

2016 Culvert Needs Study

Structures with Spans ≤ 3.0m - Final Report





Our File: 15-2977

October 28, 2016

Corporation of the Town of Tecumseh 917 Lesperance Road Tecumseh, ON N8N 1W9

Attention:

Mr. Phil Bartnik, P.Eng.,

Manager, Engineering Services

Town of Tecumseh 2016 Culvert Needs Study Structures with Spans ≤ 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

Patrick E. Robitaille, P. Eng.

Project Manager

HB:mli

Enclosure



3200 Deziel Drive

Suite 608

Windsor, Ontario

Canada

N8W 5K8

Telephone

519.948.5000

Fax

519.948.5054

Table of Contents

Executive Summary

1.0	Backgro	ound, Purpose, and Methodology	1	
	1.1	Background and Purpose		
	1.2	Methodology	1	
	1.2.1	Visual Inspection	1	
	1.2.2	Definition of Bridges and culverts	2	
	1.2.3	Structures Physical Inventory and Classification	3	
	1.2.4	Visual Site Inspection	7	
	1.2.5	Condition of Elements and Defects	9	
	1.2.6	Timing of Needs	9	
	1.2.7	Additional Investigations	9	
	1.2.8	Material Condition Survey	10	
	1.2.9	Benchmark Probable Construction Costs	10	
	1.2.10	Culvert Condition Index (CCI)	12	
2.0	Discussion of Findings and Capital Needs			
	2.1	Specific Structures: < 1 Year (Immediate) Capital Needs	13	
	2.2	Specific Structures: 1-5 Year Capital Needs	14	
	2.3	Specific Structures: 6-10 Year Capital Needs	19	
	2.4	Roadside Safety	20	
3.0	Program of Work and Study Updating			
	3.1	Program of Work	24	
	3.2	Recommended Structure Improvement	24	
	3.3	Study Updating	25	
4.0	Closure		26	
	Tables			
	Table 1:	Inventory of Culverts	3	
	Table 2: OSIM Element List			
	Table 3:	Culvert Benchmark Probable Costs of Construction	11	
	Table 4:	Culvert Construction Needs Summary	24	



Appendices

- A Location Plans
- B Summary of Construction Needs and Probable Costs
- C OSIM Inspection Forms and Photos
- D Culvert Condition Index (CCI)

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.

Flavio Forest (2015), S Talbot at Walker Culvert Failure, (15-2367), Dillon Consulting Limited.

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.

Culvert Construction Needs Summary

out of Construction (Code Culturally				
Timing	Replacement or Rehabilitation	placement or Rehabilita ti on Roadside Safety		
< 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.)



Definition of Bridges and culverts 1.2.2

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.



Structures Physical Inventory and Classification 1.2.3

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	Туре	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.		
11.B	11.B	Manning Rd.	At intersection with Tecumseh Rd. E.	Precast Rigid Box	East Townline Road Drain
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	Туре	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	Туре	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 Shrev 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



Original Str. ID	Road Name	Location	Туре	Municipal Drain
74	Concession Rd. 9	0.90 km South from South Talbot Rd.	Corrugated Steel Pipe	9th Line Drain
73	Concession Rd. 9	1.75 km South from South Talbot Rd.	Corrugated Steel Pipe	Webster Drain
41	Concession Rd. 9	At intersection with County Rd. 8	Corrugated Steel Pipe	Snake Lane Drain
	Concession Rd. 10	0.25 km South from South Talbot Rd.	Corrugated Steel Pipe	McPherson & J.C. Smith Drain
	Concession Rd. 10	0.65 km South from South Talbot Rd.	Corrugated Steel Pipe	McPherson & J.C. Smith Drain
	Concession Rd. 10	0.80 km South from South Talbot Rd.	Corrugated Steel Pipe	McPherson & J.C. Smith Drain
	Concession Rd. 10	1.0 km South from South Talbot Rd.	Concrete Pipe (East) Corrugated Steel Pipe (West	McPherson & J.C. Smith Drain
	Concession Rd. 10	1.80 km South from South Talbot Rd.	Corrugated Steel Pipe	McPherson & J.C. Smith Drain
36	Concession Rd. 10	At intersection with County Rd. 8	Corrugated Steel Pipe Arch	Colchester Townline Drain
35	Malden Rd.	At intersection with County Rd. 8	Corrugated Steel Pipe	Colchester Townline Drain
37	Concession Rd. 11	At intersection with South Talbot Rd.	Corrugated Steel Pipe	South Talbot Road Drain East
	Concession Rd. 11	0.75 km south from South Talbot Rd.	Clay Pipe (East) - Big O (West)	East McPherson & Santo Drain
	Concession Rd. 11	1.0 km south from South Talbot Rd.	Corrugated Steel Pipe	East McPherson & Santo Drain
	Concession Rd. 11	1.3 km south from South Talbot Rd.	Corrugated Steel Pipe	East McPherson & Santo Drain
33	Concession Rd. 11	At intersection with County Rd. 8	Corrugated Steel Pipe	Colchester Townline Drain
34	Concession Rd. 12	At intersection with South Talbot Rd.	Non-Rigid Open Footing Culvert	South Talbot Road Drain East
27	Odessa Drive	At intersection with County Road 42	Corrugated Steel Pipe	Klondyke & Branch Drains
	74 73 41 36 35 37 33 34	Str. ID 74 Concession Rd. 9 73 Concession Rd. 9 41 Concession Rd. 9 Concession Rd. 10 Concession Rd. 10 Concession Rd. 10 Concession Rd. 10 36 Concession Rd. 10 35 Malden Rd. 37 Concession Rd. 11 Concession Rd. 11 Concession Rd. 11 Concession Rd. 11 33 Concession Rd. 11 34 Concession Rd. 12	Str. ID Road Name Concession Rd. 9 0.90 km South from South Talbot Rd. 73 Concession Rd. 9 1.75 km South from South Talbot Rd. 41 Concession Rd. 9 At intersection with County Rd. 8 Concession Rd. 10 0.25 km South from South Talbot Rd. Concession Rd. 10 0.80 km South from South Talbot Rd. Concession Rd. 10 1.0 km South from South Talbot Rd. Concession Rd. 10 1.80 km South from South Talbot Rd. 36 Concession Rd. 10 At intersection with County Rd. 8 37 Concession Rd. 11 At intersection with South Talbot Rd. Concession Rd. 11 1.0 km south from South Talbot Rd. 37 Concession Rd. 11 At intersection with South Talbot Rd. Concession Rd. 11 1.0 km south from South Talbot Rd. Concession Rd. 11 1.0 km south from South Talbot Rd. Concession Rd. 11 1.3 km south from South Talbot Rd. 38 Concession Rd. 11 At intersection with County Rd. 8 39 Concession Rd. 11 At intersection with County Rd. 8 At intersection with Talbot Rd. Concession Rd. 11 At intersection with County Rd. 8 At intersection with County Rd. 8	Type Concession Rd. 9 0.90 km South from South Talbot Rd. Corrugated Steel Pipe

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



Element Group	Element Name	Units
	Wingwalls	Sq.m.
	Bearings	Each
	Shafts/Columns/Pile Bents	Sq.m.
Piers	Caps	Sq.m.
	Bearings	Each
Potaining Walls	Walls	Sq.m.
Retaining Walls	Barrier Systems on Walls	Sq.m.
	Inlet Components	Sq.m.
Culverts	Outlet Components	Sq.m.
	Barrels	Sq.m.
Foundations	Foundation (below ground level)	N/A
Fblt - 0	Streams and Waterways	All
Embankments & Streams	Embankments	Each
Streams	Slope Protection	Each
Signs	Signs	Each
	Wearing Surface	Sq.m.
	Approach Slabs	Sq.m.
Approaches	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.



Condition of Elements and Defects 1.2.5

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.

Timing of Needs 1.2.6

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.



Material Condition Survey 1.2.8

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.

Benchmark Probable Construction Costs 1.2.9

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

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.

L.S.

\$5,000.00

Camera Inspection, Review, and Reporting



- 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.



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.

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

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

2.0

The structure was built in 1965 and is a 2.4 m. single – span cast-in-place concrete non-rigid footing frame culvert. Severe open 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 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 springe line.

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





Specific Structures: 1-5 Year Capital Needs 2.2

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 nonrigid 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 springe 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 springe 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 southeast 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.





Specific Structures: 6-10 Year Capital Needs 2.3

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 by 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.

is recommended to anticipate 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.



Roadside Safety 2.4

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. 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 11

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 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.



Program of Work and Study Updating

Program of Work 3.1

3.0

3.2

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**

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	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.

Study Updating 3.3

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.



4.0 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.

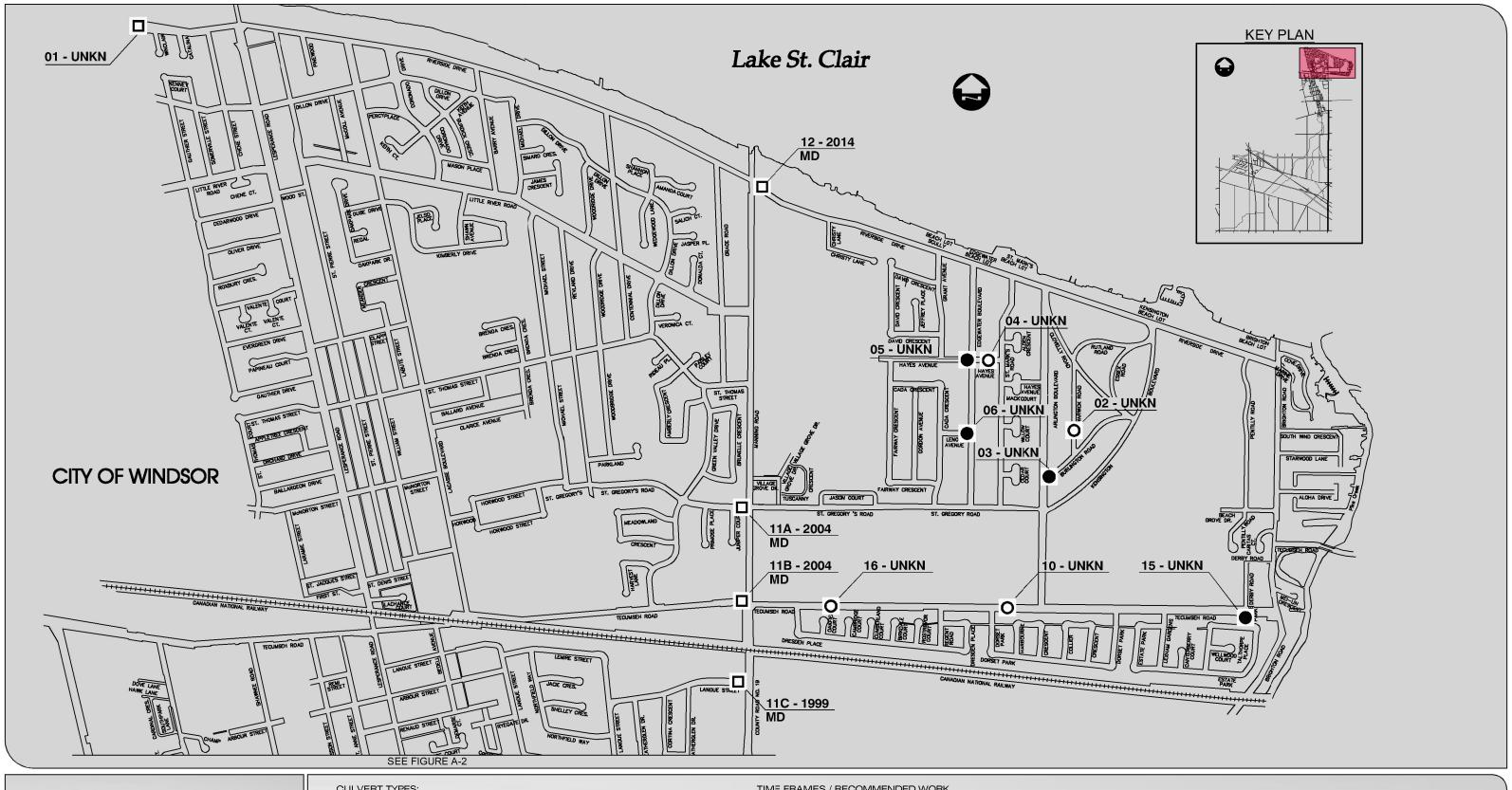
Project Manager

Hossam Bakr, E.I.T.

Appendix A

Location Plans







2016 Culvert Needs Study Structures with Spans ≤ 3.0 m

STRUCTURE LOCATIONS

FIGURE A-1



CULVERT TYPES:

NO ACCESSIBILITY
CORRUGATED STEEL PIPE ARCH
CONCRETE BOX CULVERT

☐ CONCRETE OPEN FOOT RIGID FRAME

TIME FRAMES / RECOMMENDED WORK

< 1 YEAR REHAB OR REPLACE

1 TO 5 YEARS REHAB OR REPLACE

ROADSIDE SAFETY CONCERN

6 TO 10 YEARS REHAB OR REPLACE

STRUCTURE YEAR CONSTRUCTED NUMBER

00 - 0000

MD MUNICIPAL DRAIN

File Location:

c:\projectwise\working directory\active\32drb\d0250860\152977-00-fig-con_draft_augustreport.dwg October, 21, 2016 9:21 AM

CONCRETE PIPE

THIS DRAWING IS FOR INFORMATION PLRPOSE ONLY.
IT INDICATES APPROXIMATE LOCATION: FOR THE INSPECTED
CULVERTS AND SHOULD BE SURVEYEDFOR EXACT LOCATIONS.
CREATED BY: HMB
CHECKED BY: PER
DESIGNED BY: NCO





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





STRUCTURE LOCATIONS

FIGURE A-2



☐ CONCRETE OPEN FOOT RIGID FRAME CONCRETE PIPE MAP/DRAWING INFORMATION c:\projectwise\working directory\active\32hmb\d0250860\152977-00-fig-con_draft_august report.dwg October, 26, 2016 2:05 PM

THIS DRAWING IS FOR INFORMATION PLRPOSE ONLY.
IT INDICATES APPROXIMATE LOCATIONS FOR THE INSPECTED
CULVERTS AND SHOULD BE SURVEYEDFOR EXACT LOCATIONS. CREATED BY: HMB CHECKED BY: PER DESIGNED BY: NCO

