outlet Components		Width:	0.30 m		
Location:	East Side		Height:	0.50 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	1.20 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			0.3	0.9	
Comments: - Concrete Spalls, and exposed reinforcement - Severe Alkali-Aggregate Reaction over the culvert inlet						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts	Length:	2.30 m			
Element Name:	Outlet Components	Width:	0.30 m			
Location:	West Side	Height:	2.60 m			
Material:	Cast-in-place concrete	Count:	2			
Element Type:		Total Quantity:	12.0 Sq.m			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4.0	5.0	3.0	
Comments: - Concrete spalls at the North Side mostly at the top portion. - Moderate Alkali-Aggregate Reaction						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts	Length:	2.40 m			
Element Name:	Outlet Components	Width:	0.30 m			
Location:	West Side	Height:	0.50 m			
Material:	Cast-in-place concrete	Count:				
Element Type:		Total Quantity:	1.20 Sq.m			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			0.30	0.90	
Comments: Utilities are hanged over the culvert headwalls - Concrete Spalls, and exposed reinforcement - Severe Alkali-Aggregate Reaction over the culvert inlet						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks	Length:	6.0 m			
Element Name:	Wearing Surface	Width:	2.40 m			
Location:		Height:				
Material:	Cast-in-place concrete	Count:				
Element Type:		Total Quantity:	14.40 Sq.m			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		12.0	2.40		
Comments: - Moderate Flushing in the Asphalt surface. - Light Progressive edge cracks						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.0 m		
Location:	North - South		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	72.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		55.0	12.0	10.0	
Comments: - Moderate Flushing in the Asphalt surface. - Medium Progressive edge cracks						
Recommended Work:	<input type="checkbox"/> Rehab		<input checked="" type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input checked="" type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		2			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	8		
Element Type:			Total Quantity:	8		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking West)



Photograph 3 – Culvert Barrel - Soffit



Photograph 4 – Culvert Barrel (At joint between Old/New Structure)



Photograph 5 – East Elevation



Photograph 6 – West Elevation



Photograph 7 – Eastern Wingwalls - North



Photograph 8 – Wearing Surface over Culvert (Looking North)



Photograph 9 – Water Stream (Holden Road Wes Side – Looking North)

Inventory Data:

Structure Number	49 (Formerly 68)		
Hwy/Road Name	Concession Road 8		
Structure Location	At the intersection with South Talbot Road		
Structure Type	Corrugated Steel Pipe (East) and Polyethylene (West)		
Latitude	42° 12' 45.3954"	Longitude	-82° 56' 52.5114"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.45 / 1.20 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	16.6 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	8.4 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	9.6 (m)	Detour Length Around Bridge	<input type="text" value="8.80"/> (km)
Fill on Structure	1.25 (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1985"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	A camera inspection was conducted in September. The video recording revealed that culvert 49 has two different sections and pipe types; east from 8th Concession Road a C.S.P of 1.2m diameter is used, then continue west with a polyethylene pipe of 0.45m diameter. The bottom of the C.S.P below the spring line is lightly corroded. However, the polyethylene pipe was found in good condition. Note: Culvert 49 is intersecting with Culvert No. 43.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	4.3 / 12.3 m		
Element Name:	Barrels		Width:	1.2 / 0.45 m (Dia.)		
Location:	East - West		Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	33.6 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		25.6	4.0	4.0	
Comments: Corrugated Steel Pipe (East) of 4.3m long, and Polyethylene (West) of 12.3m long. Light corrosion at the bottom half of the steel culvert barrel						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:			
Element Name:	Inlet Components		Width:			
Location:	East Side		Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: The Inlet is located East, Culvert No. 49 Intersect with Culvert No.43 at the South Side of South Talbot Road						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: light plant growth at the West elevation, recommended to be shaved						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Drain maintenance.			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:			Height:			
Material:	Masonry		Count:	2		
Element Type:	Hand Laid Rip-rap		Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	7.0 m		
Element Name:	Wearing Surface		Width:	0.45 / 1.2 m		
Location:	On top of the barrel		Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	8.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			4.2	4.2	
Comments: The existing asphalt surface is in Fair to Poor condition with need to be fully replaced. Note: This culvert is intersecting with culvert No. 43						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
		Asphalt repairs.				



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking North)



Photograph 6 – Water Stream (South Talbot Road South Side – Looking East)

Inventory Data:

Structure Number	50 (Formerly 102)		
Hwy/Road Name	Concession Road 8		
Structure Location	0.35 km South of South Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 33.9474"	Longitude	-82° 56' 53.4834"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.60 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.70 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	19.0 (m)	AADT	% Trucks
Total Deck Area	4.020 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.7 (m)	Detour Length Around Bridge	(km)
Fill on Structure	1.1 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 26, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 47%
Temperature	3 (6 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The culvert barrel was observed with light corrosion at the bottom half, Wearing surface over the culvert section with medium transverse crack, and moderate flushing. Also, medium progressive edge cracking was observed over the culvert section and along both approaches. Light plant growth was observed at the west side of the road
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:		Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	19.0 m	
Element Name:	Barrels		Width:	0.60 m	
Location:			Height:		
Material:	Corrugated Steel		Count:		
Element Type:	Multi-Plate CSP		Total Quantity:	35.8 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		17.9	17.9	
Comments: Light corrosion at the bottom half of the culvert barrel					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Decks		Length:	0.6 m	
Element Name:	Wearing Surface		Width:	6.7 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	4.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2.5	1.5	
Comments: - Medium transverse crack over the culvert section, and medium progressive edge					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	6.7 m	
Location:	North / South Sides		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	80.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		80.4		
Comments: - Medium progressive edge cracks along both approaches - Medium flushing asphalt surface.					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:		Count:	2			
Element Type:		Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		2			
Comments: Moderate plant growth on both road sides.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent		<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
			Drain maintenance.			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:		Count:	8			
Element Type:		Total Quantity:	8			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4	4		
Comments: Insufficient erosion protection.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent		<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
			Improve erosion protection			

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:		Count:				
Element Type:		Total Quantity:				
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent		<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking West)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at North Approach



Photograph 7 – Water Stream (Concession Road 8 East Side - Looking South)



Photograph 8 – Water Stream (Concession Road 8 Road West Side - Looking South)

Inventory Data:

Structure Number	51 (Formerly 42)		
Hwy/Road Name	Concession Road 8		
Structure Location	2.50 km South from South Talbot Rd.		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 11' 25.836"	Longitude	-82° 56' 58.596"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.50 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.70 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	9.60 (m)	AADT	% Trucks
Total Deck Area	16.750 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.70 (m)	Detour Length Around Bridge	8.0 (km)
Fill on Structure	0.50 (m)	Direction of Structure	N
Skew Angle	15° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1965	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 26, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 47%
Temperature	3 (6 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input checked="" type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Concrete spalling were identified at the deck soffit with exposed and corroded reinforcement. Slippery wearing surface over the culvert and along approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:	
Element Name:	Signs	Width:	
Location:		Height:	
Material:		Count:	2
Element Type:	Hazard Marker Signs	Total Quantity:	2
Environment:		Limited Inspection	<input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units	Exc.	Good
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	2	Fair
			Poor*
Comments: - Existing Sign in Excellent Condition			
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	9.6 m		
Element Name:	Soffit - Inside Boxes		Width:	2.5 m		
Location:			Height:	2.2 m		
Material:	Cast-in-place concrete		Count:			
Element Type:			Total Quantity:	66.25 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		59.25	3.5	3.5	
Comments: Concrete spalls at the Soffit with exposed and corroded reinforcement. two (2) bird nests.						
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	1.8 m		
Element Name:	Inlet Components		Width:	0.3 m		
Location:	East Side		Height:	2.8 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	10.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.0	2.0		
Comments: One Medium crack at bottom of the Northern Wingwall						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	2.5 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	East Side		Height:	0.6 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	1.5 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.5			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	1.8 / 3.7 m		
Element Name:	Outlet Components	Width:	0.3 m		
Location:	West Side	Height:	2.8 m		
Material:	Cast-in-place concrete	Count:	2		
Element Type:	Wingwall	Total Quantity:	15.4 Sq.m		
Environment:	Limited Inspection <input type="checkbox"/>				
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		15.4		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts	Length:	2.5 m		
Element Name:	Outlet Components	Width:	0.3 m		
Location:	West Side	Height:	0.6 m		
Material:	Cast-in-place concrete	Count:			
Element Type:	Headwall	Total Quantity:	1.5 Sq.m		
Environment:	Limited Inspection <input type="checkbox"/>				
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.5		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks	Length:	2.5 m		
Element Name:	Wearing Surface	Width:	6.7 m		
Location:		Height:			
Material:	Cast-in-place concrete	Count:			
Element Type:		Total Quantity:	16.75 Sq.m		
Environment:	Limited Inspection <input type="checkbox"/>				
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.375	8.375	
Comments: A slippery asphalt surface					
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.7 m		
Location:	North - South		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	80.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		40.2	40.2		
Comments: - Slippery Surface - Medium Progressive edge cracks on both sides at the South approach						
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Excessive growth of plants at the road West side						
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking West)