6 TO 10 YEARS REHAB OR REPLACE



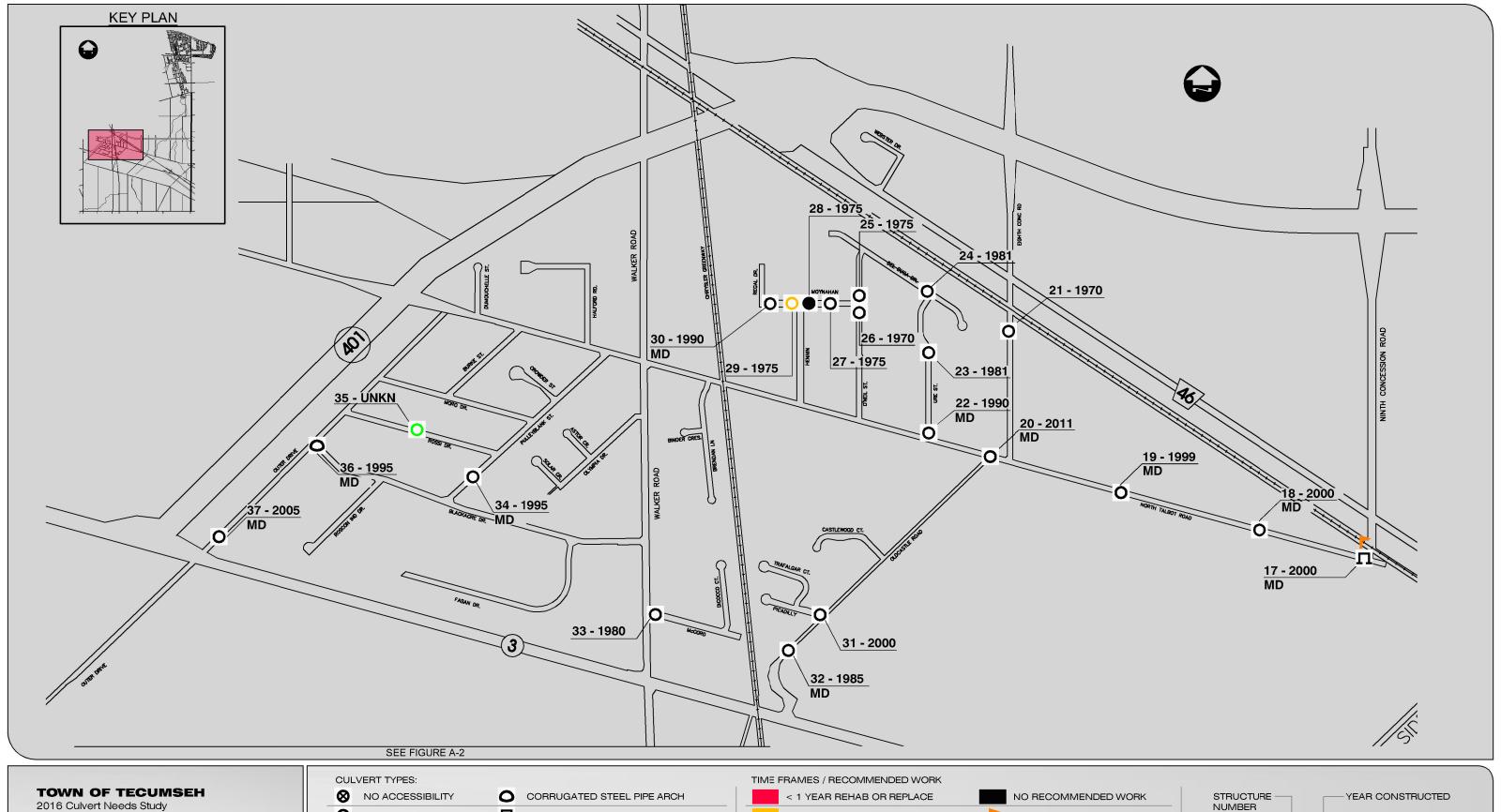


00 - 0000

/MD]

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

MUNICIPAL DRAIN





2016 Culvert Needs Study Structures with Spans ≤ 3.0 m

STRUCTURE LOCATIONS

FIGURE A-3



c:\projectwise\working directory\active\32drb\d0250860\152977-00-fig-con_draft_augustreport.dwg October, 21, 2016 9:21 AM

CONCRETE PIPE

CORRUGATED STEEL PIPE

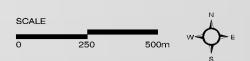
CONCRETE BOX CULVERT

☐ CONCRETE OPEN FOOT RIGID FRAME

MAP/DRAWING INFORMATION THIS DRAWING IS FOR INFORMATION PLRPOSE ONLY.
IT INDICATES APPROXIMATE LOCATIONS FOR THE INSPECTED
CULVERTS AND SHOULD BE SURVEYEDFOR EXACT LOCATIONS. CREATED BY: HMB CHECKED BY: PER DESIGNED BY: NCO

1 TO 5 YEARS REHAB OR REPLACE

6 TO 10 YEARS REHAB OR REPLACE



ROADSIDE SAFETY CONCERN

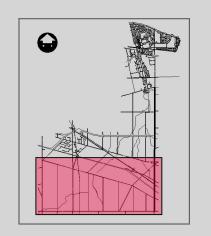


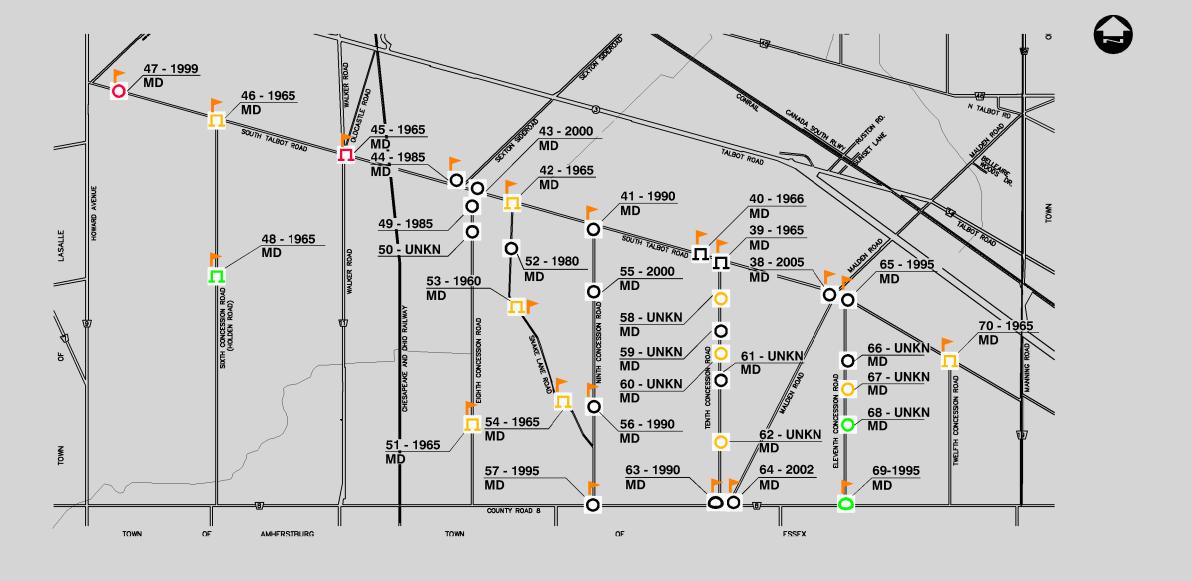
00 - 0000

∕MD]

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

MUNICIPAL DRAIN





TIME FRAMES / RECOMMENDED WORK

< 1 YEAR REHAB OR REPLACE

1 TO 5 YEARS REHAB OR REPLACE

6 TO 10 YEARS REHAB OR REPLACE



STRUCTURE LOCATIONS FIGURE A-4



File Location:
c:\projectwise\working
directory\active\32hmb\d0250860\152977-00-fig-con_draft_august report.dwg
October: 21. 2016 12:09 PM

CORRUGATED STEEL PIPE CONCRETE BOX CULVERT

CORRUGATED STEEL PIPE ARCH

CONCRETE OPEN FOOT RIGID FRAME

CULVERT TYPES:

NO ACCESSIBILITY

CONCRETE PIPE

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



NO RECOMMENDED WORK

ROADSIDE SAFETY CONCERN



STRUCTURE -

NUMBER



MD MUNICIPAL DRAIN

00 - 0000

YEAR CONSTRUCTED

Appendix B



	<i>y</i> 0. 00	istraction recoust	and Probable Costs				Dimer	nsions				Capital Needs / Construction C	osts	
Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Туре	Width (m)	Height (m)	Dia. (m)	Length (m)	Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	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		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		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			No work is necessary		
05	05	Hayes Ave.	Western intersection with Edgewater Blvd.	N/A	Concrete Pipe			0.25	21.0		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		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		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

Summa	y of Cor	struction Needs	and Probable Costs	-	_									
							Dime	nsions				Capital Needs / Construction Co	sts	
Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Туре	Width (m)	Height	Dia. (m)		Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Recommended Work	Timing of Recommended Work Item	Estimated Construction Cost for Recommended Work
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		Item
11.A 11.B 11.C	11.B	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 work is necessary		
13	24	Sylvestre Dr.	At Exit from County Rd. 22	Cyr Drain Outlet	Corrugated Steel Pipe			0.7	21.0	2002	no improvements necessary. 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		

Summai	<u>y of Con</u>	<u>istruction Needs</u>	and Probable Costs											
							Dime	nsions				Capital Needs / Construction	Costs	
Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Туре	Width (m)	Height (m)	Dia. (m)		Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	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)		

Sammar	y or cons	struction recease	and Propable Costs				Dimen	nsions				Capital Needs / Construction Co	osts	
	Original Structure ID	Road/Hwy	Location	Municipal Drain	Туре	Width (m)	Height		Length (m)	Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	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		

Summa	y or corrs	truction Needs a	and Probable Costs				Dimer	nsions				Capital Needs / Construction Costs
Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Туре	Width (m)	Height (m)		Length	Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Recommended Work Recommended Work Recommended Work 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	outh Talbot Rd.	0.10 km west from Concession Rd. 10	West Branch of Deslisle 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) 1 - 5 Years \$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 Estimated full replacement cost (for comparison purpose). (possible cost saving if combined with Structures Nos. 53 and 54)
43	67	outh 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

Julillia	y 01 001	I Struction Necus	and Probable Costs				Dimei	nsions				Capital Needs / Construction Costs	
Recent Structure ID	Original Structure ID		Location	Municipal Drain	Туре	Width (m)	Height (m)	Dia.	Length (m)	Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Recommended Work Recommended Work 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		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		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		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		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 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		no improvements necessary. 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 proxity 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) 1 - 5 Years Material testing allowance Asphalt full replacement (Related to deck repairs) & Waterproofing Concrete repairs Embankments & Streams (Slope & Scour protection) Total Estimated full replacement cost (for comparison purpose)	\$60,000.00 \$4,000.00 \$30,000.00 \$30,000.00 \$9,000.00 \$133,000.00 \$660,000.00

Julililia	li y or con	3truction recease	and Probable Costs			Dimensions				Capital Needs / Construction Cos	S		
Recent Structure ID	Original Structure ID	Road/Hwy	Location	Municipal Drain	Туре	Width (m)	Height (m)	Dia. Lengt	Original h Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	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

Jammar	<u>y 01 001</u>	istruction recess	and Probable Costs				Dime	nsions				Capital Needs / Construction Costs	
Recent Structure ID	Original Structure ID		Location	Municipal Drain	Туре	Width (m)	Height (m)	Dia.		Original Year of Constructio	Comments (Including Routine Maintenance and Roadside Safety)	Timing of Recommended Work Work Item	led Cost for
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 1 - 5 Ye (based upon drainage report recommendations)	ars \$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 Ye	ars \$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 Ye	ars \$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 Ye	ars \$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	

Jumman	y or cor		and Probable Costs				Dimo	nolono				Canital Needs / Canataustian Costs		
Decemt	Original						Dime	ensions	1	Original		Capital Needs / Construction Costs		Estimated
Recent Structure ID	-		Location	Municipal Drain	Туре	Width (m)	Height (m)	Dia.		Original Year of Construction	Comments (Including Routine Maintenance and Roadside Safety)	Recommended Work	Timing of Recommended Work Item	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				12.6	Unknown	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) Material testing allowance Asphalt full replacement (Related to deck repairs) & Waterproofing Concrete repairs Embankments & Streams (Slope/Erosion protection) Roadside safety improvements (where feasible)	1 - 5 Years Total	\$60,000.00 \$4,000.00 \$24,000.00 \$22,000.00 \$11,000.00 \$25,000.00
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.	Estimated full replacement cost (for comparison purpose) No work is necessary		\$560,000.00

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 Lesperar	nce Koad	
Structure Type			
Latitude	42° 19' 57"		Longitude -82° 53' 45"
Owner(s)	Town of Tecum	seh	Heritage □ Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	4.6	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit No Truck (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:											
Date of Inspection	Janu	ary 22, 2016										
Inspector	Hos	sam Bakr (Dill	on Consulting I	Ltd)								
Others in Party												
Access Equipment Used	Cam	era. Measurins	g Tape, Measur	ing Wheel, and	l Hammer							
Weather		ny, Probability		8,								
Temperature		2/-8) Celsius	0114111170									
Tomporuum	0 (27 0) 0015145										
Overall Structure Not	tes:											
Recommended Work on S	Structure N	one	☐Minor Rehab		jor Rehab.	Replace						
Timing of Recommended	Work 🔲	□1 to 5 years □6 to 10 years										
Overall Comments	A bus seale Septe	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												
	<u> </u>											
TI												
Element Data:												
Element Group:	Signs		Length:									
Element Name:	Signs		Width:									
Location:			Height:									
Material:			Count:	2								
Element Type:	Stop Sign / No Truck		Total Quar									
Environment:			Limited In	spection								
Protection System:	TT '		G 1	г.	D v	Perform.						
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ all ☐	Exc. 2	Good	Fair	Poor*	Deficiencies						
Comments: In Excellent Co	•											
Recommended Work:	Rehab	□Repl	ace	Maintenance	e Needs:							
	□1-5 years			Urgent	□1 year	☐2 year						
		<u> </u>										



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 Hwy/Road Name	02 (Formerly 18) Warwick Road		
Structure Location	0.10 km North from Burling	ton Road	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 19' 4.116"		Longitude -82° 51' 15.912"
Owner(s)	Town of Tecums	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □Desig./not List □Desig. & List
Span Length	0.30	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection	1		Last Evaluation
Last Enhanced OSIM 1	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Survey	у		
Rehab History:			

Field Inspection Infor	mation:							
Date of Inspection	Fe	ebruary 2, 2016						
Inspector	Н	ossam Bakr (Di	llon Consulti	ng Lt	td)			
Others in Party								
Access Equipment Used	C	amera, Measurii	ng Tape, Me	asurin	ng Wheel, a	and H	lammer	
Weather	Fo	og, Probability o	of precipitation	on 619	%			
Temperature	-1	(6 / 4) Celsius						
Overall Structure Not	tes:							
Recommended Work on Structure None			☐Minor Re	hab.		Majo	r Rehab.	Replace
Timing of Recommended	Work	□1 to 5 years □6 to 10 years						
Overall Comments Limited inspection - Existing was observed with medium p								
Date of Next Inspection								
Element Data:								
Element Data.								
Element Group:	Signs		Length	:				
Element Name:	Signs		Width:					
Location:			Height					
Material:			Count:		0			
Element Type: Environment:	No Signs		Total (•	1		
Protection System:			Limite	ı msp	pection \square	l		Perform.
Condition Data:	Units	Exc.	Good		Fair		Poor*	Deficiencies
$m^2 \square / m$	□/ each ☑/ % □/ a	11 🗆						
Comments: A speed limit si	ign is located at both ent	rance of the road						
Recommended Work:	Rehab	□Rep	olace	Maintenance Needs:			leeds:	
	1-5 yea		0 years	Ī	☐Urgent ☐1 year ☐			□2 year

Element Group:		Culverts		Length:		5.0 m		
Element Name:		Barrels		Width:		0.3 m (D	Dia.)	
Location:				Height:				
Material:		Corrugated Steel		Count:				
Element Type:				Total Qua	intity:	4.7 Sq.m	1	
Environment:				Limited In	nspection	V		
Protection System	ı :					Perform.		
C IV D		Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	n²☑/m[\square / each \square / % \square / all \square						
Comments: Limite	ed Inspecti	ion - Covered Manhole at Eas	st Inlet - Accessib	le portion appea	red to be in	good cond	lition.	
Recommended V	Work:	Rehab	Replac	e	Mainte	enance N	Needs:	
		☐1-5 years	□6-10 y		□Urge		☐1 year	☐2 year
		што учило					_	ш- учи
Element Group:		Culverts		Length:		m		
Element Name:		Inlet Components		Width:		m		
Location:		East Side	Height:		m m			
Material:		Cast-in-place concrete	Count:		111			
Element Type:		Cast-III-place colletete		Total Quantity: Sq.m				
Environment:			Limited Ir		✓			
Protection System				Limited ii	ispection			Perform.
Trotection Bystein		Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	2[-]/[☐/ each ☐/ % ☐/ all ☐	Exc.	Good	Tal	1	1001	Deficiencies
L								
Comments: Limite	ed Inspecti	on - Covered Manhole						
Recommended V	Work	Rehab	Replac	20	Mainte	enance N	Needs:	
Recommended v	WOIK.		□ Kepiac □ 6-10 y					П2 ггост
		□1-5 years	шо-10 <u>у</u>	ears	Потде	111	□1 year	☐2 year
		T		Т				
Element Group:		Embankments & Streams		Length:				
Element Name:		Embankments		Width:				
Location:				Height:				
Material:				Count:		3		
Element Type:				Total Qua		3		
Environment:				Limited In	nspection		T	
Protection System	1:		1		1	-		Perform.
Condition Data:		Units	Exc.	Good	Fai	r	Poor*	Deficiencies
n	n²□/m [3				
Comments: In Goo	od Conditi	on						
Recommended V								
	Work:	☐ Rehab	□Replac	e	Mainte	enance N	Needs:	
Tree of finite lided v	Work:	☐ Rehab	☐Replac			enance N	L L	□ 2 vear
	Work:	☐ Rehab ☐1-5 years	□Replac □6-10 y		Mainte		Needs: 1 year	2 year
	Work:						L L	2 year