Photograph 3 – Culvert Barrel - Soffit



Photograph 4 – Culvert Barrel - Soffit



Photograph 5 – East Elevation



Photograph 6 – West Elevation



Photograph 7 – Water Stream (Concession Road 8 East Side - Looking East)



Photograph 8 – Water Stream (Concession Road 8 West Side - Looking West)



Photograph 9 – Wearing Surface over Culvert (Looking South)



Photograph 10 – Wearing Surface at South Approach

Inventory Data:

Structure Number	52 (Formerly 78)		
Hwy/Road Name	Snake Lane Road		
Structure Location	0.55 km South of South Talbot Rd		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 23.58"	Longitude	-82° 56' 36.0954"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.60 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.50 (m)	Posted Speed	60 No. of Lanes 2
Overall Str. Width	13.30 (m)	AADT	% Trucks
Total Deck Area	4.500 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.50 (m)	Detour Length Around Bridge	6.3 (km)
Fill on Structure	1.00 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1980	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 23, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 54%
Temperature	7 (16 / 10) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Typical corrosion at the barrel bolted connections. bended edge at the East elevation. Wearing surface was observed with patched potholes. Settlement was also observed at the wearing surface over the culvert section. Excessive plant growth is blocking the stream along both sides of the road.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:		Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	13.30 m		
Element Name:	Barrels		Width:	0.60 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	25.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		18.75	6.25		
Comments: Typical corrosion at the bolt connections.bended edge at the East elevation.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	0.60 m		
Element Name:	Wearing Surface		Width:	7.50m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	4.50 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		2.0	0.5	2.0	
Comments: Repaired pothole. Settlement at the surface is noticed over the culvert section.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
					Asphalt repairs.	

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.5 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	90.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		90.0			
Comments: Slippery Surface						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:		Count:	2			
Element Type:		Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		2			
Comments: - Excessive plant growth is blocking the stream along both sides of the road, with recommendation to be shaved						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	
			Drain maintenance			

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:		Count:	8			
Element Type:		Total Quantity:	8			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			8		
Comments: In Fair Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:		Count:				
Element Type:		Total Quantity:				
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking East)



Photograph 3 – Culvert Barrel Top



Photograph 4 – Culvert Barrel Side Corrosion



Photograph 5 – East Elevation



Photograph 6 – West Elevation



Photograph 7 – Wearing Surface over Culvert (Looking South)



Photograph 8 –Water Stream (Snake Lane Road East Side - Looking South)



Photograph 9 –Water Stream (Snake Lane Road West Side - Looking West)

Inventory Data:

Structure Number	53 (Formerly 77)		
Hwy/Road Name	Snake Lane Road		
Structure Location	1.2 km South from South Talbot Road		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 12' 4.2114"	Longitude	-82° 56' 33.54"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.5 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.7 (m)	Posted Speed	60 No. of Lanes 2
Overall Str. Width	7.6 (m)	AADT	% Trucks
Total Deck Area	10.050 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.6 (m)	Detour Length Around Bridge	6.3 (km)
Fill on Structure	0.40 (m)	Direction of Structure	NE
Skew Angle	27° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1960	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 23, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 54%
Temperature	7 (16 / 10) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Several wide cracks at the headwalls. Large concrete spalling at the culvert soffit and end treatments with exposed and corroded reinforcement. Slippery wearing surface over the culvert section and along both approaches.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	2			
Element Type:	Hazard Marker Sign	Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	2				
Comments: - Existing Signs in Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	7.6 m		
Element Name:	Soffit - Inside Boxes		Width:	1.5 m		
Location:			Height:	2.6 m		
Material:	Cast-in-place concrete		Count:			
Element Type:			Total Quantity:	51.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			25.5	25.5	
Comments: The Structure is in Fair to Poor condition. Large spalls at soffit with exposed and light corroded reinforcement. Severe scour below the foundation and erosion at the culvert walls.						
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	3.25 m		
Element Name:	Inlet Components		Width:	0.3 m		
Location:	East Side		Height:	3.1 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	20.15 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		14.15	2.6	2.6	
Comments: Concrete spalls at the culvert edges.						
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	1.5 m		
Element Name:	Outlet Components		Width:	0.3 m		
Location:	East Side		Height:	0.6 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	0.9 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		0.3	0.3	0.3	
Comments: Wide vertical crack at the headwall corner.						
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	3.25 m			
Element Name:	Outlet Components	Width:	0.3 m			
Location:	West Side	Height:	3.1 m			
Material:	Cast-in-place concrete	Count:	2			
Element Type:	Wingwall	Total Quantity:	20.15 Sq.m			
Environment:	Limited Inspection <input type="checkbox"/>					
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		13.15	3.0	4.0	
Comments: In Fair to Poor Condition. Concrete spalls at the culvert edges with exposed and light corroded reinforcement.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts	Length:	1.5 m			
Element Name:	Outlet Components	Width:	0.3 m			
Location:	West Side	Height:	0.6 m			
Material:	Cast-in-place concrete	Count:				
Element Type:	Headwall	Total Quantity:	0.9 Sq.m			
Environment:	Limited Inspection <input type="checkbox"/>					
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		0.3	0.3	0.3	
Comments: Wide verticle crack at the headwall corner.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks	Length:	1.5 m			
Element Name:	Wearing Surface	Width:	6.7 m			
Location:		Height:				
Material:	Cast-in-place concrete	Count:				
Element Type:		Total Quantity:	10.0 Sq.m			
Environment:	Limited Inspection <input type="checkbox"/>					
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		80.4			
Comments: Slippery Surface						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.7 m		
Location:	North - South		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	80.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		80.4			
Comments: Slippery Surface						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: In Good Conditions						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Conditions						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking East)



Photograph 3 – Culvert Barrel Soffit



Photograph 4 – East Elevation



Photograph 5 – West Elevation



Photograph 6 – West Elevation



Photograph 7 –Water Stream (Snake Lane Road West Side – Looking East)



Photograph 8 –Water Stream (Snake Lane Road West Side – Looking West)

Inventory Data:

Structure Number	54 (Formerly 76)		
Hwy/Road Name	Snake Lane Road		
Structure Location	2.15 km South from South Talbot Road		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 11' 34.836"	Longitude	-82° 56' 16.836"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.0 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.2 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	10.0 (m)	AADT	% Trucks
Total Deck Area	14.400 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.2 (m)	Detour Length Around Bridge	6.3 (km)
Fill on Structure	0.50 (m)	Direction of Structure	E
Skew Angle	33° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1965	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 23, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 54%
Temperature	7 (16/10) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The structure is in fair to poor condition. Large spalling at soffit with exposed and corroded reinforcement. Severe scour below the foundation and erosion at the culvert walls. Settlement at the asphalt surface over the culvert section, and slippery surface along both approaches. Waterway with excessive plant growth on both road sides, and scour at the embankment.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	2			
Element Type:	Hazard Marker Signs	Total Quantity:	2			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	2				
Comments: - Existing Sign in Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	10.0 m	
Element Name:	Soffit - Inside Boxes		Width:	2.0 m	
Location:			Height:	2.4 m	
Material:	Cast-in-place concrete		Count:		
Element Type:			Total Quantity:	68.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			35.2	32.8
Comments: The Structure is in Fair to Poor condition. Large spalls at soffit with exposed and light corroded reinforcement. Severe scour below the foundation and erosion at the culvert walls.					
Recommended Work:	<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.5 m	
Element Name:	Inlet Components		Width:	0.3 m	
Location:	East Side		Height:	3.0 m	
Material:	Cast-in-place concrete		Count:	2	
Element Type:	Wingwall		Total Quantity:	15.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		15.0		
Comments: In Good Condition. Extensions added to the original structure.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.0 m	
Element Name:	Outlet Components		Width:	0.3 m	
Location:	East Side		Height:	0.6 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Headwall		Total Quantity:	1.2 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.2		
Comments: In Good Condition. Extension added to the original structure.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.5 m	
Element Name:	Outlet Components		Width:	0.3 m	
Location:	West Side		Height:	3.0 m	
Material:	Cast-in-place concrete		Count:	2	
Element Type:	Wingwall		Total Quantity:	15.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		12.0	1.5	1.5
Comments: In Good Condition. minor spalls at the edges					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.0 m	
Element Name:	Outlet Components		Width:	0.3 m	
Location:	West Side		Height:	0.6 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Headwall		Total Quantity:	1.2 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.0	0.2	
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Decks		Length:	2.0 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	14.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			7.2	7.2
Comments: Two (2) potholes over the culvert, and settlement along the structure width					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
		Asphalt repairs			