Element Group:	Decks	ecks			0.3 m				
Element Name:	Wearing Surface		Width:		5.0 m				
Location:			Height:						
Material:	Asphalt		Count:						
Element Type:			Total Quar	ntity:	1.5 Sq.:	m			
Environment:			Limited Inspection						
Protection System:				_			Perform.		
Condition Data:	Units	Exc.	Good	Fair		Poor*	Deficiencies		
m ² /m	□/ each □ / % □ / all □			1.5	5				
Comments: - Moderate Alli - Moderate Rav									
Recommended Work:	Rehab	Replac	ce	Maintenance Needs:					
	□1-5 years	□1-5 years □6-10 year			nt	☐1 year	☐2 year		
	-								
Element Group:	Approaches		Length:		3.0 m				
Element Name:		Wearing Surface							
Location:		North - South			5.0 m				
Material:	Asphalt	Height:		2					
Element Type:	rispitat	Total Quar	ntity:	ım					
Environment:	Moderate	Limited In		30.0 Sq	<u> </u>				
Protection System:	Perform.								
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: $\frac{1}{m^2 \mathcal{L} /m}$	\square / each \square / % \square / all \square		5.0	20.		5.0			
Comments: - Moderate Alli, - Moderate Rav	gator cracks				-	1			
Recommended Work:	☐ Rehab	□Replac	ee	Mainte	Needs:				
	□1-5 years	□6-10 y	ears	rs Urgent			☐2 year		
	***************************************			☐ Urgent ☐ 1 year ☐ 2 year Asphalt repairs					
Element Group:	F 1 1		Lanath	•					
Element Name:	Embankments & Streams Streams and Waterways		Length: Width:						
Location:	East - West		Height:						
Material:	East - West		Count:		1				
Element Type:			Total Quar	ntity:	1				
Environment:			Limited In		П				
Protection System:			Limited in	ispection	<u> </u>		Perform.		
Trotection System.	Units	Exc.	Good	Fai		Poor*	Deficiencies		
Condition Data:	\square / each \square / % \square / all \square			га	1	F001 ·	Deficiencies		
Comments: Covered water S			1						
Recommended Work:	☐ Rehab	Replac	ee	Mainte	enance	Needs:			
	☐1-5 years	☐ 6-10 y		Urge	nt	☐1 year	2 year		
	<u> </u>			8-					



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:			
St. Marilan			
Structure Number	03 (Formerly 17)		
Hwy/Road Name	Burlington Road		
Structure Location	At intersection with Arlington	on Blvd.	
Structure Type	Concrete Pipe Culvert		
Latitude	42° 18' 58.6074"		Longitude -82° 51' 20.4834"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.25	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	9.5	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	12.5	(m)	AADT % Trucks
Total Deck Area	2.375	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		Februa	ary 2, 2016						
Inspector		Hossa	m Bakr (Dil	llon (Consulting I	Ltd)			
Others in Party									
Access Equipment Used		Camer	ra, Measurir	ng Ta	npe, Measuri	ng Whe	el, and	Hammer	
Weather		Fog, P	robability o	of pre	cipitation 6	1%			
Temperature		-1 (6 /	4) Celsius						
		· ·							
O II C4 N4									
Overall Structure Not	es:								
Recommended Work on S	ecommended Work on Structure None Minor Rehab				Iinor Rehab.		□мај	or Rehab.	Replace
Timing of Recommended	Work	☑1 to 5 years ☐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	Date of Next Inspection								
<u> </u>		l .							
Element Data:									
Element Group:	Signs				Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material:					Count:		1		
Element Type:	Stop Sign				Total Quan	tity:	1		
Environment:					Limited Ins	spection			
Protection System:									Perform.
Condition Data:	Units		Exc.		Good	Fai	ir	Poor*	Deficiencies
L.;	□/ each ☑/ % □	J∕ all⊔	1						
Comments: In Excellent Con	nditions								
Recommended Work:	□Rel	hab	□Rep	lace		Maint	enance		
	□1-5	years	□6-10) yea	rs	□Urge	ent	□1 year	☐2 year

Element Group:	Culverts	ulverts		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 Qua	ntity:	9.80 Sc	q.m		
Environment:			Limited Ir	spection				
Protection System:							Perform.	
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		8.0			1.80		
Comments: Split in the culv	vert barrel section at the road	edges, causing a h	nole at the road su	urface at the	North e	dge of the culvert.		
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y	ears	Urge	nt	□1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	North - South		Height:					
Material:	Ttorur Boutir		Count:					
Element Type:		Total Quan			1			
Environment:								
Protection System:			Limited Ir	вресноп			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \square / m}$	□/ each □ / % □/ all □			1 41	1	1 001		
Comments: In Excellent Co				- L				
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y	ears ears	Urge	☐Urgent ☐1 year		☐2 year	
	-	-				-	-	
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:			Height:					
Material:			Count:		4			
Element Type:			Total Qua	ntity:	4			
Environment:			Limited Ir					
Protection System:				•			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \Pi/m}$	□/ each □/ % □/ all □	4						
Comments: In Excellent Co	,_	·						
Recommended Work:	Rehab	Repla	ce	Mainte	enance	Needs:		
	☐1-5 years	□6-10 y		Urge		□1 year	2 year	
				80	-			

Element Group:	Decks	Decks			0.4 m				
Element Name:	Wearing Surface		Width:						
Location:			Height:						
Material:	Asphalt		Count:						
Element Type:			Total Qua	ntity:	m				
Environment:	Moderate		Limited In	spection					
Protection System:							Perform.		
G III D	Units	Exc.	Good	Fair		Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square			2.0		1.8			
Comments: - Wide map cra - Open pothole	cking over the culvert section (Nor	rth Edge)		1	'				
Recommended Work:	Rehab	☑ Replace	e	Mainte	enance	Needs:			
		☐1-5 years ☐6-10 years		Urge		□1 year	☐2 year		
Element Group:	Ammoochoo		Length:		6.0				
Element Name:	Approaches Wearing Surface	Width:		6.0 m 9.5 m					
Location:	East - West	Height:		9.3 III					
Material:	Asphalt	Count:		2					
Element Type:	Aspilan	Total Qua	ntity:	la m					
Environment:			•	114.0 \$	94.111				
Protection System:									
Trotection System.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data:	\square / each \square / $\%$ \square / all \square		50.0	50.0		14.0	Deficiencies		
Comments: Potholes, and w				1 20		N. 1			
Recommended Work:	Rehab	Replac							
	☑ 1-5 years	□6-10 у	ears	☐Urge	nt	☐1 year	☐2 year		
Element Group:			Length:						
Element Name:			Width:						
Location:			Height:						
Material:			Count:						
Element Type:			Total Qua	ntity:					
Environment:			Limited In	spection					
Protection System:							Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: $\frac{1}{m^2 \square / m}$	□/ each □/ % □/ all □								
Comments:		,		1	'				
Recommended Work:	Rehab	Replac	ee	Maintenance Needs:					
	☐1-5 years	☐ 6-10 y		Urge	Urgent 1 y		2 year		
				3-					



Photograph 1 – Road over Culvert (Looking West)



Photograph 2 – Culvert Barrel



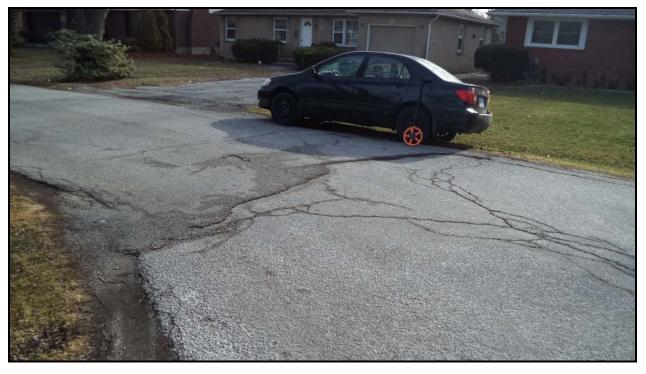
Photograph 3 – North Elevation



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:			
Constant Name has			
Structure Number	04		
Hwy/Road Name	Hayes Avenue		
Structure Location	Eastern intersection with Ed	gewater Blvd.	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 19' 12.648"		Longitude -82° 51' 31.3194"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	0.4	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	9.0	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	20.0	(m)	AADT % Trucks
Total Deck Area	3.600	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:									
Date of Inspection		Februa	ary 2, 2016							
Inspector			<u> </u>		Consulting L	td)				
_		1108841	III Daki (Di	illoli C	Olisuitilig L	<i></i>)				
Others in Party										
Access Equipment Used		Camer	a, Measurii	ng Ta _l	pe, Measuri	ng Whe	el, and	Hammer		
Weather		Fog, P	robability o	of pred	cipitation 61	1%				
Temperature		-1 (6 /	4) Celsius							
Overall Structure Not	es:									
Recommended Work on Structure			ØM	inor Rehab.		□мај	or Rehab.	Replace		
Timing of Recommended Work □1 to 5 years □6 to 10 year				to 10 years						
Overall Comments Existing manholes with cast iron cover at the northern inlet causing limited inspection. Wearing was observed with medium map cracking, potholes and isolated cracks. The wearing surface dextend over the culvert section and along both approaches.										
Date of Next Inspection										
Element Data:										
	T									
Element Group: Element Name:	Signs				Length: Width:					
Location:	Signs				Height:					
Material:					Count:		1			
Element Type:	Stop Sign				Total Quan	tity:	1			
Environment:					Limited Ins					
Protection System:									Perform.	
Condition Data: ${m^2 \prod / m}$	Units ☐/ each ☑/ % ☐	/ all□	Exc.		Good	Fai	ir	Poor*	Deficiencies	
Comments: In Excellent Co		, 411								
Recommended Work:	□Reh	nah.	□Rep	21000		Maint	ananca	nongo Naoda:		
Recommended WOIK:	□ Rei			0 year				1 year	☐2 year	
		<i>y</i>								

Element Group:	Culverts	ulverts		Length:		20.0 m		
Element Name:	Barrels		Width:		0.4 m (l	Dia.)		
Location:			Height:					
Material:	Corrugated Steel		Count:					
Element Type:			Total Quar	ntity:	25.1 Sq	ı.m		
Environment:			Limited In	spection	2			
Protection System:							Perform.	
C - 1'd' - Data	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Condition Data: $m^2 \square / m \square$	\square / each \square / % \square / all \square		25.1		İ			
Comments: Limited Inspects	ion - Covered Manhole at No	rth				•		
D	□ Dahah			T 3.6 sint		3.7 1		
Recommended Work:	Rehab	Replac			enance			
	□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	2 year	
			Length:		-			
Element Group:	Culverts				m			
Element Name:	Inlet Components		Width:		m			
Location:	North Side	Height: Count:		m				
Material:	Corrugated Steel							
Element Type:	Rounded Manhole	Rounded Manhole			Sq.m			
Environment:	<u> </u>	Limited Inspection						
Protection System:	<u> </u>			 	Т		Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² m/m	□ / each □ / % □ / all □							
Comments: Limited Inspecti	ion - Covered Manhole			_	_	_		
~ 1 1XX 1				T 3.5 .		· · ·		
Recommended Work:	Rehab	Replac						
	☐1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:	South Outlet		Height:		Ī			
Material:			Count:		2			
Element Type:			Total Quar	ntity:	2			
Environment:			Limited In	spection				
Protection System:							Perform.	
C 22 D	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		2	†				
Comments: In Good Condition		L		<u>.I</u>	1			
Recommended Work:	□ Dahah	□ Domlo.		T Moint	enance	Maada		
Recommended work.	Rehab	Replac						
	☐1-5 years	□ 6-10 y	ears	Urge	nt	☐1 year	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 Quar	ntity:	3.6 Sq.m	1	
Environment:	Moderate	-	Limited In		П		
Protection System:				<u></u>			Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data:	\square / each \square / % \square / all \square	EAC.	1.0	2.6		1 001	20110101010
<u> </u>			1.0	2.0	<u>, </u>		
Comments: - Medium Long	itudinal and Transverse crack	is.					
Recommended Work:	✓ Rehab	— Damlaa		Mainte	enance N	Jaada	
Recommended work:		Replace					По
	∠ 1-5 years	□ 1-5 years		Urge	nt	□1 year	☐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 Quar	ntity:	80.40 Sq	ı.m	
Environment:	Moderate		Limited In	spection			
Protection System:							Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: m ² [r]/m	\square / each \square / % \square / all \square		18.0	50.0		12.40	
					,	12.40	
Comments: - Medium Long		is.	- Map cracking	at WBL			
- Pothole at the	WBL						
Recommended Work:	✓ Rehab	Replace	<u> </u>	Mainte	enance N	Jeeds:	
Recommended work.	☑1-5 years	☐6-10 ye				1 year	☐2 year
	■1-3 years	⊔0-10 ye	ars	□Urgent		□1 yeai	□2 yeai
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:		 		
Location:	•		Height:		 		
Material:	North - South		Count:				
			Total Quar		1		
Element Type:					1		
Environment:			Limited In	spection			
Protection System:	<u> </u>			T			Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² □/m	□/ each □ / % □ / all ☑		1				
Comments: Covered water s	stream, North from Hayes Av	/enue					
	•						
Recommended Work:	☐ Rehab	Replace	3	Mainte	enance N	Needs:	
	☐1-5 years	☐ 6-10 ye	ars	Urge	nt	☐ 1 year	2 year
					111		
				L Cigo	110	ш - , очи	ш = учи



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		Edagmeter Dlyd	
	Eastern of intersection with	Edgewater Divu.	
Structure Type	Concrete Pipe Culvert		Y 2: 1 000 511 00 111111
Latitude	42° 19' 12.6834"		Longitude -82° 51' 32.1114"
Owner(s)	Town of Tecum	seh	Heritage Designation: Not Cons. Cons./not App. List/not Desig Desig./not List Desig. & List
Span Length	0.25	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	10.3	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	21.0	(m)	AADT % Trucks
Total Deck Area	2.575	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
		,	
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection			Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Info	rmation:								
Date of Inspection		Februs	ary 2, 2016						
				lon Cons	ultina I	. +4)			
Inspector		Hossa	m Bakr (Dil	ion Cons	ulting I	<u>الله)</u>			
Others in Party									
Access Equipment Used		Camer	ra, Measurin	ng Tape,	Measur	ing Whe	el, and	Hammer	
Weather		Fog, P	robability o	f precipi	ation 6	1%			
Temperature		-1 (6 /	4) Celsius						
Overall Structure Notes:									
Overan Structure 1400									
Recommended Work on	Structure	□Noı	ne	Minor	Rehab		□мај	jor Rehab.	Replace
Timing of Recommended	l Work	☑ 1 to	5 years	□6 to 1) years				
Overall Comments Existing manholes with cast iron cover a									
		severely cracked. The wearing surface deficiencies extend over the culvert section and along both approaches.							
Date of Next Inspection									
Element Data:									
Element Data:									
Element Group:	Signs			Ler	gth:				
Element Name:	Signs			Wie					
Location:					ght:				
Material:				Cor			1		
Element Type:	Stop Sign				al Quar	•	1		
Environment:				Lin	nited In	spection			1
Protection System:				1		ı		T	Perform.
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐	/ all□	Exc.	Go	od	Fai	ir	Poor*	Deficiencies
Comments: In Excellent Co						I			1
D 1 - 1 W/1-		1	Пр	1		Marina		Needs:	
Recommended Work:	□ Reh		□Rep) years		Urge		Needs: ☐1 year	☐2 year
	<u> </u>	, cars	O 10	, , , , , , , , , , , , , , , , , , , ,		Lorge	·····	Li year	<u> </u>

Element Group:	Culverts		Length:	Length:		21.0 m			
Element Name:	Barrels	Width:	Width:		0.25 (Inner) / 0.40 (Outer) m (Dia.)				
Location:			Height:						
Material:	Precast concrete		Count:						
Element Type:	Concrete Pipe Culvert		Total Quar	ntity:	16.5 Sq	ı.m			
Environment:			Limited In	spection	V				
Protection System:							Perform.		
C - I'd - Data	Units	Exc.	Good	Fair		Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each□/ %□/ all□		16.5						
Comments: Limited Inspect	ion - Covered Manhole at No	rth			•				
Recommended Work:	— □ Rehab	Rehab Replace			enance i	Needs:			
Trecommended (1 office	☐1-5 years	□6-10 y		Urge		1 year	☐2 year		
	Пт 3 уста		Cars		П		<u> </u>		
E1 C	0.1		T		т —				
Element Group:	Culverts		Length:		m				
Element Name:	Inlet Components		Width:		m				
Location:	North Side		Height:		m				
Material:	Cast-in-place concrete	Count:	414	-					
Element Type:	Rounded Manhole	Total Quar	•	Sq.m					
Environment:	Limited Inspection								
Protection System:	** •			Т			Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
m²Ľ/m∣	□/ each □/ % □/ all □								
Comments: Limited Inspect				<u> </u>					
Recommended Work:	Rehab	Replac							
	□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year		
Element Group:	Embankments & Streams		Length:						
Element Name:	Embankments		Width:						
Location:	South Outlet		Height:						
Material:			Count:		2				
Element Type:			Total Quar	ntity:	2				
Environment:			Limited In						
Protection System:				<u>-1</u>			Perform.		
	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$		+	2	1	+		_		
Comments: In Good Condit									
Recommended Work:	Rehab	Replac	ce	Mainte	enance i	Needs:			
	1-5 years	☐ 6-10 y		Urge		1 year	2 year		
		_	Curs	<u> </u>	110	_	_ _ ,		

Element Group:	Decks		Length:		0.4 m			
Element Name:	Wearing Surface	Width:		10.3 m				
Location:	1		Height:					
Material:	Asphalt		Count:					
Element Type:			Total Quan	ntity:	4.15 Sq.	.m		
Environment:	Severe		Limited Ins					
Protection System:		-	-1				Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \sqrt{ m }}$	\square / each \square / % \square / all \square	- Enc.		1 41	4.15			
<u> </u>						4.13		
Comments: - Wide Longitud	dinal and Transverse cracks.	- S	Severe map crack	cing at WBI	L			
Recommended Work:	Rehab	Replace		Mainte	enance l	Noods:		
Recommended work.						П2		
	□ 1-5 years	□6-10 ye	ars	Urge	nt	□1 year	☐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 Quan	ntity:	80.40 S	q.m			
Environment:	Severe	Limited Ins	spection					
Protection System:				•			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \mathbb{Z}/m}$	□/ each □/ % □/ all □			40.2	-	40.2		
Comments: - Wide Longitudinal and Transverse cracks Severe map cracking at both approach								
Recommended Work:	Rehab	Replace	e	Mainte	enance l	Needs:		
Tree of the first	☑1-5 years	□6-10 ye		Urge		□1 year	☐2 year	
	E1-3 years		-a15		111	шт усаг	□ 2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	North - South		Height:					
Material:	Norui - Souui		Count:		1			
			Total Quan		1			
Element Type:			`	-				
Environment:			Limited Ins	spection				
Protection System:					1		Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m$	□/ each □ / % □ / all □	1						
Comments: Covered water s	stream, North from Hayes Ave	enue						
	•							
				_				
Recommended Work:	☐ Rehab	Replace	e	Mainte	enance l	Needs:		
	☐1-5 years	☐ 6-10 ye	ears	Urge	nt	☐1 year	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 Edgewa	ter Blvd.	
Structure Type	Concrete Pipe Culvert		
Latitude	42° 19' 3.792"		Longitude -82° 51' 32.5434"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	0.30	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	12.1	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	46.8	(m)	AADT % Trucks
Total Deck Area	3.630	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	12.1	(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
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		Februa	ary 2, 2016						
Inspector			-		Consulting L	td)			
_		110884	III Daki (Di	iiioii C	Jonsum L	<i></i>			
Others in Party									
Access Equipment Used		Camer	ra, Measurii	ng Ta	pe, Measuri	ng Whe	el, and	Hammer	
Weather		Fog, P	robability o	of pred	cipitation 61	1%			
Temperature		-1 (6 /	4) Celsius						
Overall Structure Notes:									
D 1.137 1 6	7.				. 511				
Recommended Work on S		□Nor			inor Rehab.		⊔Мај	or Rehab.	Replace
Timing of Recommended	Work	∠ 1 to	5 years	□ 61	to 10 years				
Overall Comments Existing manholes with cast iron cover at the northern inlet causing limited inspection. We severely cracked. The wearing surface deficiencies extend over the culvert section and alon approaches.									
Date of Next Inspection									
Element Data:									
Element Group: Element Name:	Signs				Length: Width:				
Location:	Signs				Height:				
Material:					Count:		1		
Element Type:	Stop Sign				Total Quan	tity:	1		
Environment:					Limited Ins	•			
Protection System:						•			Perform.
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units ☐/ each ☑/ % ☐	/ all□	Exc.		Good	Fai	ir	Poor*	Deficiencies
Comments: In Excellent Co		/ an <u> </u>	1						
Recommended Work:	□Reh	ab	□Rep	olace		Maint	enance	Needs:	
	 □1-5		 □6-1		rs	□Urge		□1 year	☐2 year

Element Group:	Culverts		Length:	Length:		46.8 m		
Element Name:	Barrels	Width:	Width:		0.3 (Inner) / 0.4 (Outer) m (Dia.)			
Location:			Height:					
Material:	Precast concrete		Count:					
Element Type:			Total Quar	ntity:	44.1 Sq	.m		
Environment:			Limited In	spection	Ø			
Protection System:							Perform.	
C - I'd - Data	Units	Exc.	Good	Fair		Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		44.1					
Comments: Limited Inspect	ion - Covered Manhole at No	orth		<u>.</u> I				
				т				
Recommended Work:	Rehab	ce		enance l				
	□1-5 years	□ 6-10 у	ears	□Urge	nt	☐1 year	☐2 year	
Elamant Craun	Culverts		Langth		Т			
Element Group: Element Name:			Length: Width:		m	_	_	
Location:	Inlet Components		Height:		m			
Material:	North Side				m			
	Cast-in-place concrete	Count: Total Quar	ontitru G					
Element Type: Environment:	+			•	Sq.m	_	_	
	1		Limited In	ispection				
Protection System:	TT 1.		1	T		- · · · ·	Perform.	
Condition Data:	Units	Exc.	Good	Fai	ır	Poor*	Deficiencies	
m²Ľ/m	□ / each □ / % □ / all □							
Comments: Limited Inspect	ion - Covered Manhole							
Recommended Work:	Rehab	Replac		Mainte	enance l	Needs.		
Recommended work.							Полог	
	□1-5 years	⊔о-10 y	ears	Lorge	nı	□1 year	☐2 year	
	т		т					
Element Group:	Embankments & Streams		Length:		<u> </u>			
Element Name:	Embankments		Width:		<u> </u>			
Location:	South Outlet		Height:		<u> </u>			
Material:			Count:		2			
Element Type:			Total Quar		2			
Environment:			Limited In	spection				
Protection System:				1			Perform.	
Condition Data:	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
$m^2 \square / m$	\square / each \square / % \square / all \square		2					
Comments: In Good Condit	ion							
Recommended Work:	Rehab	Replac	ce	Mainte	enance l	Needs:	-	
	1-5 years	 ☐ 6-10 y		Urge		☐1 year	2 year	
				8-				

Element Group:	Decks		Length:		0.4 m			
Element Name:	Wearing Surface		Width:		12.1 m			
Location:			Height:	Height:				
Material:	Asphalt		Count:					
Element Type:			Total Quantity: 4.85 Sq.m			m		
Environment:			Limited In	spection				
Protection System:							Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		4.85	1				
Comments: An area of approx. 18.0 Sq.m of the asphalt have been replaced								
Comments, in area of appro-	ox. 10.0 sq.m of the asphalt	nave seen replaced						
Recommended Work:	Rehab	□Replac	e	Mainte	enance N	Needs:		
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐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			m			
Environment:	Severe	Limited In	-					
Protection System:	Perform.							
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² / m ²	\square / each \square / % \square / all \square			40.		40.2		
Comments: Recently, area of approx. 18.0 Sq.m of the asphalt have been replaced - Severe map cracking at both approach								
Severe map en	acking at both approach							
Recommended Work:	Rehab	✓ Replace	e	Maintenance Needs:				
	□1-5 years	 □6-10 ye				□1 year	☐2 year	
	<u>— J </u>			шотдене				
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	North - South		Height:					
Material:			Count:		1			
Element Type:			Total Quar	ntity:	1			
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all ☑			1				
Comments: Covered water s		Vanua			I	I_		
Comments. Covered water s	sucam, North Hom Hayes A	venue						
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance N	Needs:		
Recommended Work:	☐ Rehab	☐ Replac		Mainte		Needs:	2 year	
Recommended Work:							2 year	
Recommended Work:							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	07							
Hwy/Road Name	Desro Drive							
Structure Location	At intersection with Mannin	g Road (CR 19)						
Structure Type	Corrugated Steel Pipe							
Latitude	42° 18' 14.004"		Longitude -82° 52' 11.172"					
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List					
Span Length	1.9	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐					
Total Deck Length	12.0	(m)	Posted Speed No. of Lanes 2					
Overall Str. Width	25.0	(m)	AADT % Trucks					
Total Deck Area	22.800	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle					
Roadway Width	12.0	(m)	Detour Length Around Bridge [1.5] (km)					
Fill on Structure	0.6 (m)		Direction of Structure E					
Skew Angle	0°	(Degrees)	No. of Spans					
Historical Data:								
Year Built	1985		Year of Last Major Rehab.					
Last OSIM Inspection	1		Last Evaluation					
Last Enhanced OSIM I	nspection		Current Load Limit N/A (tonnes)					
Enhanced Access Equ (ladder, boat, lift, etc.)			Load Limit By-Law #					
Last Underwater Inspe	ection		By-Law Expiry Date					
Last Condition Survey	У							
Rehab History:								

Field Inspection Infor	mation:									
Date of Inspection]	Febru	ary 2, 2016							
Inspector		Hossa	ım Bakr (Dil	llon (Consulting I	Ltd)				
Others in Party										
Access Equipment Used		Measuring Tape, Measuring Wheel, and Hammer								
Weather		Fog, Probability of precipitation 61%								
Temperature			(4) Celsius		1					
1 - (2)										
Overall Structure Notes:										
Recommended Work on S	Structure	□No	ne	\square N	Inor Rehab	•	□Maj	or Rehab.	Replace	
Timing of Recommended	Work	☑ 1 to	o 5 years	□ 6	to 10 years					
Overall Comments Culvert barrel has a typical severe corrosion at the bolt connections. Settlement was not the culvert section located approximately below the road.					as noted at the top of					
Date of Next Inspection										
Element Data:										
Element Data.										
Element Group:	Signs				Length:					
Element Name:	Signs				Width:					
Location:					Height:					
Material:					Count:		1			
Element Type:	Stop Sign				Total Quan		1			
Environment:					Limited Ins	spection				
Protection System:							T		Perform.	
Condition Data: ${m^2 \square / m}$	Units \square / each \square / $\%$ \square /	all□	Exc.		Good	Fai	r	Poor*	Deficiencies	
Comments: - Existing Sign		1		ct Ma	rkings to meet	the Ontario	Traffic	Manual		
Recommended Work:	□Reha	ıb	□Rep	lace		Mainte	enance	Needs:		
	□1-5 y	ears	□6-10) yea	ırs	□Urge	nt	□1 year	☐2 year	

Element Group:	Culverts		Length:		25.0 m			
Element Name:	Barrels		Width:		1.9 m (Dia.)			
Location:			Height:	Height:				
Material:	Corrugated Steel		Count:					
Element Type:	Multi-Plate CSP		Total Quantity:		149.2 \$	Sq.m		
Environment:			Limited Ins	-	П	1		
Protection System:				Perform.				
	Units	Exc.	Good	Fair		Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square	LAC.					Bettereneres	
L.			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.							
rocated below the road. It wide spite at the new extension of the current length.								
Recommended Work:	Rehab	✓ Replac	e	Mainte	nance	Needs:		
	■ 1-5 years	 ☐6-10 ye		Urge	nt	□1 year	☐2 year	
Element Group:	Decks		Length:		1.9 m			
Element Name:	Wearing Surface		Width:		12.0 m			
Location:	Wearing Surface		Height:		12.0 111			
Material:	A amb alt	Count:						
Element Type:	Asphalt	Total Quan	antity: 22.8 Sq.m					
Environment:		_ `	Limited Inspection					
Protection System:	-		Limited in	spection	<u> </u>		D (
Frotection System.		- г	G 1	г.		D *	Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m \square / each \square / \% \square / all \square$			22.0			0.8		
Comments: - Minor edge cr	acks.							
D 1 1 1 1 1 1 1						N. 1		
Recommended Work:	Rehab	Replac				Needs:		
	□1-5 years	□6-10 ye	ears Urge		ent 1 year		☐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 Quan	ntity:	144.0 \$			
Environment:	Moderate		Limited Ins	•		1		
Protection System:				- F			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square	Ene.		1 41			2011011011010	
٠,			140.0			4.0		
Comments: - Minor edge cr	acks at West approach.							
				,				
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance	Needs:		
	☐1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	2 year	

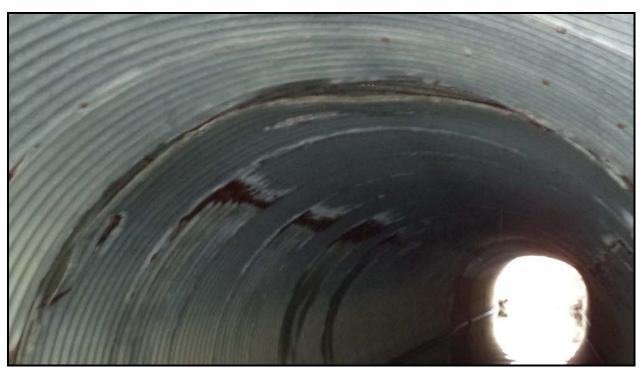
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways	Width:					
Location:	North - South		Height:				
Material:			Count:		1		
Element Type:			Total Qua	ntity:			
Environment:			Limited In	•			
Protection System:				эрссион			Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square	Exc.	- G00 u	1	L	1 001	Bettereneres
							