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.2 m		
Location:	North - South		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	86.4 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		43.2	43.2		
Comments: Slippery surface along both approaches						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Excessive plant growth blocking the water flow at both culvert ends						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
						Drain maintenance

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			4		
Comments: Excessively covered with plants and randomly distributed rip rap						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
						Drain maintenance



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Wearing Surface over Culvert (Looking West)



Photograph 3 – Culvert Barrel (Looking East)



Photograph 4 – Culvert Soffit



Photograph 5 – East Elevation



Photograph 6 – West Elevation



Photograph 7 –Water Stream (Snake Lane Road East Side – Looking East)



Photograph 8 –Water Stream (Looking West)

Inventory Data:

Structure Number	55 (Formerly 74)		
Hwy/Road Name	Concession Road 9		
Structure Location	0.88 km South From South Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 3.0234"	Longitude	-82° 55' 55.4874"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.80 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.70 (m)	Posted Speed	60 No. of Lanes 2
Overall Str. Width	11.30 (m)	AADT	% Trucks
Total Deck Area	5.360 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.70 (m)	Detour Length Around Bridge	8.3 (km)
Fill on Structure	1.50 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2000	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 23, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 54%
Temperature	7 (16/10) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Lightly corroded culvert barrel with distorted edges at the East elevation inlet. Settlement at the asphalt surface where distorted section at the culvert barrel was observed from below. Wearing surface was also observed with severe flushing.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:		Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts	Length:	11.3 m		
Element Name:	Barrels	Width:	0.8 m (Dia.)		
Location:		Height:			
Material:	Corrugated Steel	Count:			
Element Type:	Multi-Plate CSP	Total Quantity:	28.4 Sq.m		
Environment:		Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		18.4	5.6	4.4
Comments: Distorted edges at the East elevation inlet, settlement at the asphalt surface causing a distortion in the culvert barrel from below, and light corrosion at the bottom half of the culvert barrel * Inspection was limited due to the small culvert section					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks	Length:	0.80 m		
Element Name:	Wearing Surface	Width:	6.70 m		
Location:		Height:			
Material:	Tar and Chip	Count:			
Element Type:		Total Quantity:	5.40 Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			4.80	0.60
Comments: - Flushing surface - A pothole is noted over the culvert causing a bending in the culvert barrel from below					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
			Asphalt repairs		

Element Group:	Approaches	Length:	6.0 m		
Element Name:	Wearing Surface	Width:	6.70 m		
Location:	North - South	Height:			
Material:	Tar and Chip	Count:	2		
Element Type:		Total Quantity:	80.40 Sq.m		
Environment:	Moderate	Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			80.40	
Comments: - Flushing surface on both approaches					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	2	
Element Type:			Total Quantity:	2	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	5	
Element Type:			Total Quantity:	5	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		5		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking West)



Photograph 3 – Culvert Barrel (Looking East)



Photograph 4 – East Elevation



Photograph 5 – West Elevation



Photograph 6 – Wearing Surface at North Approach (Looking South)



Photograph 7 –Water Stream (Concession Road 9 West Side - Looking West)



Photograph 8 –Water Stream (Concession Road 9 East Side - Looking South)

Inventory Data:

Structure Number	56 (Formerly 73)		
Hwy/Road Name	Concession Road 9		
Structure Location	1.75 km South from South Talbot Road		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 11' 34.2594"	Longitude	-82° 55' 57.936"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.30 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.70 (m)	Posted Speed	60 No. of Lanes 2
Overall Str. Width	11.30 (m)	AADT	% Trucks
Total Deck Area	8.710 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.70 (m)	Detour Length Around Bridge	8.3 (km)
Fill on Structure	1.50 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1990	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 23, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 54%
Temperature	7 (16/10) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Generally, the structure is in good condition, wearing surface was identified with severe flushing. Waterways with excessive plant growth blocking the flow at the East side of the road. Regarding the roadside safety; The ends of the culvert are very close to the edge of pavement since there are no shoulders. Guide rail would not improve the overall roadside safety in this case.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:		Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	
			Add Object Marker Signs			

Element Group:	Culverts		Length:	11.30 m		
Element Name:	Barrels		Width:	1.30 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	46.2 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		30.0	16.2		
Comments: Light corrosion at the bottom half of the culvert barrel						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	6.0 m		
Element Name:	Inlet Components		Width:	0.60 m		
Location:	East Side		Height:	2.80 m		
Material:	Masonry		Count:			
Element Type:	Wire Mesh MSE Wall		Total Quantity:	16.80 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		16.8			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	8.0 m		
Element Name:	Outlet Components		Width:	0.60 m		
Location:	West Side		Height:	2.80 m		
Material:	Masonry		Count:			
Element Type:	Wire Mesh MSE Wall		Total Quantity:	22.70 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.70			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	1.30 m		
Element Name:	Wearing Surface		Width:	6.70 m		
Location:			Height:			
Material:	Tar and Chip		Count:			
Element Type:			Total Quantity:	8.70 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			8.70		
Comments: - Flushing Surface						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.70 m		
Location:	North - South		Height:			
Material:	Tar and Chip		Count:	2		
Element Type:			Total Quantity:	80.40 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>			80.40		
Comments: - Flushing Surface						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	3		
Element Type:			Total Quantity:	3		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1	1		
Comments: - Excessive plant growth is blocking the stream on the East side of Concession Road 9, with recommendation to be shaved						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Drain maintenance		

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	8	
Element Type:			Total Quantity:	8	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (East Elevation)



Photograph 3 – Culvert Barrel (East Elevation)



Photograph 4 – East Elevation



Photograph 5 – West Elevation



Photograph 6 – Wearing Surface at North Approach (Looking South)



Photograph 7 –Water Stream (Concession Road 9 East Side - Looking North)



Photograph 8 –Water Stream (Concession Road 9 West Side - Looking North)

Inventory Data:

Structure Number	57 (Formerly 41)		
Hwy/Road Name	Concession Road 9		
Structure Location	At the Intersection with County Road 8		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 10' 54.3354"	Longitude	-82° 56' 0.528"
Owner(s)		Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.60 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	25.90 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	25.90 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	67.340 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	12.20 (m)	Detour Length Around Bridge	8.3 (km)
Fill on Structure	1.10 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1995	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	December 23, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 54%
Temperature	7 (16/10) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The structure is in good condition with minor deficiencies at the wearing surface over the culvert section. Concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	25.90 m		
Element Name:	Barrels		Width:	2.60 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	550.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	550				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	8.40 m		
Element Name:	Inlet Components		Width:	0.60 m		
Location:	East Side		Height:	2.70 m		
Material:	Precast concrete		Count:			
Element Type:	Concrete Blocks		Total Quantity:	22.70 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	22.70				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	8.40 m		
Element Name:	Outlet Components		Width:	0.60 m		
Location:	West Side		Height:	2.70 m		
Material:	Precast concrete		Count:			
Element Type:	Concrete Blocks		Total Quantity:	22.70 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	22.70				
Comments: In Excellent Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	2.60 m		
Element Name:	Wearing Surface		Width:	12.20 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	31.70 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		31.72			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	12.20 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	146.40 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		36.6	73.2	36.6	
Comments: - South Approach: Map Cracking - North Approach: Severe Flushing						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Asphalt repairs		

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: In Good Condition						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:			Height:			
Material:	Masonry		Count:	4		
Element Type:	Hand laid Riprap		Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking East)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking East)



Photograph 6 – Wearing Surface at South Approach



Photograph 7 – Wearing Surface at South Approach



Photograph 8 – Water Stream (Concession Road 9 West Side – Looking West)

Inventory Data:

Structure Number	58		
Hwy/Road Name	10th Concession Road		
Structure Location	2.35 km north from County Rd. 8 (McPherson Drain/J.C. Smith Drain)		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 08" N	Longitude	82° 54' 55.60" W
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.4 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.5 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	13.5 (m)	AADT	% Trucks
Total Deck Area	2.600 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.5 (m)	Detour Length Around Bridge	8.4 (km)
Fill on Structure	1.2 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	September 8, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	Dan Baughan (Dillon Consulting Ltd)
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy
Temperature	24 Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The inspection of the culvert was limited due to the high water level. The east end was covered under the heavy plant growth. In Drainage Report (provided by the Town): The culvert is recommended to be fully replaced with new 750mm smooth wall concrete pipe.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	13.5 m		
Element Name:	Barrels		Width:	0.4 m (Dia.)		
Location:			Height:			
Material:	Clay Pipe (East) - Big O (West)		Count:			
Element Type:			Total Quantity:	8.0 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	--	--	--	--	
Comments: Limited inspection; pipe covered under water at east end, and un-able to find at the west end under the heavy vegetation.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	0	1	1	0	
Comments: Culvert is connecting Mepherston Drain (East) to J.C. Smith Drain (West). Western drain is in good condition. Heavy vegetation observed along the eastern drain with need to be cleared as part of the routine maintenance.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
						Drain Maintenance