Comments: Excessive plant	growth along the water stream	m, with recommen	dation to be sha	ved.			
Recommended Work:	☑ Rehab	□D omloo		Mainte		Naada	
Recommended Work.		Replac					Па
	□ 1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		4		
Element Type:		Total Qua	Total Quantity: 4				
Environment:			Limited In	spection			
Protection System:			•	•			Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	□/ each ☑ / % □/ all □		4				
L.,				1	J		
Comments: In Good Condit	cion						
Recommended Work:	Rehab	Replac	e.	Mainte	nance	Needs:	
	□1-5 years	□6-10 ye				□1 year	☐2 year
	□1-5 years		2413	Lorge		шт усаг	□2 ycai
Element Group:	Embankments & Streams		Length:				
Element Name:	Slope Protection		Width:				
Location:	Stope Protection		Height:				
Material:	Masonry		Count:		2		
Element Type:	Hand laid Riprap		Total Quar	ntity	2		
Environment:	нани наи ктргар		Limited In	•			
Protection System:			Limited in	ispection	<u> </u>		D 6
riotection system.	T.T'4 .	Б.	C 1	F.:		D *	Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
$m^2 \square / m$				2			
Comments: In Fair Condition	on, Located at the North Inlet						
				1			
Recommended Work:	☑ Rehab	Replac				Needs:	
	□ 1-5 years	☐ 6-10 ye	ears	Urge	nt	☐1 year	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	ne ne		1				
	Use and Drive						
Hwy/Road Name	Jamsyl Drive	5 1/CD 10)					
Structure Location	At intersection with Mannin	g Road (CR 19)					
Structure Type	Corrugated Steel Pipe						
Latitude	42° 18' 6.2994"		Longitude -82° 52' 11.64"				
Owner(s)	Town of Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List				
Span Length	1.7	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐				
Total Deck Length	21.0	(m)	Posted Speed No. of Lanes 2				
Overall Str. Width	30.0	(m)	AADT % Trucks				
Total Deck Area	35.700	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	1985		Year of Last Major Rehab.				
Last OSIM Inspection	n		Last Evaluation				
Last Enhanced OSIM			Current Load Limit N/A (tonnes)				
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Inspection			By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Information:									
Date of Inspection		Februa	ary 2, 2016						
Inspector		Hossa	m Bakr (Dil	lon (Consulting L	Ltd)			
Others in Party			· · · · · · · · · · · · · · · · · · ·						
Access Equipment Used		Camer	ra. Measurin	 19 Ta	ape, Measuri	ng Whe	el. and	Hammer	
Weather					ecipitation 61				
Temperature		_	(4) Celsius	1 P1-	- Ipitution 5.				
Temperature 1 (0/4) Celsius									
Overall Structure Not	Overall Structure Notes:								
Recommended Work on S	Ctructura	□Nor		Пм	Iinor Rehab.		Пмоі	or Rehab.	Replace
							□ Iviaj	or Kellau.	► Kepiace
Timing of Recommended Overall Comments	WOIK				to 10 years				
Overan 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 Quan		1		
Environment:					Limited Ins	spection			
Protection System:	<u> </u>	—		_	~ ,				Perform.
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/	/ all□	Exc.		Good	Fai	ir	Poor*	Deficiencies
Comments: - Existing Sign i	in Excellent Condition	on					1		
- Upgrade and in	installation of Object	Marker s	signs and Objec	ct Ma	rkings to meet t	the Ontario	o Traffic	Manual	
Recommended Work:	□Reh		□Repl	lace		Maint	enance	Needs:	
Trecommended (, or).	□1-5 y		□6-10			Urge			☐2 year
	<u> </u>	years	— • • •	, , ,	113		/110	L 1 , Cu.	<u> </u>

Element Group:	Culverts		Length:	Length:		30.0 m			
Element Name:	Barrels	Width:	Width:		1.7 m (Dia.)				
Location:			Height:						
Material:	Corrugated Steel		Count:						
Element Type:			Total Quar	ntity:	160.2 S	q.m			
Environment:			Limited In	spection					
Protection System:							Perform.		
C - Prisa Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		123.2	21.0	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:	Rehab	✓ Replace	ce	Mainte	enance	Needs:			
	■1-5 years	 □6-10 ye		Urge	nt	☐1 year	☐2 year		
Element Group:	Culverts		Length:		Τ				
Element Name:	Inlet Components		Width:		m				
Location:	North Side		Height:		m m				
Material:	Norm side		Count:		111				
Element Type:	N/A	Total Quar	antity: Sq.m						
Environment:	IV/A	N/A			Limited Inspection				
Protection System:	+		Limica in	spection			Perform.		
Trocedon by stem.	Units	Exc.	Good	Fai	42	Poor*	Deficiencies		
Condition Data:		EXC.	Good	1 '41	1	FUUI	Deficiencies		
m ² m / each / % / all									
Recommended Work:	☑ Rehab	Replac	зе		enance	Needs:			
	☑ 1-5 years	□6-10 y	ears	rs Urgen		□1 year	☐2 year		
Element Group:	Embankments & Streams		Length:						
Element Name:	Embankments		Width:						
Location:	†		Height:						
Material:			Count:		4				
Element Type:			Total Quar	ntity:	4				
Environment:			Limited In	-					
Protection System:				•			Perform.		
G 1111 B 1	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$			4	+					
Comments: In Good Condition			<u> </u>						
Recommended Work:	Rehab	Replac	 ce	Mainte	enance	Needs:			
	11-5 years	☐ 6-10 ye		Urge		1 year	2 year		
	—		- Cars	<u> </u>		— * <i>j</i>	— - ,		

Element Group:	Decks		Length:		1.7 m				
Element Name:	Wearing Surface		Width:	Width:		21.0 m			
Location:			Height:						
Material:	Asphalt		Count:						
Element Type:			Total Quar	ntity:	35.7 Sq.m				
Environment:	Bengin		Limited In	spection					
Protection System:							Perform.		
Condition Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: $m^2 \square / m \rceil$	□/ each □/ % □/ all □	35.7		 					
Comments: In Excellent Con	ndition			_1					
Comments, in Enterior	nutron								
Recommended Work:	Rehab	□Replac	e e	Mainte	enance N	leeds:			
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐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:	Tiphar		Total Quantity: 252.0 Sq.m						
Environment:	Severe		Limited Inspection						
Protection System:				<u> </u>			Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: m ² /m /	□/ each □/ % □/ all □	252.0				1001			
<u> </u>		232.0							
Comments: In Excellent Con	ndition								
Recommended Work:	Rehab	Replac	ce	Mainte	enance N	leeds:			
	□1-5 years	 ☐6-10 ye		Urgent		☐1 year	☐2 year		
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	North - South		Height:						
Material:			Count:		1				
Element Type:			Total Quar	ntity:	1				
Environment:			Limited In	spection					
Protection System:							Perform.		
Carallitian Datas	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		1						
Comments: Light plant grov		the North side w		ion to be sh	oved				
Comments. Light plant grov	vui along the water stream at t	the North side, wi	un recommendati	on to be sna	aveu				
Recommended Work:		Replac	ee e	Mainte	enance N	leeds:			
	□ 1-5 years	□ 6-10 y		Urge	nt	1 year	2 year		
				 					

Element Group:	Embankments & Streams		Length:	Length:				
Element Name:	Slope Protection		Width:					
Location:	North/South Side		Height:					
Material:			Count:		2			
Element Type:			Total Quar	ntity:	2			
Environment:			Limited In					
Protection System:] =====================================	эрссион			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / $\%$ \square / all \square	LAC.	1	+			Deficiencies	
				1				
Comments: In good condition	on at North, and fair at South.							
D 1 - 1 W1-				1 14.5		NI I		
Recommended Work:	Rehab	Repla				Needs:		
	□1-5 years	□6-10 y	years	Urge	nt	☐1 year	☐2 year	
Element Group:			Length:					
Element Name:			Width:					
Location:			Height:					
Material:								
Element Type:		Total Quar	Count: Total Quantity:					
Environment:			Limited In		П			
Protection System:							Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \Pi/m}$	☐/ each ☐/ % ☐/ all ☐	Exc.		T ut	•	1 001	Beneficience	
<u> </u>		L			ļ			
Comments:								
Recommended Work:	Rehab	Repla	CO	Mainte	nance	Needs:		
Recommended Work.	☐1-5 years	☐6-10 v		Maintenance Needs: ☐ Urgent ☐ 1 year			По тголя	
	□1-3 years	□0-10 <u>y</u>	years		11t	шт уеаг	☐2 year	
	T				1			
Element Group:			Length:					
Element Name:			Width:					
Location:			Height:					
Material:			Count:					
Element Type:			Total Quar	ntity:				
Environment:			Limited In	spection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \Pi/m}$	□/ each□/ %□/ all□							
· ·				1				
Comments:								
<u> </u>				1				
Recommended Work:	Rehab	Repla			ntenance Needs:			
	□1-5 years	□6-10 <u>y</u>	years	Urge	nt	□1 year	☐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:			
Constant November			
Structure Number	09		
Hwy/Road Name	Sylvestre Drive		
Structure Location	At intersection with Mannin	g Road (CR 19)	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 17' 54.0594"		Longitude -82° 52' 12.3954"
Owner(s)	Town of Tecum	seh	Heritage
Span Length	2.0	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	12.5	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	23.0	(m)	AADT % Trucks
Total Deck Area	25	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	12.5	(m)	Detour Length Around Bridge 1.6 (km)
Fill on Structure	0.60	(m)	Direction of Structure E
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1990		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Info	rmation:							
Date of Inspection	Fe	ebruary 2, 2016	<u> </u>					
Inspector			illon Consulting	r I td)				
Others in Party		ossaiii baki (b	mon Consumn	g Liu)				
-	C		T M	XX/1	.11	TT	_	
Access Equipment Used			ing Tape, Meas		el, and	Hammer		
Weather			of precipitation	61%				
Temperature	-1	(6 / 4) Celsius						
Overall Structure Not	tes:							
Recommended Work on	Structure F	None	☐Minor Reha	ah.	Пмаі	or Pahah	Replace	
		<u> </u>					Кергаес	
Timing of Recommended		<u> </u>	☐6 to 10 year					
Overall Comments Moderate corrosion is noted at the culvert barrel below the road surface, and medium scatter at the culvert haunches, a wide opening the spring line approximately 3.0 m from the North i bags located at the south-east portion of the outlet was observed in poor condition and unstab 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.					the North inlet. Mortar and unstable. Culvert			
Date of Next Inspection								
Element Data:								
Element Group:	Signs		Length:	Length:				
Element Name:	Signs		Width:					
Location:			Height:					
Material:			Count:		1			
Element Type:	Stop Sign		Total Qu		1			
Environment:			Limited	Inspection		I		
Protection System:							Perform.	
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units ☐/ each ☑/ % ☐/ al	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Comments: - Existing Sign		1 1						
	installation of Object Ma	rker signs and Obj	ect Markings to me	eet the Ontario	o Traffic	Manual		
Recommended Work:	Rehab	□Re	place	Maint	enance	Needs:		
	□1-5 yea	ırs 🗆 6-1	0 years	□Urge	ent	□1 year	☐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 Quar	ntity:	144.5 S	q.m		
Environment:			Limited In	spection				
Protection System:				Perform.				
Condition Dates	Units	Exc.	Good	Fair		Poor*	Deficiencies	
Condition Data: $\frac{ C }{ C } \frac{ C }{ C } $			79.45	43.3	5	21.7		
Comments: - Moderate scatt	ered corrosion along the inter	ce. a wide openin	g the spring	g line apı	proximately 3.0 m	from the North inlet.		
Recommended Work:	Rehab	☑ Replace	e	Mainte	enance	Needs:		
	□1-5 years	☑ 6-10 ye	ears	Urge	nt	□1 year	☐2 year	
				L				
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 Quar	ntity:	12.9 Sq	ı.m			
Environment:			Limited In:	spection				
Protection System:				•			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $m^2 \square / m$	\square / each \square / % \square / all \square		10.0	2.9)			
Comments: In Good Conditi	OII							
Recommended Work:	✓ Rehab	Replac	e	Maintenance Needs:				
	☑ 1-5 years	□6-10 ye		☐Urgent ☐1 year			☐2 year	
Monitor for deformation and set								
Withitton for deformation and set	nement.							
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:		2.13 111			
Element Type:	Mortar Bags		Total Quar	ntity:	12.9 Sq	ım		
Environment:	Wortar Bags		Limited In:	•	12.9 Sq	J.111		
Protection System:			Limited III.	spection	<u> </u>		Perform.	
Trocection bystein.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$		Exc.				1 001	Beneficiences	
			10.9	2.0				
Comments: Mortar bags loca	ated at the South-East portion	of the outlet was	observed in poor	condition a	and unsta	able		
				_				
Recommended Work:		Replac	e	Mainte	enance	Needs:		
	☑ 1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐ 2 year	
Monitor for deformation and set								
	tlement.							

Element Group:	Decks		Length:	Length:		2.0 m		
Element Name:	Wearing Surface		Width:	Width:		12.5 m		
Location:			Height:					
Material:	Asphalt		Count:					
Element Type:			Total Quar	ntity:	25.0 Sq.	.m		
Environment:	Bengin			Limited Inspection				
Protection System:			•	1			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² m ²	\square / each \square / % \square / all \square	25.0						
		23.0						
Comments: In Excellent Co	ndition							
Recommended Work:	Rehab	Replac	re	Mainte	Needs:			
recommended work.	□1-5 years □6-10 years			Urge		1 year	☐2 year	
	шт-э years	Ш0-10 у	cars	Lorge	111	шт усаг	□2 yeai	
			T					
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 Quar		150.0 Se	q.m			
Environment:	Severe		Limited In	spection				
Protection System:							Perform.	
Canditian Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □	150.0						
Comments: In Excellent Condition								
Comments. In Executive Co	ndition							
Recommended Work:	Rehab	Replac	e	Mainte	enance l	Needs:		
	□1-5 years	□6-10 y		☐Urgent ☐1 year		□1 year	☐2 year	
								
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	North - South		Height:					
Material:		-	Count:		1			
Element Type:			Total Quar	ntity:	1			
Environment:		-	Limited In	•	П			
Protection System:							Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$		Exc.		1 41	1	1 001	Demondres	
L.,			1					
Comments: Light plants gro	wth along the water stream at	both the North ar	nd South sides.					
Recommended Work:	□ Dalaah			Mainta	enance l	Maada		
Recommended work:	Rehab	Replac					П 2	
	☐1-5 years	□ 6-10 y	ears	Urge	nt	☐1 year	2 year	
				1				

Element Group:	Embankments & Streams		Length:							
Element Name:	Embankments		Width:	Width:						
Location:			Height:							
Material:			Count:		4					
Element Type:			Total Quar	ntity:	4					
Environment:			Limited In		П					
Protection System:] =====================================	эрссион			Perform.			
	Units	Units Exc. Good				Poor*	Deficiencies			
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square	LAC.		Fai	ı	1 001	Deficiencies			
_			4							
Comments: In Good Condit	tion									
D 1 - 1 W1-				1 14.5		NI I				
Recommended Work:	Rehab	Repla				Needs:				
	☐1-5 years	□6-10 y	years	Urge	nt	☐1 year	☐2 year			
				1						
Element Group:			Length:							
Element Name:			Width:							
Location:			Height:							
Material:		Cor								
Element Type:			Total Quar	ntity:						
Environment:			Limited In	-						
Protection System:	Perform.									
	Units Exc.			Fai	r	Poor*	Deficiencies			
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / $\%$ \square / all \square	Exc.	Good	T ut	•	1 001	Beneficience			
<u> </u>	_/ cach_/ /o_/ and	L			ļ					
Comments:										
Recommended Work:	Rehab	Repla	CO	Mainte	nance	Needs:				
Recommended Work.		☐6-10 <u></u>		Urgent		1 year	По тголя			
	□1-5 years	□0-10 <u>y</u>	years		11t	шт уеаг	☐2 year			
					1					
Element Group:			Length:							
Element Name:			Width:							
Location:			Height:							
Material:			Count:							
Element Type:			Total Quar	ntity:						
Environment:			Limited In	spection						
Protection System:							Perform.			
G III B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: $\frac{1}{m^2 \Pi/m}$	□/ each□/ % □/ all□									
•				1						
Comments:										
T	—			1 3.5 .		I				
Recommended Work:	Rehab	Repla				Needs:				
	□1-5 years	□6-10 <u>y</u>	years	Urge	nt	☐1 year	☐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	10		
	Tecumseh Rd. E		
Hwy/Road Name			
Structure Location	1.00 km East from Manning	Rd.	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 18' 42.444"		Longitude -82° 51' 26.892"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.45	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	6.7	(m)	Posted Speed 50 No. of Lanes 2
Overall Str. Width	12.5	(m)	AADT % Trucks
Total Deck Area	3.015	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	6.7	(m)	Detour Length Around Bridge 1.3 (km)
Fill on Structure	1.2 (m)		Direction of Structure E
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM I			Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Survey	у		
Rehab History:			

Field Inspection Information:								
Date of Inspection	Fe	ebruary 2, 201	16					
Inspector	Н	ossam Bakr (Dillo	n Consulting L	Ltd)			
Others in Party				-				
Access Equipment Used	C	amera, Measu	ring '	Tape, Measuri	ng Whee	el, and	Hammer	
Weather	Fo	og, Probabilit	y of p	recipitation 61	1%			
Temperature	-1	(6 / 4) Celsiu	18					
Overall Structure Notes:								
	1_					_		_
Recommended Work on Structure None Minor Reh						∐Maj	or Rehab.	Replace
Timing of Recommended	Work	□1 to 5 years □6 to 10 years						
Overall Comments Limited inspection - Light corrosion at the bottom half of the culvert barrel. corroded and bended. Wearing surface with wide transverse cracks over the approaches.								
Date of Next Inspection								
Element Data:								
Element Data.								
Element Group:	Signs			Length:	Length:			
Element Name:	Signs			Width:				
Location:				Height:				
Material:				Count:		1		
Element Type:	School Crossing Sign			Total Quan		1		
Environment:				Limited Ins	spection			
Protection System:				~ . 1		1		Perform.
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ a	Exc.		Good	Fai	r	Poor*	Deficiencies
Comments: In Excellent Co			l					
Recommended Work:	□Rehab	□R	eplac	ce	Mainte	enance	Needs:	
	□1-5 yea	ars 🛮 6	-10 y	ears	□Urge	nt	□1 year	☐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 Quar	ntity:	17.7 Sq	ı.m		
Environment:			Limited In	spection 🗹				
Protection System:		-	-				Perform.	
	Units	Exc.	Good	Fair		Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square	Enc.	12.40	5.30	-	1 001		
<u> </u>								
Comments: Light corrosion	at the bottom half of the culve	ert barrel. Culvert	North inlet is lig	htly corrod	ed and be	ended.		
Recommended Work:	□ Dahah	□D omloo		Mainte		Nooda		
Recommended work:		Rehab Replace					По	
	☐1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐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	Rectangular Manhole						
Environment:		Limited In:	spection					
Protection System:								
	Exc.	Good	Fai	r	Poor*	Perform. Deficiencies		
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☐ / % ☐ / all ☐		0000		-	1 001		
L.,								
Comments: Limited Inspect	ion - Covered Manhole							
Recommended Work:	Rehab	Replac	2	Maintenance Needs:				
Recommended work.						1 year	П2	
	□1-5 years	□6-10 ye	ears	s \square Urgent \square 1 y			☐2 year	
			-1					
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:	North Side		Height:					
Material:	Cast-in-place concrete		Count:		3			
Element Type:			Total Quar	ntity:	3			
Environment:			Limited In:	spection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \Pi/m}$	□/ each □/ % □/ all □		3					
Comments: In Good Condit		outh outlet			l			
Comments: In Good Condit	ion. Mannoie located at the sc	Jun ounet						
Recommended Work:	Rehab	Replac				Needs:		
	□1-5 years	☐ 6-10 ye	ears	Urge	nt	☐1 year	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 Quan	Total Quantity: 3.0 Sq.m					
Environment:			Limited Ins						
Protection System:							Perform.		
C 127 Date	Units	Exc.	Good	Fai	Fair Poor*		Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		2.4	<u> </u>		0.6			
Comments: - Wide Transve	, L		<u> </u>		<u>l</u> _				
Comments wide manage	ise Ciacks.								
Recommended Work:	∠ Rehab	Replac	e	Mainte	enance N	Needs:			
	☑ 1-5 years	□6-10 ye	ears	Urge	nt	□1 year	☐2 year		
	-	 							
				<u> </u>					
Element Group:	Approaches		Length:		6.0 m				
Element Name:	Wearing Surface	Width:		6.7 m					
Location:	East - West	Height:		0.7 111					
Material:	Asphalt	Count:		2					
Element Type:	Aspiiait		Total Quan	ntity.	80.4 Sq.	m			
Environment:	-	Limited Ins	•	00.7 5q.					
Protection System:			Lilling	<u> зресноп</u>	<u> </u>		Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: m ² /m	\square / each \square / % \square / all \square	EAC.		1 41	1		Delicionero		
L,	73.7	<u> </u>		6.7					
Comments: - Wide Transverse Cracks at East approach									
Recommended Work:	✓ Rehab	Replac		Maintenance Needs:					
1000mmonaca ,, o.m.	☑1-5 years	□6-10 ye		Urge		1 year	☐2 year		
	El 3 years		7d15		111	шт усы	<u> </u>		
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	North - South		Height:						
Material:	110111 20111		Count:		1				
	†			ntity:	1				
Element Type:		1 Total Qual	The Carry						
Element Type: Environment:			_ `	-					
Environment: Protection System:			Limited Ins	-			Perform.		
Environment: Protection System:	Units	Exc.	Limited Ins	spection		Poor*	Perform. Deficiencies		
Environment: Protection System:	Units	Exc.	_ `	-		Poor*			
Environment: Protection System: Condition Data: m² □/m		1	Limited Ins	spection		Poor*			
Environment: Protection System:		1	Limited Ins	spection		Poor*			
Environment: Protection System: Condition Data: m² □/m		1	Limited Ins	spection		Poor*			
Environment: Protection System: Condition Data: m² □/m Comments: Covered water s	☐/ each ☐ / % ☐ / all ☑ stream, South of the Warwick	1 Road	Limited Ins	Fai	r				
Environment: Protection System: Condition Data: m² □/m	□/ each □/ % □/ all ☑ stream, South of the Warwick □ Rehab	1 Road	Good	Spection Fai	r enance N	Needs:	Deficiencies		
Environment: Protection System: Condition Data: m² □/m Comments: Covered water s	☐/ each ☐ / % ☐ / all ☑ stream, South of the Warwick	1 Road	Good	spection Fai	r enance N				



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. P1 C)		
	11 (A, B, and C)		
Hwy/Road Name	Manning Road		
Structure Location	0.24 km North from St. Greg	gory's Road	
Structure Type	Rigid Frame Box Culvert		
Latitude	42° 19' 50.1816"		Longitude -82° 52' 11.028"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	1.9	(m)	Road Class: Freeway ☐ Arterial ☑ Collector ☐ Local ☐
Total Deck Length	12.0	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	25.0	(m)	AADT % Trucks
Total Deck Area	22.800	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	12.0 (m)		Detour Length Around Bridge N/A (km)
Fill on Structure	0.6 (m)		Direction of Structure E
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1985		V CL. (M. C. D.L.)
			Year of Last Major Rehab.
Last OSIM Inspection			Last Evaluation
Last Enhanced OSIM I	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		February 2, 2016							
Inspector		Hossa	m Bakr (Dill	lon C	Consulting I	_td)			
Others in Party									
Access Equipment Used		Meası	ıring Tape, N	Meas	uring Whee	l, and Ha	ammer		
Weather		Fog, F	Probability of	f pre	cipitation 6	1%			
Temperature		-1 (6 / 4) Celsius							
·									
Overall Structure Not	tes:								
Recommended Work on Structure				inor Rehab	•	□Мајо	or Rehab.	Replace	
Timing of Recommended	Work	□1 to 5 years □6 to 10 years							
Overall Comments The structure is in good condition. It extend Rd. E., and Lanoue St.) on the side of Mann Manning Road development - Phase 1.					_				
Date of Next Inspection									
Element Data:									
Element Group:	Signs				Length:				
Element Name:	Signs				Width:				
Location: Material:					Height: Count:				
Element Type:	Signs				Total Quan	ıtity:	Various		
Environment:	Signs				Limited Ins		Various	•	
Protection System:					Emmed in	эресноп			Perform.
Condition Data:	Units ☐/ each ☑ / % ☐ /	' all□	Exc.		Good	Fai	r	Poor*	Deficiencies
Comments: Multiple Signs									
Comments. Manages organs									
Recommended Work:	Reha	ab	□Repl	lace		Mainte	enance l	Needs:	
	□1-5 y	ears/	□ 6-10) yeai	rs	□Urge	nt	□1 year	☐2 year

Element Group:	Culverts		Length:		1300 m					
Element Name:	Soffit - Inside Boxes		· · · · · · · · · · · · · · · · · · ·		2.4 m					
Location:			Height:	Height:		1.9 m				
Material:	Precast concrete		Count:							
Element Type:			Total Quantity:		11,180	Sa.m				
Environment:			Limited Ins							
Protection System:				Perform.						
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data:	\square / each \square / % \square / all \square	LAC.	11.180	1 (1)		1 001	Beneficiences			
<u> </u>			11,180							
Comments: In Good Condit	ions. Limited Inspection - So	uth Inlet is Closed								
December ded Werle	□ n.11	□D1		Maria		NT 1				
Recommended Work: Rehab Replace				Mainte			П.			
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐2 year			
Element Group:	Decks		Length:		Var. m					
Element Name:	Wearing Surface		Width:		2.4 m					
Location:		Height:								
Material:	Asphalt	Count:								
Element Type:		Total Quantity: Multiple			e					
Environment:		Limited Ins								
Protection System:							Perform.			
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: ${m^2 \square / m}$										
L,										
Comments: This structure pa	_	-	Or., Lanoue St., T	Гесиmseh F	Rd. E, and	d St. Gregory's Rd)	on the side of Manning			
Road (County R	Road 22). Generally in Good of	condition								
Recommended Work:	Rehab	Replac		Mainte	enance	Needs:				
Recommended work.	1-5 years	☐6-10 ye				1 year	☐2 year			
	□1-3 years	□0-10 ус	7a18	Gorgent Grycan			□2 yeai			
	T		T _							
Element Group:	Approaches		Length:		6.0 m					
Element Name:	Wearing Surface		Width:		(Varies) m					
Location:	East - West		Height:							
Material:	Asphalt		Count:		Multipl					
Element Type:			Total Quantity:		Multiple					
Environment:		Limited Ins	spection							
Protection System:							Perform.			
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
m ² /m	□/ each □ / % □ / all □									
Comments: In Good Condit	ion.	•			•					
Comments cood condit										
Dagamman dad Waiil-	□ n .11	□ D1		Maint		Maada				
Recommended Work:	Rehab	Replac		Mainte						
	☐1-5 years	□ 6-10 ye	ears	Urge	nt	☐1 year	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:	1		Limited In							
Protection System:				Perform.						
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies			
Condition Data: ${m^2 \Pi/m}$	\square / each \square / % \square / all \square			1	+					
<u> </u>										
Comments: Drain is out of a	ılignment.									
Recommended Work:	Rehab	Replac		Mainte	nance	Needs:				
Recommended work.	☐1-5 years	☐6-10 y		Urgei			☐2 year			
	□1-3 years	∐6-10 у	zars			☐1 year	□2 year			
Element Group:	Embankments & Streams		Length:							
Element Name:	Embankments	Width:								
Location:		Height:								
Material:	<u> </u>	Count:		4						
Element Type:		Total Quar	ntity:							
Environment:	<u> </u>	Limit				Limited Inspection				
Protection System:							Perform.			
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies			
Condition Data: ${m^2 \square / m}$	□/ each ☑ / % □/ all □		4	†						
L.			·	.1						
Comments: In Good Condit	ion.									
Recommended Work:	Rehab	Replac	e	Mainte	nance	Needs:				
	□1-5 years	□6-10 y		Urgei		□1 year	☐2 year			
	што доше	ر ۱۰ ۰۵	zars		111	<u> </u>				
Element Group:	Embankments & Streams		Length:							
Element Name:	Slope Protection		Width:							
Location:	South Inlet		Height:							
Material:	Masonry		Count:		2					
Element Type:	Hand laid Riprap		Total Quar	ntity:	2					
Environment:	пана наи Кіргар		_ `	•	\Box					
Protection System:			Limited In	spection	Ц		D 6			
Protection System.		-		Г.	T	D *	Perform.			
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies			
$m^2 \square / m$	□/ each		2							
Comments: In Good Condit	ion.									
Recommended Work:	☐ Rehab	☐ Replac	:e	Mainte	enance ?	Needs:				
	☐1-5 years	☐ 6-10 ye	ears	☐ Urgei	nt	☐1 year	☐ 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:			
- N 1			
Structure Number	12 (Formerly 72)		
Hwy/Road Name	Hayes Avenue		
Structure Location	Eastern intersection with E	ldgewater Blvd.	
Structure Type	Rigid Frame Box Culvert		
Latitude	42° 19' 34"		Longitude -82° 52' 05"
Owner(s)	Town of Tecus	mseh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	3.0	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	116	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	20.0	(m)	AADT % Trucks
Total Deck Area	348 (sq.m)		Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	2014		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Inspection			By-Law Expiry Date
Last Condition Surve	у		
Rehab History:		ure was recently bu PN. (12-6301-1000	uilt in 2014 within Manning Road Improvements, Phase 1

Field Inspection Infor	mation:										
Date of Inspection	Ja	January 22, 2016									
Inspector	Н	Hossam Bakr (D	illon Consulting l	Ltd)							
Others in Party				<u> </u>							
Access Equipment Used	C	Camera, Measur	ing Tape, Measur	ing Whee	el. and	Hammer					
Weather		Sunny, Probability of rain 1%									
Temperature -6 (-2/-8) Celsius											
Overall Structure Not	tes:										
	~ _	_									
Recommended Work on S	None	☐Minor Rehab	•	⊔Maj	or Rehab.	Replace					
Timing of Recommended	Work	1 to 5 years	☐6 to 10 years								
Overall Comments	p	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 Quar	Total Quantity: 1113.6 Sq.m							
Environment:			Limited In	nited Inspection 🗹							
Protection System:							Perform.				
Condition Data: Units		Exc.	Good	Fai	ir Poor*		Deficiencies				
m²╚/m Comments: Limited inspect	□/ each □/ % □/ a		andition								
Comments: Limited inspect	ion. Barrer is assumed	to be in Excellent C	onanion.								
Recommended Work:	Rehal	o □Re	place	Mainte	enance	Needs:					
	□1-5 ye	ears []6-1	0 years	□Urge	nt	□1 year	☐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:			
Charles N. a. L.	12 (F. 1.24)		
Structure Number	13 (Formerly 24)		
Hwy/Road Name	Sylvestre Drive		
Structure Location	At Exit from County Road 2	!2	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 18' 22.7514"		Longitude -82° 52' 42.132"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	0.7	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	2002		Year of Last Major Rehab.
Last OSIM Inspection	ı		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Info	rmation:										
Date of Inspection	F	February 3, 2016									
Inspector	Н	Hossai	m Bakr (Di	llon Cor	nsulting L	.td)					
Others in Party											
Access Equipment Used	(Camer	a. Measurir	ng Tape	. Measuri	ng Whee	el. and	Hammer			
Weather		Camera, Measuring Tape, Measuring Wheel, and Hammer Mostly Cloudy, Probability of rain 55%									
Temperature 10 (12 / -1) Celsius											
Overall Structure Not	tes:										
									_		
Recommended Work on Structure					or Rehab.		⊔Maj	or Rehab.	Replace		
Timing of Recommended	l Work	□1 to	5 years	□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.									
		under water and inspection was minited. Water way with inoderate plant growth.									
Date of Next Inspection											
TI (D)											
Element Data:											
Element Group:	Signs			Le	ength:						
Element Name:	Signs				idth:						
Location:				Н	eight:						
Material:				Co	Count: 1						
Element Type:	Speed Limit (30 km/l	h)		To	Total Quantity: 1						
Environment:				Li	imited Ins	pection					
Protection System:		<u> </u>							Perform.		
Condition Data: Units Exc. $\frac{U_{\text{mis}}}{m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square} = 1$		Exc.	G	Good	Fai	Fair Poor*		Deficiencies			
Comments: - Existing Sign			1								
Recommended Work:	Reha		□Rep					Needs:			
	□1-5 ye	ears	□6-10	0 years		□Urge	nt	□1 year	☐2 year		