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	6		
Element Type:			Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	6	0	0	
Comments: The embankments appear to be in good condition. They are covered with heavy vegetation on the east side of the road, which can be removed/cleaned as part of the routine maintenance.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
						Drain Maintenance

Element Group:	Decks		Length:	0.4 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	2.6 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	2.2	0.0	0.4	
Comments: The road edges are loose and in poor condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	78.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	66.0	0.0	12.0	
Comments: The road edges are loose and in poor condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road view over Culvert (Looking North)



Photograph 2 – West Embankments & Waterway (Looking North)



Photograph 3 – West Elevation



Photograph 4 – East Embankments & Waterway (Looking North)



Photograph 5 – Heavy Plants Growth at East Elevation (Looking East)

Inventory Data:

Structure Number	<input type="text" value="59"/>		
Hwy/Road Name	<input type="text" value="10th Concession Road"/>		
Structure Location	<input type="text" value="1.95 km north from County Rd. 8 (McPherson Drain/J.C. Smith Drain)"/>		
Structure Type	<input type="text" value="Corrugated Steel Pipe"/>		
Latitude	<input n"="" type="text" value="42° 11' 55"/>	Longitude	<input type="text" value="82° 54' 56.59" w"=""/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="0.2"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	<input type="text" value="6.5"/> (m)	Posted Speed	<input type="text" value="80"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="13.5"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="1.300"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="6.5"/> (m)	Detour Length Around Bridge	<input type="text" value="8.4"/> (km)
Fill on Structure	<input type="text" value="1.2"/> (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="Unknown"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="5.0"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	September 8, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	Dan Baughan (Dillon Consulting Ltd)
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy
Temperature	24 Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Limited inspection - The drain pipe is in poor condition. During the field inspection, it was noted by the neighbor that it is no longer functioning. A covered manhole exists at the west end. In Drainage Report (provided by the Town): The culvert is listed as "Not Needed" with buck up ends and abandon.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:				
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year		

Element Group:	Culverts		Length:	13.5 m		
Element Name:	Barrels		Width:	0.2 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	8.5 Sq.m		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	0.0	0.0	8.5	
Comments: Limited inspection - Existing pipe is heavily corroded and in poor condition, where accessible. It is clogged, and is not needed.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
					Brick up ends and abandon as per drainage report	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	0	0	2	0	
Comments: Culvert is connecting Mepherston Drain (East) to J.C. Smith Drain (West). It is no longer functioning. The drain on the west side is covered. Excessive plant growth was observed on the eastern drain with need to be cleared as part of the routine maintenance.						
Recommended Work:	<input checked="" type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input checked="" type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
					Drain Maintenance	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	3		
Element Type:			Total Quantity:	3		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	3	0	0	
Comments: The embankments appear to be in good condition. They are covered with heavy vegetation which can be removed/cleaned as part of the routine maintenance.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
					Drain Maintenance	

Element Group:	Decks		Length:	0.2 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:			Height:			
Material:	Tar and Chip		Count:			
Element Type:			Total Quantity:	1.3 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	1.1	0.0	0.2	
Comments: The road edges are loose and in poor condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:	North - South		Height:			
Material:	Tar and Chip		Count:	2		
Element Type:			Total Quantity:	78.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	66.0	0.0	12.0	
Comments: The road edges are loose and in poor condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road view over Culvert (Looking South)



Photograph 2 – Wearing Surface over Culvert (Looking West)



Photograph 3 – Inlet Manhole at West Elevation



Photograph 4 – Road over Culvert (Looking West)



Photograph 5 – East Elevation



Photograph 6 – Culvert Barrel (Looking West)

Inventory Data:

Structure Number	<input type="text" value="60"/>		
Hwy/Road Name	<input type="text" value="10th Concession Road"/>		
Structure Location	<input type="text" value="1.8 km north from County Rd. 8 (McPherson Drain/J.C. Smith Drain)"/>		
Structure Type	<input type="text" value="Corrugated Steel Pipe"/>		
Latitude	<input n"="" type="text" value="42° 11' 50.42"/>	Longitude	<input type="text" value="82° 54' 57.02" w"=""/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="0.45"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	<input type="text" value="6.5"/> (m)	Posted Speed	<input type="text" value="80"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="13.5"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="2.925"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="6.5"/> (m)	Detour Length Around Bridge	<input type="text" value="8.4"/> (km)
Fill on Structure	<input type="text" value="1.2"/> (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="Unknown"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="5.0"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	September 8, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	Dan Baughan (Dillon Consulting Ltd)
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy
Temperature	24 Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The culvert is found in fair to poor condition. A full length split was observed at the spring line In Drainage Report (provided by the Town): The culvert is recommended to be fully replaced with new 600mm smooth wall concrete pipe.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	13.5 m		
Element Name:	Barrels		Width:	0.45 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	19.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	0.0	4.75	14.25	
Comments: Existing pipe is in fair to poor condition with damaged and corroded regions						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	0	2	0	0	
Comments: Culvert is connecting McPherson Drain (East) to J.C. Smith Drain (West). Light plant growth was observed on both drains. This can be repaired as part of the routine maintenance.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Drain Maintenance		

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	6		
Element Type:			Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	6	0	0	
Comments: The embankments appear to be in good conditions. They are covered with vegetation which can be removed/cleaned as part of the routine maintenance.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Drain Maintenance		

Element Group:	Decks		Length:	0.45 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:			Height:			
Material:	Tar and Chip		Count:			
Element Type:			Total Quantity:	2.9 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	2.45	0.0	0.45	
Comments: The road edges are loose and in poor conditions.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:	North - South		Height:			
Material:	Tar and Chip		Count:	2		
Element Type:			Total Quantity:	78.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	66.0	0.0	12.0	
Comments: The road edges are loose and in poor conditions.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input checked="" type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Wearing Surface over Culvert (Looking West)



Photograph 2 – East Elevation



Photograph 3 – Culvert Barrel (Looking West)



Photograph 4 – West Embankments & Waterways (Looking West)



Photograph 5 – West Elevation

Inventory Data:

Structure Number	<input type="text" value="61"/>		
Hwy/Road Name	<input type="text" value="10th Concession Road"/>		
Structure Location	<input type="text" value="1.6 km north from County Rd. 8 (McPherson Drain/J.C. Smith Drain)"/>		
Structure Type	<input type="text" value="Concrete Pipe (East) - Corrugated Steel Pipe (West)"/>		
Latitude	<input n"="" type="text" value="42° 11' 44"/>	Longitude	<input type="text" value="82° 54' 57.92" w"=""/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="0.45 / 0.6"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	<input type="text" value="6.5"/> (m)	Posted Speed	<input type="text" value="80"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="13.5"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="1.#QO"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="6.5"/> (m)	Detour Length Around Bridge	<input type="text" value="8.4"/> (km)
Fill on Structure	<input type="text" value="1.2"/> (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="Unknown"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="5.0"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	September 8, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	Dan Baughan (Dillon Consulting Ltd)
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy
Temperature	24 Celsius

Overall Structure Notes:

Recommended Work on Structure	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The drain pipe is in poor condition. It is clogged at one end (East), and connected to a steel corrugated pipe on the other (West). In Drainage Report (provided by the Town): The culvert is listed as "Not Needed" and to be blocked at ends and abandoned
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:				
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year		

Element Group:	Culverts		Length:	13.5 m		
Element Name:	Barrels		Width:	0.45 m (Dia.)		
Location:			Height:			
Material:	Concrete Pipe - Corrugated Steel Pipe		Count:			
Element Type:			Total Quantity:	19.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	0.0	0.0	19.0	
Comments: Limited inspections - Existing pipe is in poor condition, where accessible. It is clogged at one end (East), and connected to a steel corrugated pipe on the other (West). It is not needed.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
As per drainage report, the culvert is to be blocked at ends and abandoned.						

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	0	0	1	1	
Comments: Culvert is connecting Mepherson Drain (East) to J.C. Smith Drain (West). Excessive plant growth was observed on the east side. A corrugated steel pipe exists on the west side. The Eastern drain needs to be cleared of the excessive plant growth.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
Drain Maintenance						

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:	East road edge		Height:			
Material:			Count:	3		
Element Type:			Total Quantity:	3		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	3	0	0	
Comments: The embankments appear to be in good condition. They are covered with heavy vegetation which can be removed/cleaned as part of the routine maintenance.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
Drain Maintenance						

Element Group:	Decks		Length:	0.45 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:			Height:			
Material:	Tar and Chip		Count:			
Element Type:			Total Quantity:	3.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	2.55	0.0	0.45	
Comments: The road edges are loose and in poor condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:	North - South		Height:			
Material:	Tar and Chip		Count:	2		
Element Type:			Total Quantity:	78.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	66.0	0.0	12.0	
Comments: The road edges are loose and in poor condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Wearing Surface over Culvert (Looking North)



Photograph 2 – Wearing Surface over Culvert (Looking South)



Photograph 3 – Wearing Surface over Culvert (Looking West)



Photograph 4 – East Elevation



Photograph 5 –Culvert Barrel (Looking West)



Photograph 6 – West Elevation (Looking South)



Photograph 7 – Culvert Parallel to Road at West Edge (Intersecting with Crossing Culvert)

Inventory Data:

Structure Number	62		
Hwy/Road Name	10th Concession Road		
Structure Location	0.75 km north from County Rd. 8 (McPherson Drain/J.C. Smith Drain)		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 11' 16.72" N	Longitude	82° 54' 59" W
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.6 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.5 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	13.5 (m)	AADT	% Trucks
Total Deck Area	3.900 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.5 (m)	Detour Length Around Bridge	8.4 (km)
Fill on Structure	1.2 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	September 8, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	Dan Baughan (Dillon Consulting Ltd)
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy
Temperature	24 Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The bottom half of the culvert barrel is moderately corroded. The water flow is partially blocked with debris and the heavy plants growth at both ends. The drains needs to be cleared of the excessive plants. In Drainage Report (provided by the Town): The culvert is recommended to be fully replaced with new 900mm smooth wall concrete pipe.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	13.5 m		
Element Name:	Barrels		Width:	0.6 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	25.45 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	19.0	6.45	0.0	
Comments: Existing pipe is in fair to good condition, with corrosion mainly below the spring line.						
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
Replacement is recommended as per the drainage report.						

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	0	0	2	0	
Comments: Culvert is connecting Mepherston Drain (East) to J.C. Smith Drain (West). Excessive plant growth was observed on both drains. This can be repaired as part of the routine maintenance.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
Drain Maintenance						

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	6		
Element Type:			Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	6	0	0	
Comments: The embankments appear to be in good condition. They are covered with heavy vegetation which can be removed/cleaned as part of the routine maintenance.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
Drain Maintenance						

Element Group:	Decks		Length:	0.6 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:			Height:			
Material:	Tar and Chip		Count:			
Element Type:			Total Quantity:	3.9 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	3.3	0.0	0.6	
Comments: The road edges are loose and in poor condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Road Maintenance		

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.5 m		
Location:	North - South		Height:			
Material:	Tar and Chip		Count:	2		
Element Type:			Total Quantity:	78.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	66.0	0.0	12.0	
Comments: The road edges are loose and in poor condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Road Maintenance		

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road view over Culvert (Looking North)



Photograph 2 – Wearing Surface over Culvert (Looking North)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Culvert Barrel (Looking East)



Photograph 6 – Culvert Barrel (Looking West)



Photograph 7 – Road over Culvert & East Inlet (Looking South)

Inventory Data:

Structure Number	63 (Formerly 36)		
Hwy/Road Name	Concession Road 10		
Structure Location	At the Intersection with County Road 8		
Structure Type	Corrugated Steel Pipe Arch		
Latitude	42° 10' 52.356"	Longitude	-82° 55' 1.416"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.80 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	9.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	27.5 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	25.200 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	9.0 (m)	Detour Length Around Bridge	6.50 (km)
Fill on Structure	1.10 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1990	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	January 26, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 47%
Temperature	3 (6 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The structure is in good condition. Wearing surface was identified with major on both approaches and is recommended to be fully replaced. Regarding the roadside safety; the concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Existing Sign in Excellent Conditions - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	27.5 m	
Element Name:	Barrels		Width:	2.8 m	
Location:			Height:	2.1 m	
Material:	Corrugated Steel		Count:		
Element Type:	Multi-Plate CSP		Total Quantity:	241.90 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		241.90		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	8.40 m	
Element Name:	Inlet Components		Width:	0.60 m	
Location:	East Side		Height:	2.70 m	
Material:	Precast concrete		Count:		
Element Type:	Concrete Blocks		Total Quantity:	22.70 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.70		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	8.40 m	
Element Name:	Outlet Components		Width:	0.60 m	
Location:	West Side		Height:	2.70 m	
Material:	Precast concrete		Count:		
Element Type:	Concrete Blocks		Total Quantity:	22.70 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.70		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Decks		Length:	2.8 m	
Element Name:	Wearing Surface		Width:	9.0 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	25.2 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		25.2		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	6.7 m	
Location:	North - South		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	80.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		65.4	10.0	5.0
Comments: North Approach - Slippery Surface South Approach - Map Cracking					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
			Asphalt repairs		

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:			Height:			
Material:	Masonry		Count:	4		
Element Type:	Hand laid Riprap		Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking West)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at South Approach



Photograph 7 – Water Stream (Concession Road 10 East Side – Looking East)



Photograph 8 – Water Stream (Concession Road 10 West Side – Looking West)

Inventory Data:

Structure Number	64 (Formerly 35)		
Hwy/Road Name	Malden Road		
Structure Location	At the Intersection with County Road 8		
Structure Type	Corrugated Steel Pipe Arch		
Latitude	42° 10' 52.14"	Longitude	-82° 54' 56.736"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.80 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local <input type="checkbox"/>
Total Deck Length	23.0 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	27.5 (m)	AADT	% Trucks
Total Deck Area	64.400 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	23.0 (m)	Detour Length Around Bridge	6.10 (km)
Fill on Structure	1.10 (m)	Direction of Structure	N
Skew Angle	28° (Degrees)	No. of Spans	1

Historical Data:

Year Built	2002	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	(tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 26, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 47%
Temperature	3 (6 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The structure is in good condition. Wearing surface at the north approach has major deficiencies and is recommended to be fully replaced. Regarding the roadside safety; the concrete headwalls are a hazard that vehicles should be protected from. Guide rail is recommended.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Existing Sign in Excellent Conditions - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	27.5 m	
Element Name:	Barrels		Width:	2.8 m	
Location:			Height:	2.1 m	
Material:	Corrugated Steel		Count:		
Element Type:	Multi-Plate CSP		Total Quantity:	241.90 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		241.90		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	8.40 m	
Element Name:	Inlet Components		Width:	0.60 m	
Location:	East Side		Height:	2.70 m	
Material:	Precast concrete		Count:		
Element Type:	Concrete Blocks		Total Quantity:	22.70 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.70		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	8.40 m	
Element Name:	Outlet Components		Width:	0.60 m	
Location:	West Side		Height:	2.70 m	
Material:	Precast concrete		Count:		
Element Type:	Concrete Blocks		Total Quantity:	22.70 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		22.70		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	2.8 m	
Element Name:	Wearing Surface		Width:	23.0 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	64.4 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		64.40		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	7.2 m	
Location:	North - South		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	86.4 Sq.m	
Environment:	Severe		Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		49.15	20.0	17.25
Comments: North Approach - Severe Ravelling on the West side - Light Map Cracking					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
				Asphalt repairs	

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: In Good Condition					
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:	
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	4	
Element Type:			Total Quantity:	4	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4		
Comments: In Excellent Conditions					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:		
Element Name:	Slope Protection		Width:		
Location:			Height:		
Material:	Masonry		Count:	4	
Element Type:	Hand laid Riprap		Total Quantity:	4	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	4			
Comments: In Excellent Conditions					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel (Looking West)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at North Approach



Photograph 7 – Water Stream (Malden Road West Side – Looking East)



Photograph 8 – Water Stream (Malden Road West Side – Looking West)

Inventory Data:

Structure Number	65 (Formerly 37)		
Hwy/Road Name	Concession Rd. 11		
Structure Location	At the intersection with South Talbot Rd.		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 1.0074"	Longitude	-82° 53' 56.76"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.85 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	16.80 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	16.80 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	31.080 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	8.80 (m)	Detour Length Around Bridge	6.0 (km)
Fill on Structure	0.40 (m)	Direction of Structure	N
Skew Angle	15° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1995	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	The culvert barrel edges were deformed at the east elevation, and bolted connections are lightly corroded. Wearing surface was observed with severe alligator cracks over the culvert section, and map cracking and longitudinal crack at the north approach.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	16.80 m		
Element Name:	Barrels		Width:	1.85 m		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:	Multi-Plate CSP		Total Quantity:	180.60 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		144.6	31.0	5.0	
Comments: light corrosion at the bolts and bottom portion, Deformed Top (East Inlet), and cut on the surface (East Inlet)						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	4.00 m		
Element Name:	Inlet Components		Width:			
Location:	East Side		Height:	1.60 m		
Material:			Count:			
Element Type:	Mortar Bags		Total Quantity:	6.40 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		6.40			
Comments: In Good Condition						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Decks		Length:	1.85 m		
Element Name:	Wearing Surface		Width:	8.80 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	16.30 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.30	4.0	4.0	
Comments: Severe alligator cracks (At the Deck).						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
					Asphalt repairs	