Element Group:	Culverts		Length:		21.0 m				
Element Name:	Barrels		Width:	Width:		0.7 m			
Location:			Height:						
Material:	Corrugated Steel		Count:	Count:					
Element Type:			Total Qua	ntity:					
Environment:			Limited Ir	nspection					
Protection System:			•	•			Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square								
Comments: Limited inspect	·	l underwater.		1		L			
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:			
	□1-5 years	□6-10 y		Urge		☐1 year	☐2 year		
	што усыз	шо 10 ј		Lorge		шт усы	ш2 усы		
Element Group:	Embankments & Streams		Length:						
Element Name:	Embankments		Width:						
Location:	Embankments		Height:						
Material:			Count:		4				
Element Type:									
Environment:			Total Qua Limited Ir	-					
Protection System:			Limited ii	ispection			D C		
Trotteetion System.	TT::t-	E	Card	Ea:		D*	Perform. Deficiencies		
Condition Data:	Units	Exc.	Good	Fai	I.I	Poor*	Deficiencies		
<u>m²</u> ∟/m	□ / each □ / % □ / all □		4						
Comments: In Good Condit	ion								
Recommended Work:	Rehab	□D amlas		Maint	nnnna	Needs:			
Recommended work:							Па		
	□1-5 years	□6-10 у	ears	Urge	nt	☐1 year	☐2 year		
	T		T						
Element Group:	Embankments & Streams		Length:						
Element Name:	Slope Protection		Width:						
Location:			Height:						
Material:			Count:		4				
Element Type:			Total Qua		4				
Environment:			Limited Ir	spection					
Protection System:							Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
$m^2 \square / m$	□/ each ☑ / % □ / all □		4						
Comments: In Good Condit	ion			•	•	<u>.</u>			
Comments.									
Recommended Work:	Rehab	Replac	·ρ	Mainte	enance	Needs:			
Recommended WOIK.					enance Needs:		□ 2 xzoo=		
	□1-5 years	□ 6-10 y	ears	Urge	11L	☐1 year	2 year		

Element Group:	Decks	Length:		0.7 m					
Element Name:	Wearing Surface		Width:	Width:		11.0 m			
Location:		Height:							
Material:	Asphalt		Count:						
Element Type:			Total Quantity: 7.7 So			m			
Environment:			Limited In	spection					
Protection System:				•			Perform.		
	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		7.7						
Comments: Generally, the a		ndition Lines need		1					
Comments. Generally, the a	spirari surrace is in Good Co	nation. Lines need	to be to paintee						
Recommended Work:	✓ Rehab	Replac	e	Mainte	enance	Needs:			
	□ 1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year		
Element Group:	Approaches		Length:		6.0 m				
Element Name:	Wearing Surface		Width:		11.0 m				
Location:	North - South	Height:		11.0 III					
Material:	Asphalt	Count:		2					
Element Type:	113pitett	Total Quantity: 132.0 Sq.m			a.m				
Environment:		Limited In		4					
Protection System:							Perform.		
	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: $\frac{1}{m^2 \sqrt{m}}$	\square / each \square / % \square / all \square		73.2	1 4.2		1 001			
L.	·		73.2						
Comments: Wide transverse	crack along the North appro	oach							
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:			
	□1-5 years	□6-10 y				□1 year	☐2 year		
	— 10 years								
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	East - West		Height:						
Material:			Count:		1				
Element Type:			Total Qua	ntity:	1				
Environment:			Limited In	spection					
Protection System:			•	•			Perform.		
	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: ${m^2 \Pi/m}$			1						
I				1 4 1	1 1				
Comments: Plant growth alo	ong the water stream South of	or County Road 22,	with recommen	dations to b	e snaved.				
Recommended Work:		Replac	e	Mainte	enance	Needs:			
	☑ 1-5 years	☐ 6-10 y		Urge		1 year	2 year		
	<u> </u>				-		<u> </u>		
				1					



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:			
G			7
Structure Number	14 (Formerly 22)		
Hwy/Road Name	Intersection Road		
Structure Location	At intersection with Banwel	l Road	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 17' 32.0634"		Longitude -82° 53' 48.084"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.5	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐
Total Deck Length	17.0	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	42.0	(m)	AADT % Trucks
Total Deck Area	8.500	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	17.0	(m)	Detour Length Around Bridge 4.0 (km)
Fill on Structure	1.0	(m)	Direction of Structure
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1990		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equ			
(ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		Februa	ary 1, 2016						
Inspector		Hossai	m Bakr (Di	llon	Consulting I	Ltd)			
Others in Party			•						
Access Equipment Used		Camer	a, Measurii	ng T	ape, Measuri	ing Whe	el, and	Hammer	
Weather		Cloud	y, Probabili	ty of	f rain 1%				
Temperature		1 (6/-	1) Celsius						
Overall Structure Notes:									
Overan Structure 1400									
Recommended Work on S	Structure	□Nor	ne		/Iinor Rehab.		□Мај	or Rehab.	Replace
Timing of Recommended	Work	☑ 1 to	5 years	□ 6	to 10 years				
Overall Comments Limited Inspection - The structure is in poor condition. Culvert barrel is severely corroded with heave 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 Data.									
Element Group:	Signs				Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material:					Count:		1		
Element Type:	Stop Sign.				Total Quan		1		
Environment:					Limited Ins	spection			T
Protection System:				-					Perform.
Condition Data: ${m^2 \square / m}$	Units \Box / each \Box / % \Box	/ all 🗆	Exc.		Good	Fa	ir	Poor*	Deficiencies
Comments: - Existing Sign			1						
Recommended Work:	□Rel	nab	□Rep	lace	:	Maint	enance	Needs:	
	□1-5	years	☐6-1			□Urge	ent	□1 year	☐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 Qua	ntity:	66.0 Sc	g.m			
Environment:			Limited In		П				
Protection System:				P		Perform.			
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: m ² /m	\square / each \square / % \square / all \square	Enc.	19.8	33.		13.2			
L.,									
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:	Rehab			Mainte		Maada			
Recommended work:		Replac				Needs:	П2		
	□ 1-5 years	□6-10 y	ears	☐Urge	nt	☐1 year	☐2 year		
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	North - South		Height:						
Material:			Count:		1				
Element Type:			Total Qua	ntity:	1				
Environment:		Limited Inspection							
Protection System:							Perform.		
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each□/ % □/ all 🗹		1						
Comments: In Good Condit	1011								
Recommended Work:	Rehab	Replac	ce	Mainte	Maintenance Needs:				
	□1-5 years	 ☐6-10 y		ПUrge	.,		☐2 year		
	— 1 0 70 010	— 0 10 ,		— 0.80		□1 year	— – y • • • •		
Element Group:	Embankments & Streams		Length:						
Element Name:			Width:						
	Embankments		Height:						
Location: Material:			Count:		4				
			Total Qua	m+i+	4				
Element Type:				-	4				
Environment:			Limited In	ispection	<u> </u>				
Protection System:						75 di	Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
m ² ☑/m	□/ each		4						
Comments: In Good Condit	ion								
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:			
	11-5 years	☐ 6-10 y		Urge		1 year	2 year		
	<u></u>			50					
				1					

Element Group:	Decks	Decks			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 In	spection					
Protection System:							Perform.		
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		5.0	2.5	5				
Comments: - Longitudinal crack over the culvert section									
- Medium Progi	Medium Progressive edge cracks at the South edge of Intersection Road								
Recommended Work:	☑ Rehab	Replac	ρ	Mainte	enance l	Needs:			
Recommended work.	☑1-5 years	☐6-10 ye		Urge		1 year	☐2 year		
	≥ 11-3 years	0-10 ус	7a1 S	Lorge	111	□1 year	□2 yeai		
El C	1		T		_				
Element Group: Element Name:	Approaches		Length:		6.0 m				
	Wearing Surface		Width:		17.0 m				
Location:	East - West		Height:						
Material:	Asphalt		Count:		20400				
Element Type:		Total Quar		204.0 S	q.m				
Environment:	Limited Inspection								
Protection System:	TT *:	H. iv.				To all	Perform.		
Condition Data:	Units	Exc.	Good	Fai	-	Poor*	Deficiencies		
Condition Data. $m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square$ 150.0					0				
Comments: - Medium map cracking at both approaches									
- Medium Progr	ressive edge cracks at the So	uth edge of Intersec	tion Road						
Dagamen dad Warls	□ n. tt	□n1		Moint		Maada			
Recommended Work:	☑ Rehab	Replac			intenance Needs:		По		
	□ 1-5 years	□6-10 ye	ears	☐Urgent ☐1 year		□1 year	☐2 year		
Element Group:			Lanath						
Element Name:			Length: Width:						
Location:			Height:						
Material:			Count:						
Element Type:			Total Quar	ntity:					
Environment:			Limited In		П				
Protection System:			Limited in	spection	<u> </u>		Df		
Tiotection system.	Units	Erro	Good	Fai	.	Poor*	Perform. Deficiencies		
Condition Data:		Exc.	Good	га	Г	Poor	Deficiencies		
$m^2 \square / m$	\square / each \square / % \square / all \square								
Comments:									
Dogomeranda 1 W 1	— D 1 1			Marine		Naads:			
Recommended Work:		☐ Rehab ☐ Replace				NEEDS.			
						l l			
	☐ Renab ☐ 1-5 years	☐ 6-10 ye		Urge		1 year	2 year		
						l l	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 Tecums	eh Road East	
Structure Type	Concrete Pipe Culvert		
Latitude	42° 18' 40.896"		Longitude -82° 50' 48.5874"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	0.28	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	9.5	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	25.5	(m)	AADT % Trucks
Total Deck Area	2.660	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	9.5	(m)	Detour Length Around Bridge 1.1 (km)
Fill on Structure	1.5	(m)	Direction of Structure N
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:		_	

Field Inspection Information:									
Date of Inspection	F	Februa	ry 2, 2016						
Inspector	I	Hossar	n Bakr (Dill	lon Co	onsulting L	Ltd)			
Others in Party									
Access Equipment Used	(Camer	a, Measuring	g Tap	e, Measuri	ng Whee	el, and	Hammer	
Weather	F	Fog, P	robability of	f preci	ipitation 61	1%			
Temperature	-	1 (6 /	4) Celsius						
	<u> </u>								
Overall Structure Not	tes:								
Recommended Work on S	led Work on Structure None Minor Rehab				nor Rehab.		□Мај	or Rehab.	Replace
Timing of Recommended	Work	□1 to 5 years □6 to 10 years							
Overall Comments Limited inspection - Existing manholes with cast iron cover at both the Inlet and Outlet.					Outlet.				
Date of Next Inspection									
	•								
Element Data:									
Diement Butu.									
Element Group:	Signs			I	Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material:					Count:	. • .	1		
Element Type:	Stop Sign				Total Quan		1		
Environment: Protection System:				1	Limited Ins	spection			DC
	Units		Exc.		Good	Fai	ir	Poor*	Perform. Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ :	all□	1		Good	1 41		1 001	Belletelletes
Comments: In Excellent Co	ndition								
Recommended Work:	Reha	h	□Repl	lace		Mainte	enance	Needs:	
Tecommended Wolk.	□1-5 ye		□6-10		S	Maintenance Needs: ☐Urgent ☐1 year			☐2 year
				J		8	-		

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 Quar	ntity:	22.5 Sq	ı.m		
Environment:			Limited In	spection				
Protection System:					Perform.			
C - Pris Data	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each□/ %□/ all□		22.5					
Comments: Limited Inspection - Covered Manhole at both Inlet/Outlet								
Recommended Work:	Rehab	Replac	e	Maintenance Needs:				
	☐1-5 years			Urge		□1 year	☐2 year	
	□1-5 years □6-10 years							
Flamont Crount	Culverts		Langth		T			
Element Group: Element Name:		Length: Width:		m				
Location:	Inlet Components		Height:		m	_	_	
Material:	East Side		Count:		m			
Element Type:	Cast-in-place concrete	Total Quar	antity: Sam			_		
Environment:	Rectangular Manhole		•	Sq.m	_	_		
Protection System:	1		Limited In	spection	V			
Protection System.	***		C . 1	T		D	Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m²Ľ/m∣	□/ each □/ % □/ all □			<u></u>				
Comments: Limited Inspect				1 34.5		xy 1		
Recommended Work:	Rehab	Replac			Maintenance Needs:			
	□1-5 years	□6-10 y	ears	Urgent		☐1 year	☐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 Quar	ntity:	Sq.m			
Environment:			Limited In					
Protection System:				<u>. i</u>			Perform.	
	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$		+		1				
Comments: Limited Inspect				<u>.I</u>				
Recommended Work:	Rehab	Replac	ce	Mainte	enance i	Needs:		
	1-5 years	☐ 6-10 y		Urge		1 year	2 year	
	што усыз		cars		111	<u> </u>	Li 2 y Cui	

Element Group:	Decks		Length:		0.33 m		
Element Name:	Wearing Surface		Width:		9.5 m		
Location:			Height:				
Material:	Asphalt		Count:				
Element Type:			Total Quar	ntity:	3.1 Sq.m		
Environment:			_	nited Inspection			
Protection System:		-	,—II		_		Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \mathcal{V} /m}$	\square / each \square / % \square / all \square	- Exc.	3.1			1001	
<u> </u>			3.1				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Replac		Mointe	enance N	Inada	
Recommended work:							Па
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐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 Quar	ntity:	114.0 Sq.	.m		
Environment:	Severe	Limited In	spection				
Protection System:		-	,—II				Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \mathcal{L} /m}$	□/ each □/ % □/ all □	Exc.	114.0	1 41		1 001	Beneficies
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Replac		Maintenance Needs:			
Recommended work.						1 year	П2
	□1-5 years	□6-10 y	ears	Urge	nı	□1 year	☐2 year
Elamant Cassas			T				
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:	_		Count:	. • .			
Element Type:	_		Total Quar				
Environment:			Limited In	spection	Ш		
Protection System:	<u> </u>				1		Perform.
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
$m^2 \square / m$	□/ each □/ % □/ all □						
Comments:		<u>.</u>					
Comments.							
Recommended Work:	☐ Rehab	Replac	ce c	Mainte	enance N	leeds:	
	1-5 years	□ 6-10 y		Urge	nt	1 year	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 Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List						
Span Length	1.2	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐						
Total Deck Length	10.5	(m)	Posted Speed No. of Lanes 2						
Overall Str. Width	18.0	(m)	AADT % Trucks						
Total Deck Area	12.600	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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						
Historical Data:									
Year Built	Unknown		Year of Last Major Rehab.						
Last OSIM Inspection	n		Last Evaluation						
Last Enhanced OSIM	<u> </u>		Current Load Limit N/A (tonnes)						
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #						
Last Underwater Insp	ection		By-Law Expiry Date						
Last Condition Surve	у								
Rehab History:									

Field Inspection Information:									
Date of Inspection	Feh	ruary 2, 2016							
Inspector		•	lon Consulting 1	[td)					
	Hos	Saili Baki (Dii	ion Consuming I	Liu)					
Others in Party									
Access Equipment Used	Can	nera, Measurin	g Tape, Measur	ring Wheel, and	l Hammer				
Weather	Fog	, Probability of	f precipitation 6	1%					
Temperature	-1 (6 / 4) Celsius							
Overall Structure Notes:									
Recommended Work on S	tructure	Vone	☐Minor Rehab	 . □Ma	jor Rehab.	Replace			
Timing of Recommended			☐6 to 10 years		<u> </u>				
Overall Comments			<u> </u>	ulvart harral Waar	ing surface was che	varued with two (2)			
Overall Comments Light corrosion at the bottom half of the potholes over the culvert section, wide t approach. Stop Sign is required to be place.				nsverse cracks and	Medium progressiv				
Date of Next Inspection									
	•								
Element Data:									
Element Data.									
Element Group:	Signs		Length:						
Element Name:	Signs		Width:						
Location:			Height:						
Material:			Count:	0					
Element Type:			Total Quar						
Environment:			Limited In	spection		Т			
Protection System:			T		T	Perform.			
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units ☐/ each ☐/ % ☐/ all [Exc.	Good	Fair	Poor*	Deficiencies			
Comments: - Stop Sign is red									
	astallation of Object Mark	er signs and Objec	et Markings to meet	the Ontario Traffic	c Manual				
Recommended Work:									
Recommended Work:	∟Renab								
Recommended Work:	☐ Renab	·····		Urgent	☐1 year	☐2 year			