Element Group:	Approaches	Length:	6.0 m		
Element Name:	Wearing Surface	Width:	8.80 m		
Location:		Height:			
Material:	Asphalt	Count:	2		
Element Type:		Total Quantity:	105.60 Sq.m		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		55.60	42.0	8.0
Comments: Map cracking and longitudinal crack at the North approach.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
			Asphalt repairs		

Element Group:	Embankments & Streams	Length:			
Element Name:	Streams and Waterways	Width:			
Location:	East - West	Height:			
Material:		Count:	1		
Element Type:		Total Quantity:	1		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams	Length:			
Element Name:	Embankments	Width:			
Location:		Height:			
Material:		Count:	6		
Element Type:		Total Quantity:	6		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		6		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel (Looking West)



Photograph 3 – Culvert Barrel (Looking North)



Photograph 4 – Culvert Barrel (Looking East)



Photograph 5 – East Elevation



Photograph 6 – West Elevation



Photograph 7 – Wearing Surface at North Approach



Photograph 8 – Wearing Surface over Culvert (Looking West)



Photograph 9 – Water Stream (Concession Road 11 East Side – Looking East)



Photograph 10 – Water Stream (Concession Road 11 West Side – Looking West)

Inventory Data:

Structure Number	<input type="text" value="66"/>		
Hwy/Road Name	<input type="text" value="11th Concession Road"/>		
Structure Location	<input type="text" value="0.75 km south from South Talbot Road at East McPherson Drain"/>		
Structure Type	<input type="text" value="Clay Pipe (East) - Big O (West)"/>		
Latitude	<input n"="" type="text" value="42° 11' 63.20"/>	Longitude	<input type="text" value="82° 53' 58.35" w"=""/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="0.2"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	<input type="text" value="6.0"/> (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="12.6"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="1.200"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="6.0"/> (m)	Detour Length Around Bridge	<input type="text" value="6.2"/> (km)
Fill on Structure	<input type="text" value="1.0"/> (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="Unknown"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="5.0"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	September 8, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	Dan Baughan (Dillon Consulting Ltd)
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy
Temperature	24 Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Drain pipe is in poor condition. gaps between the segments. The plants at the west inlets needs to be cleaned as it is blocking the water flow. In Drainage Report (provided by the Town): The pipe was identified in good condition and recommended to remain in place.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts	Length:	12.6 m		
Element Name:	Barrels	Width:	0.2 m (Dia.)		
Location:		Height:			
Material:	Clay Pipe (East) - Big O (West)	Count:			
Element Type:		Total Quantity:	8.0 Sq.m		
Environment:		Limited Inspection	<input checked="" type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	0.0	0.0	0.0
Comments: Limited inspection - Gaps between clay pipe segments - Assumed to be acceptable as per drainage report recommendations.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams	Length:			
Element Name:	Streams and Waterways	Width:			
Location:	East - West	Height:			
Material:		Count:	2		
Element Type:		Total Quantity:	2		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	0	0	1	1
Comments: Drain is connecting East McPherson Drain (East) to Santo Drain (West). Excessive plant growth was observed on both drains. This can be repaired as part of the routine maintenance.					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
			Drain Maintenance		

Element Group:	Embankments & Streams	Length:			
Element Name:	Embankments	Width:			
Location:		Height:			
Material:		Count:	5		
Element Type:		Total Quantity:	5		
Environment:		Limited Inspection	<input type="checkbox"/>		
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	5	0	0
Comments: The embankment at the road east side are in good condition. However, the embankments on the road west side are covered with heavy vegetation and were not possible to be inspected (Assumed in Good Condition).					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
			Drain Maintenance		

Element Group:	Decks		Length:	0.2 m		
Element Name:	Wearing Surface		Width:	6.0 m		
Location:			Height:			
Material:	Tar and Chip		Count:			
Element Type:			Total Quantity:	1.2 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	1.2	0.0	0.0	
Comments: The Tar and Chip surface is in good condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.0 m		
Location:	North - South		Height:			
Material:	Tar and Chip		Count:	2		
Element Type:			Total Quantity:	72.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	72.0	0.0	0.0	
Comments: The Tar and Chip surface is in good condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Wearing Surface over Culvert (Looking West)



Photograph 3 – West Elevation



Photograph 4 – Culvert Barrel

Inventory Data:

Structure Number	<input type="text" value="67"/>		
Hwy/Road Name	<input type="text" value="11th Concession Road"/>		
Structure Location	<input type="text" value="1.00 km south from South Talbot Road at East McPherson Drain"/>		
Structure Type	<input type="text" value="Corrugated Steel Pipe"/>		
Latitude	<input n"="" type="text" value="42° 11' 28.65"/>	Longitude	<input type="text" value="82° 53' 59" w"=""/>
Owner(s)	<input type="text" value="Town of Tecumseh"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	<input type="text" value="0.6"/> (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	<input type="text" value="6.0"/> (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	<input type="text" value="12.6"/> (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	<input type="text" value="3.600"/> (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="6.0"/> (m)	Detour Length Around Bridge	<input type="text" value="6.2"/> (km)
Fill on Structure	<input type="text" value="1.0"/> (m)	Direction of Structure	<input type="text" value="N"/>
Skew Angle	<input type="text" value="0°"/> (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="Unkown"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="5.0"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	September 8, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	Dan Baughan (Dillon Consulting Ltd)
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy
Temperature	24 Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Culvert barrel is moderate to severely corroded. The bottom half is filled with sedimentation. It is recommended to be replaced in the drainage report received from the Town. Excessive plant growth needs to be repaired as part of the routine maintenance.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years	Maintenance Needs:	<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	12.6 m		
Element Name:	Barrels		Width:	0.6 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	23.75 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	0.0	17.75	6.0	
Comments: Culvert barrel is moderate to severely corroded. The bottom half is filled with sediment. It is recommended to be replaced in the Drainage Report received from the Town.						
Recommended Work:		<input type="checkbox"/> Rehab	<input checked="" type="checkbox"/> Replace	Maintenance Needs:		
		<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	0	0	1	1	
Comments: Culvert is connecting East McPherson Drain (East) to Santo Drain (West). Excessive plant growth was observed on the west side, and moderate on the east side. This can be repaired as part of the routine maintenance.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Drain Maintenance		

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	6		
Element Type:			Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	6	0	0	
Comments: The embankments appear to be in good conditions. They are covered with heavy vegetation which can be removed/cleaned as part of the routine maintenance.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year
				Drain Maintenance		

Element Group:	Decks		Length:	0.6 m		
Element Name:	Wearing Surface		Width:	6.0 m		
Location:			Height:			
Material:	Tar and Chip		Count:			
Element Type:			Total Quantity:	3.6 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	3.0	0.0	0.6	
Comments: The road edges are loose						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.0 m		
Location:	North - South		Height:			
Material:	Tar and Chip		Count:	2		
Element Type:			Total Quantity:	72.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	60.0	0.0	12.0	
Comments: The road edges are loose						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Wearing Surface over Culvert (Looking North)



Photograph 2 – Wearing Surface over Culvert (Looking South)



Photograph 3 – East Elevation



Photograph 4 – Culvert Barrel

Inventory Data:

Structure Number	68		
Hwy/Road Name	11th Concession Road		
Structure Location	1.30 km south from South Talbot Road at East McPherson Drain		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 11' 17.77" N	Longitude	82° 53' 59.67" W
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	0.45 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	6.0 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	12.6 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	2.700 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	6.0 (m)	Detour Length Around Bridge	6.2 (km)
Fill on Structure	1.0 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	Unknown	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	5.0 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	September 8, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	Dan Baughan (Dillon Consulting Ltd)
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy
Temperature	24 Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input checked="" type="checkbox"/> 6 to 10 years
Overall Comments	Existing pipe is in fair condition with bended west end. The bottom half below the spring line is moderately corroded. In the drainage report received from the Town; it is recommended to remain in place with need to be cleaned/flushed . Excessive plant growth needs to be repaired as part of the routine maintenance.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	0			
Element Type:	N/A	Total Quantity:	0			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	12.6 m		
Element Name:	Barrels		Width:	0.45 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	17.80 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	8.8	9.0	0.0	
Comments: Existing pipe is in fair condition with damaged west end. The bottom half below the spring line is moderately corroded. The existing pipe was recommended to remain in place in the drainage report. It is recommended to anticipate replacement within 6-10 Years.						
Recommended Work:	<input type="checkbox"/> Rehab		<input checked="" type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input checked="" type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>	0	0	1	1	
Comments: Drain is connecting East McPherson Drain (East) to Santo Drain (West). Moderate plant growth was observed on both road sides. This can be repaired as part of the routine maintenance.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
					Drain Maintenance	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	6		
Element Type:			Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0	6	0	0	
Comments: The embankments appears to be in good condition. They are covered with heavy vegetation which can be removed/cleaned as part of the routine maintenance.						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
					Drain Maintenance	

Element Group:	Decks		Length:	0.45 m		
Element Name:	Wearing Surface		Width:	6.0 m		
Location:			Height:			
Material:	Tar and Chip		Count:			
Element Type:			Total Quantity:	2.7 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	2.7	0.0	0.0	
Comments: The Tar and Chip surface is in good condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	6.0 m		
Location:	North - South		Height:			
Material:	Tar and Chip		Count:	2		
Element Type:			Total Quantity:	72.0 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	0.0	72.0	0.0	0.0	
Comments: The Tar and Chip surface is in good condition.						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:			
Element Name:			Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments:						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Wearing Surface over Culvert (Looking North)



Photograph 2 – Wearing Surface over Culvert (Looking South)



Photograph 3 – Culvert Barrel (Looking West)



Photograph 4 – Culvert Barrel (Looking East)



Photograph 5 – West Elevation

Inventory Data:

Structure Number	69 (Formerly 33)		
Hwy/Road Name	Concession Road 11		
Structure Location	At the Intersection with County Road 8		
Structure Type	Corrugated Steel Pipe Arch		
Latitude	42° 10' 50.3394"	Longitude	-82° 54' 2.088"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.40 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.60 (m)	Posted Speed	60 No. of Lanes 2
Overall Str. Width	13.0 (m)	AADT	% Trucks
Total Deck Area	18.240 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.60 (m)	Detour Length Around Bridge	6.10 (km)
Fill on Structure	0.60 (m)	Direction of Structure	N
Skew Angle	0° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1995	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	January 26, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 47%
Temperature	3 (6 / -3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input checked="" type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input checked="" type="checkbox"/> 6 to 10 years
Overall Comments	Culvert barrel was observed with moderate corrosion around the bolts, and lightly corroded haunches at the bottom. Wearing surface with wide transverse cracks over the culvert. Assume replacement required due to eventual corrosion loss and improved roadside safety.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	13.0 m	
Element Name:	Barrels		Width:	2.40 m	
Location:			Height:	1.80 m	
Material:	Corrugated Steel		Count:		
Element Type:	Multi-Plate CSP		Total Quantity:	98.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		58.80	29.40	9.80
Comments: Moderate corrosion around the bolts, and benign corrosion at the haunches bottom.					
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input checked="" type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Culverts		Length:	8.40 m	
Element Name:	Inlet Components		Width:	0.60 m	
Location:	East Side		Height:	2.30 m	
Material:			Count:		
Element Type:	Culvert Mortar Bags		Total Quantity:	19.30 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	19.3			
Comments: In Excellent Condition					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Culverts		Length:	8.40 m	
Element Name:	Outlet Components		Width:	0.60 m	
Location:	West Side		Height:	2.30 m	
Material:			Count:		
Element Type:	Culvert Mortar Bags		Total Quantity:	19.30 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	19.30			
Comments: In Excellent Condition					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Decks		Length:	2.40 m	
Element Name:	Wearing Surface		Width:	7.60 m	
Location:			Height:		
Material:	Asphalt		Count:		
Element Type:			Total Quantity:	18.25 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments: A newer asphalt layer than approaches with Wide Transverse Cracks over the culvert					
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Approaches		Length:	6.0 m	
Element Name:	Wearing Surface		Width:	7.60 m	
Location:	North - South		Height:		
Material:	Asphalt		Count:	2	
Element Type:			Total Quantity:	91.20 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		86.0	5.20	
Comments: - North Approach: Edge Cracks - South Approach: Longitudinal Crack					
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Embankments & Streams		Length:		
Element Name:	Streams and Waterways		Width:		
Location:	East - West		Height:		
Material:			Count:	1	
Element Type:			Total Quantity:	1	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:		
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Element Group:	Embankments & Streams		Length:		
Element Name:	Embankments		Width:		
Location:			Height:		
Material:			Count:	4	
Element Type:			Total Quantity:	4	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4		
Comments: In Good Condition					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:			Length:		
Element Name:			Width:		
Location:			Height:		
Material:			Count:		
Element Type:			Total Quantity:		
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>				
Comments:					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year



Photograph 1 – Road over Culvert (Looking South)



Photograph 2 – Culvert Barrel



Photograph 3 – Bolts Corrosion at Culvert Soffit



Photograph 4 – Culvert haunches corrosion



Photograph 5 – East Elevation



Photograph 6 – West Elevation



Photograph 7 – Wearing Surface over Culvert (Looking East)



Photograph 8 – Wearing Surface at North Approach



Photograph 9 – Water Stream (Concession Road 11 East Side - Looking East)



Photograph 10 – Water Stream (Concession Road 11 West Side - Looking West)

Inventory Data:

Structure Number	70 (Formerly 34)		
Hwy/Road Name	Concession Road 12		
Structure Location	At the intersection with South Talbot Rd.		
Structure Type	Non-Rigid Frame Open Footing Culvert		
Latitude	42° 11' 38.6874"	Longitude	-82° 53' 8.8074"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	2.45 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	7.60 (m)	Posted Speed	80 No. of Lanes 2
Overall Str. Width	10.10 (m)	AADT	% Trucks
Total Deck Area	18.620 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	7.60 (m)	Detour Length Around Bridge	4.30 (km)
Fill on Structure	0.40 (m)	Direction of Structure	N
Skew Angle	29° (Degrees)	No. of Spans	1

Historical Data:

Year Built	1965	Year of Last Major Rehab.	
Last OSIM Inspection		Last Evaluation	
Last Enhanced OSIM Inspection		Current Load Limit	N/A (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)		Load Limit By-Law #	
Last Underwater Inspection		By-Law Expiry Date	
Last Condition Survey			

Rehab History:

Field Inspection Information:

Date of Inspection	December 16, 2015
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Mostly Cloudy, Afternoon Shower
Temperature	(11/3) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input checked="" type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments	Concrete spalling was indicated at the deck soffit with exposed and corroded reinforcement. Wearing surface was observed with potholes on both road sides over the culvert section, moderate flushing at south approach, and patched strip of approximate area of 4.50 Sq.m.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Condition - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	10.10 m	
Element Name:	Soffit - Inside Boxes		Width:	2.45 m	
Location:			Height:	1.15 m	
Material:	Cast-in-place concrete		Count:		
Element Type:			Total Quantity:	48.0 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		37.0	5.50	5.50
Comments: - Concrete Spalls with exposed, and corroded reinforcement. - Map Cracking at Soffit (East Inlet Side). - Leak at the constuction joint					
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.0/3.0 m	
Element Name:	Inlet Components		Width:	0.30 m	
Location:	East Side		Height:	1.75 m	
Material:	Cast-in-place concrete		Count:	2	
Element Type:	Wingwall		Total Quantity:	8.75 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.75		
Comments: In Good Conditions					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	2.45 m	
Element Name:	Outlet Components		Width:	0.30 m	
Location:	East Side		Height:	0.60 m	
Material:	Cast-in-place concrete		Count:		
Element Type:	Headwall		Total Quantity:	1.45 Sq.m	
Environment:			Limited Inspection	<input type="checkbox"/>	
Protection System:					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.45		
Comments: In Good Conditions					
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Culverts		Length:	3.0 m		
Element Name:	Outlet Components		Width:	0.30 m		
Location:	West Side		Height:	1.75 m		
Material:	Cast-in-place concrete		Count:	2		
Element Type:	Wingwall		Total Quantity:	10.50 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		8.4	2.1		
Comments: - Alkali-Aggregate Reaction at the top of the wingwalls - Minor concrete Spalls at the wingwalls vertical edges.						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Culverts		Length:	2.45 m		
Element Name:	Outlet Components		Width:	0.30 m		
Location:	West Side		Height:	0.60 m		
Material:	Cast-in-place concrete		Count:			
Element Type:	Headwall		Total Quantity:	1.45 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		1.45			
Comments: In Good Conditions						
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Decks		Length:	2.45 m		
Element Name:	Wearing Surface		Width:	7.60 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	18.60 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		12.6	4.0	2.0	
Comments: - Potholes on both sides over. - Approx 4.50 Sq.m of the asphalt surface had been replaced						
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	7.60 m		
Location:	North - South		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	91.20 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		73.2	12.0	6.0	
Comments: - Moderate Flushing at South Approach						
Recommended Work:	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input checked="" type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Growing plants on the East Side, with recommendation to be shaved.						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	6		
Element Type:			Total Quantity:	6		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		6			
Comments: In Good Conditions						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Soffit (Looking South)



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking North)



Photograph 6 – Wearing Surface over Culvert (Looking West)



Photograph 7 – Wearing Surface over Culvert Deck



Photograph 8 – Water Stream (Concession Road 12 West Side – Looking West)



Photograph 9 – Water Stream (Concession Road 12 West Side – Looking West)

Inventory Data:

Structure Number	71 (Formerly 27)		
Hwy/Road Name	Odessa Drive		
Structure Location	At intersection with County Road 42		
Structure Type	Corrugated Steel Pipe		
Latitude	42° 16' 40.7274"	Longitude	-82° 53' 8.9874"
Owner(s)	Town of Tecumseh	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Span Length	1.1 (m)	Road Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Total Deck Length	9.7 (m)	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Overall Str. Width	19.0 (m)	AADT	<input type="text"/> % Trucks <input type="text"/>
Total Deck Area	10.67 (sq.m)	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	9.7 (m)	Detour Length Around Bridge	<input type="text" value="N/A"/> (km)
Fill on Structure	1.1 (m)	Direction of Structure	<input type="text" value="NW"/>
Skew Angle	0° (Degrees)	No. of Spans	<input type="text" value="1"/>

Historical Data:

Year Built	<input type="text" value="1985"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="N/A"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		

Rehab History:

Field Inspection Information:

Date of Inspection	February 1, 2016
Inspector	Hossam Bakr (Dillon Consulting Ltd)
Others in Party	
Access Equipment Used	Camera, Measuring Tape, Measuring Wheel, and Hammer
Weather	Cloudy, Probability of rain 1%
Temperature	1 (6 / -1) Celsius

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None <input checked="" type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work	<input type="checkbox"/> 1 to 5 years <input checked="" type="checkbox"/> 6 to 10 years
Overall Comments	Generally, the structure is in good condition. Patched strip was observed over the culvert section at the south approach. light plant growth was noted at the waterway way on both road sides.
Date of Next Inspection	

Element Data:

Element Group:	Signs	Length:				
Element Name:	Signs	Width:				
Location:		Height:				
Material:		Count:	1			
Element Type:	Stop Sign	Total Quantity:	1			
Environment:		Limited Inspection	<input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>	1				
Comments: - Existing Sign in Excellent Conditions - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual						
Recommended Work:	<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:			
	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year	

Element Group:	Culverts		Length:	19.0 m		
Element Name:	Barrels		Width:	1.1 m (Dia.)		
Location:			Height:			
Material:	Corrugated Steel		Count:			
Element Type:			Total Quantity:	65.7 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		65.7			
Comments: In Good Conditions						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:	East Side		Height:			
Material:			Count:	4		
Element Type:	N/A		Total Quantity:	4		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		4			
Comments: In Good Conditions						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:	East - West Inlets		Height:			
Material:	Masonry		Count:	2		
Element Type:	Hand Laid Riprap		Total Quantity:	2		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input checked="" type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>					
Comments: In Good Conditions						
Recommended Work:		<input type="checkbox"/> Rehab	<input type="checkbox"/> Replace	Maintenance Needs:		
		<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 6-10 years	<input type="checkbox"/> Urgent	<input type="checkbox"/> 1 year	<input type="checkbox"/> 2 year

Element Group:	Decks		Length:	1.1 m		
Element Name:	Wearing Surface		Width:	9.7 m		
Location:			Height:			
Material:	Asphalt		Count:			
Element Type:			Total Quantity:	10.7 Sq.m		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input checked="" type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		10.7			
Comments: In Good Conditions						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Approaches		Length:	6.0 m		
Element Name:	Wearing Surface		Width:	9.7 m		
Location:	North - South		Height:			
Material:	Asphalt		Count:	2		
Element Type:			Total Quantity:	116.4 Sq.m		
Environment:	Bengin		Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input type="checkbox"/>		110.0	6.4		
Comments: Generally, in Good Conditions with a replaced strip at the Southern approach						
Recommended Work:	<input type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1		
Environment:			Limited Inspection	<input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² <input type="checkbox"/> /m <input type="checkbox"/> / each <input type="checkbox"/> / % <input type="checkbox"/> / all <input checked="" type="checkbox"/>		1			
Comments: Excessive plants growth along the water stream at the West side, with recommendation to be shaved						
Recommended Work:	<input checked="" type="checkbox"/> Rehab		<input type="checkbox"/> Replace		Maintenance Needs:	
	<input checked="" type="checkbox"/> 1-5 years		<input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Culvert Barrel



Photograph 3 – East Elevation



Photograph 4 – West Elevation



Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at South Approach



Photograph 7 – Water Stream (County Road 42 North Side - Looking East)



Photograph 8 – Water Stream (County Road 42 North Side - Looking West)

Appendix D

Culvert Condition Index (CCI)

Culverts Condition Index

Table D-1: Culvert Condition Index Range:

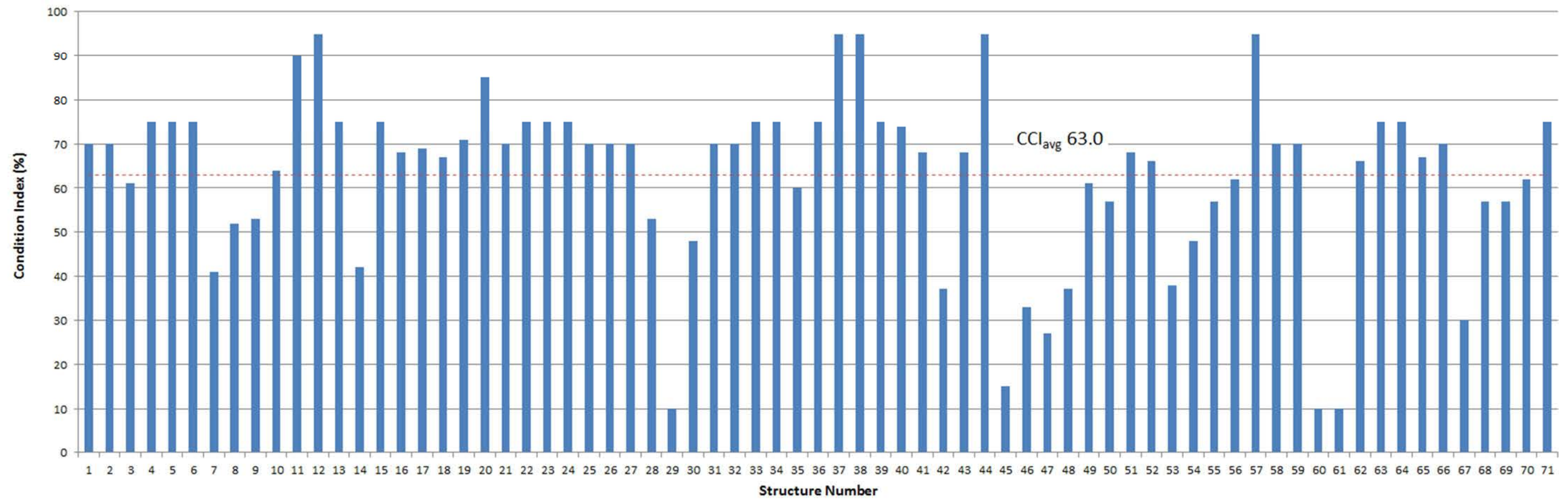
Poor	Fair	Good	Excellent
< 40	40 - 60	60 - 80	> 80

Table D-2: Culvert Condition Index (CCI)

Structure ID	Condition Index (%)	Structure ID	Condition Index (%)	Structure ID	Condition Index (%)
01	70	25	70	49	61
02	70	26	70	50	57
03	61	27	70	51	68
04	75	28	53	52	66
05	75	29	10	53	38
06	75	30	48	54	48
07	41	31	70	55	57
08	52	32	70	56	62
09	53	33	75	57	95
10	64	34	75	58	70
11	90	35	60	59	70
12	95	36	75	60	10
13	75	37	95	61	10
14	42	38	95	62	66
15	75	39	75	63	75
16	68	40	74	64	75
17	69	41	68	65	67
18	67	42	37	66	70
19	71	43	68	67	30
20	85	44	95	68	57
21	70	45	15	69	57
22	75	46	33	70	62
23	75	47	27	71	75
24	75	48	37		

Culvert Condition Index (CCI)

**CORPORATION OF THE TOWN OF TECUMSEH
Culvert Condition Index (CCI)**



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