Element Group:		Culverts		Len	gth:		18.0 m		
Element Name:		Barrels		Wid	lth:		0.3 m (Dia.)	
Location:				Heiş	ght:				
Material:		Corrugated Steel		Cou	nt:				
Element Type:				Tota	al Quar	ntity:	17.0 Sc	ı.m	
Environment:		Moderate		Lim	ited In	spection			
Protection System	n:								Perform.
G 11:1: D 1		Units	Exc.	God	od	Fai	r	Poor*	Deficiencies
Condition Data:	m²☑/m	\square / each \square / $\%$ \square / all \square		13.	.6	3.4			
Comments: Light corrosion at the bottom half of the culvert barrel.									
D 1 . 1	XX71-	□				36.4		NT 1	
Recommended	work:	Rehab	Repla					Needs:	
		□1-5 years	□6-10 y	ears/		□Urge	nt	☐1 year	☐2 year
						L			
Element Group:		Decks		Len			0.3 m		
Element Name:		Wearing Surface		Wid			10.5 m		
Location:				Heig	ght:				
Material:		Asphalt		Count:					
Element Type:				Total Quant			3.15 Sc	Į.m	
Environment:			ited In	spection					
Protection System	n:								Perform.
Condition Data:		Units	Exc.	God	od	Fai	r	Poor*	Deficiencies
		□ / each □ / % □ / all □		2	5			0.65	
Comments: Two	Comments: Two (2) potholes located over the culvert								
Recommended	Work:	Rehab	□Repla	ce		Maintenance Needs:			
		□1-5 years	□6-10 y	ears/		□Urgent □1 yes		□1 year	☐2 year
						Asphalt repair			
						T Ispitate I			
El		Τ. ,		Τ	. 41				
Element Group:		Approaches		Len	_		6.0 m		
Element Name:		Wearing Surface		Wid			10.5 m		
Location:		North - South		Heig					
Material:		Asphalt		Cou			2		
Element Type:				_	al Quar	•	126.0 \$	Sq.m	
Environment:				Lim	ited In	spection	Ш		
Protection System	n:	TT 1	-		1			D dt	Perform.
Condition Data:		Units	Exc.	Goo		Fai	r	Poor*	Deficiencies
	m²☑/m	□/ each□/ % □/ all□		10	0	20		6	
Comments: - Wi	de transvers dium progr	se cracks essive edge cracks at the Sou	ith approach						
Recommended Work: Replace					Mainte	enance	Needs:		
Recommended	11 OIK.	1-5 years	☐ Kepia			Urge		1 year	2 year
		□1-3 years	0-10 }	cal S		· · · · · · · · · · · · · · · · · · ·		⊔ı year	⊥ ∠ year
						Asphalt r	epair		

Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	North - South	Height:	Height:				
Material:			Count:	Count: 1			
Element Type:			Total Quar	ntity:	1		
Environment:	1		Limited In				
Protection System:							Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square	1		-	+		
<u> </u>	, L	1					
Comments: In Excellent Co.	ndition						
Recommended Work:		Replac		Mainte	nance N	Needs:	
Recommended work.	☑1-5 years	☐6-10 y		Urger		1 year	☐2 year
	∠ 11-3 years	<u> </u>	ears	Lorger	[]L	⊔т уеаг	□2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		4		
Element Type:		Total Quar	Total Quantity: 4				
Environment:			Limited In	spection			
Protection System:							Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \square / m}$	□/ each ☑ / % □/ all □	4					
<u> </u>					I		
Comments: In Excellent Co.	ndition						
Recommended Work:	Rehab	Replac	re.	Mainte	nance l	Needs:	
Tree of the first	□1-5 years	□6-10 y		Urger		□1 year	2 year
	□1-5 years	шо-то у	cars	Orgen		шт усаг	□ 2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Slope Protection		Width:				
Location:	North - South		Height:				
Material:			Count:		2		
	Masonry			Count: 2 Total Quantity: 2			
Element Type:	Hand Laid Riprap						
Environment:			Limited In	spection			
Protection System:					1		Perform.
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
$m^2 \square / m$	□ / each □ / % □ / all □	1]
Comments: In Excellent Co.	ndition						
Recommended Work:	☐ Rehab	☐ Replac	e	Mainte	nance l	Needs:	
	☐1-5 years	□6-10 y	ears	Urger	nt	☐ 1 year	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)	17 (Formerly 66)					
Hwy/Road Name	North Talbot Road	North Talbot Road					
Structure Location	at the transition from North	Talbot Road to Co	oncession Road 9				
Structure Type	Non-Rigid Frame Open Foo	ting Culvert					
Latitude	42° 13' 51.924"		Longitude -82° 55' 53.0034"				
Owner(s)	Town of Tecumseh		Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List				
Span Length	1.90	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐				
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: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	2000		Year of Last Major Rehab.				
Last OSIM Inspection	n		Last Evaluation				
Last Enhanced OSIM	Inspection		Current Load Limit 5.0 (tonnes)				
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #				
Last Underwater Insp	rwater Inspection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:								
Date of Inspection	J	January 27, 2016							
Inspector	I	Hossam Bakr (Dillon Consulting Ltd)							
Others in Party									
Access Equipment Used		Came	ra. Measurin	g Tape, Measur	ing Whee	el. and	Hammer		
Weather				obability of Sno					
Temperature									
Tomperature	Temperature 0 (17-3) Cersius								
Overall Structure Not	tes:								
Recommended Work on S	Structure	□Noi	no l	☐Minor Rehab		Пмаі	or Rehab.	Replace	
	-			_	·•	шиај	of Kellab.	Пкеріасе	
Timing of Recommended				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									
	<u>'</u>								
Element Data:									
Element Group:	Signs			Length:					
Element Name:	Signs			Width:					
Location:				Height:					
Material:				Count:	2				
Element Type:	Hazard Marker Signs	S		Total Quar	Total Quantity: 2				
Environment:				Limited In	spection				
Protection System:				1				Perform.	
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units \square / each \square / $\%$ \square / :	o11□	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Comments: - Existing Sign									
Dagammandad Warls	Reha	1.	□n1		Maintenance Needs:				
Recommended Work:	☐ Rena ☐1-5 ye		□Repl □6-10		Urge		□1 year	☐2 year	
	ус		 0 10	<i>J</i> 2415	Lorge	-116	Li yeai		

Element Group:	Culverts		Length:			10.0 m		
Element Name:	Soffit - Inside Boxes		Width:		1.9 m			
Location:			Height:	Height:				
Material:	Cast-in-place concrete		Count:					
Element Type:			Total Quai	Total Quantity:		Į.m		
Environment:		Limited Ins						
Protection System:							Perform.	
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each□/ %□/ all□		55.0					
Comments: In Good Condition								
Recommended Work:	Rehab	Replac	ne	Mainte	nance	Needs:		
Recommended work.	☐1-5 years	☐6-10 y		Urge		1 year	☐2 year	
	□1-3 years		ears		111		□ 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 Quai	Total Quantity: 8.1 Sq.m					
Environment:		Limited In	Limited Inspection					
Protection System:				•			Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		5.6	1.0)	1.5		
Comments: Concrete Spalls at the top of the wingwalls								
Comments. Concrete Spans	at the top of the wingwans							
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year	
Element Group:	Culverts		Length:		2.5 m			
Element Name:	Outlet Components		Width:	1		0.3 m		
Location:	North Side		Height:		0.5 m			
Material:	Cast-in-place concrete		Count:		0.0 III			
Element Type:	Headwall		Total Quar	ntity:	1.5 Sq.	m		
Environment:	Headwan		Limited In		П	1.5 Sq.iii		
Protection System:			Limited in	вресноп			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \sqrt{m}}$	\square / each \square / $\%$ \square / all \square	EAC.		1 41			Belleteneres	
L.			1.25			0.25		
Comments: Concrete Spalls	at the corner due to vehicle r	novement.						
				1				
Recommended Work:	Rehab	Replac				Needs:		
	☐1-5 years	□ 6-10 y	ears	Urge	nt	☐1 year	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:	Count:			
Element Type:	Wingwall		Total Quantity: 13.0		13.0 Sq	.m	
Environment:		Limited In	spection				
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	□/ each□/ % □/ all□		13.0				
Comments: In Good Condition							
Recommended Work:	Rehab	ee	Mainte	enance l	Needs:		
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐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 Quar	Total Quantity: 1.15 Sq.m				
Environment:			Limited Inspection				
Protection System:			•	•			Perform.
C IV. D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		1.15				
Comments: In Good Condition Recommended Work:							
	□1-5 years	□6-10 y				□1 year	☐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			.m		
Environment:				mited Inspection			
			Limited In	spection	Ш	1	
Protection System:			Limited In	spection			Perform.
Protection System:	Units	Exc.	Limited In Good	spection Fai		Poor*	Perform. Deficiencies
	0	Exc.	1	•	r	Poor* 2.25	
Protection System: Condition Data: m² □/m Comments: - Wide transver - Light map crac	□/ each □/ % □/ all □	Exc.	Good	Fai	r		
Protection System: Condition Data: m² □/m Comments: - Wide transver - Light map crac	□/ each □/ % □/ all □ se cracks cking	Exc.	Good 9.45	Fai 2.0	r	2.25	
Protection System: Condition Data: m² □/m Comments: - Wide transver - Light map crac - Severe alligator	☐/ each ☐/ % ☐/ all ☐ se cracks cking or at the road North side		Good 9.45	Fai 2.0	r enance	2.25	
Protection System: Condition Data: m² □/m Comments: - Wide transver - Light map crac - Severe alligator	□/ each □/ % □/ all □ se cracks cking or at the road North side □ Rehab	Replac	Good 9.45	Fai 2.0	r enance	2.25 Needs:	Deficiencies

Element Group:	Approaches		Length:	Length:		6.0 m		
Element Name:	Wearing Surface		Width:	Width:				
Location:	East - West		Height:	Height:				
Material:			Count:	Count:				
Element Type:			Total Quar	Total Quantity: 86.4 S		q.m		
Environment:	Limited			imited Inspection				
Protection System:			•				Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		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:	Rehab Replace		ce	Mainte	enance	Needs:		
	☐1-5 years	□6-10 y		□Urge	nt	□1 year	☐2 year	
				Asphalt 1		<u>, </u>		
				•				
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	North - South		Height:					
Material:			Count:		1			
Element Type:			Total Quar	ntity:	1			
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m$	□/ each □/ % □/ all 🗹		1					
Comments: Minor Plant growth blocking the water flow, and large stone at the Northern waterway. recommended to be shaved								
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:		
	□1-5 years	 □6-10 y		rs 🔲 Urgent 🔲 1 year		□1 vear	☐2 year	
				Drain repairs				
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:			Height:					
Material:			Count:		5			
Element Type:			Total Quar	ntity:	5			
Environment:			Limited In					
Protection System:	1		_ Elimited III	Бреспоп			Perform.	
, and the second	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \square / m!}$	\square / each \square / % \square / all \square	Zine.	5	1 41	•	1 001		
Comments: In Good Condit								
Recommended Work:	Rehab	Replac	re	Mainte	enance	Needs:		
recommended work.	☐ Renab	☐6-10 y		Urge		□1 year	☐2 year	
	LI-J years	у	Cal S	Lorge	111	□1 yeal	⊔∠ yeai	



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:							
Circuit and National and	10 (F. 1. (5)						
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 □ Not Cons. □ Cons./not App. □ List/not Designation: □ Desig./not List □ Desig. & List				
Span Length	1.25	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐				
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: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	2000		Year of Last Major Rehab.				
Last OSIM Inspection	ı		Last Evaluation				
Last Enhanced OSIM	Inspection		Current Load Limit 5.0 (tonnes)				
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Insp	ection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:					
Date of Inspection	Jan	uary 27, 2016				
Inspector	Но	ssam Bakr (Dil	lon Consulting 1	Ltd)		
Others in Party		`		,		
Access Equipment Used	Car	mera. Measurin	ng Tape, Measur	ing Wheel, ar	nd Hammer	
Weather			robability of Sno			
Temperature		1 / -3) Celsius	or since	7.1. 370		
Tomperature 0 (17-3) Constant						
Overall Structure Not	tes:					
Recommended Work on S	Structure Di	None	☐Minor Rehab		Iajor Rehab.	Replace
Timing of Recommended				· — IV	rajor Kenao.	Пкеріасе
			☐6 to 10 years			
I =			er the culvert section		earing surface with w cressive edge cracks a	ide transverse and at north approach. Light
Date of Next Inspection						
	l .					
Element Data:						
Element Group:	Signs		Length:			
Element Name:	Signs		Width:			
Location:			Height:			
Material:			Count:	2		
Element Type:	Speed Limit / Maximum	n Weight	Total Quar	ntity: 2		
Environment:			Limited In	spection		
Protection System:						Perform.
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ all	Exc.	Good	Fair	Poor*	Deficiencies
Comments: - Exisiting signs		-,	ends (N Talbot Rd.)			
	nstallation of Object Mark				fic Manual	
Recommended Work:	□Rehab	□Rep	lace	Maintenan	ce Needs:	
	□1-5 year	rs □6-10) years	Urgent	□1 year	☐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 Quar	ntity:	53.80 \$	Sq.m	
Environment:			Limited In	spection			
Protection System:							Perform.
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		43.0	10.	8		
Comments: Light corrosion at the bottom half of the pipe culvert							
Recommended Work:	commended Work: Rehab Replace		ce	Mainte	enance	Needs:	
	□1-5 years	□6-10 y	ears	Urge	nt	□1 year	☐2 year
El . C	G 1 .		T .1				
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 Quai	•	22.70 Sq.m			
Environment:		Limited Inspection					
Protection System:	TT 1:	ъ	G 1	T		To all	Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
			22.7				
Comments: In good Conditi							
Recommended Work:	Rehab	□Replac		Maintenance Needs:			
	□1-5 years	□6-10 у	ears	□Urge	nt	☐1 year	☐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 Quar	ntitv:	22.70 \$	Sa.m	
Environment:			Limited In	-		1	
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² /m	\square / each \square / % \square / all \square		22.7				
Comments: In good Conditi		L	22.1				
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	1-5 years	□6-10 y		Urge		☐1 year	2 year
		J					

Elamant Cassas	ъ .		I amostle.		4.05			
Element Group:	Decks		Length:		1.25 m			
Element Name:	Wearing Surface		Width:		7.2 m			
Location:			Height:					
Material:	Asphalt		Count:					
Element Type:			Total Quar		9.0 Sq.	m		
Environment:			Limited In	spection			1	
Protection System:							Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	\square / each \square / % \square / all \square		5.0	3.0)	1.0		
Comments: - Moderate ma	p cracking over the culvert essive edge cracks at the road	North side			'			
Severe progre	ssive edge cracks at the road	rvorui side						
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:		
	□1-5 years	□6-10 ye		Urge		□1 year	☐2 year	
	□1 3 years		241 3			шт усаг	<u> </u>	
				Asphalt 1	repairs			
Elamant Cassas	1		T					
Element Group:	Approaches		Length: Width:		6.0 m			
Element Name:	**	Treating Surface			7.2 m			
Location:			Height:					
Material:			Count:		2			
Element Type:	-		Total Quar	•	86.4 Sq.m			
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	\square / each \square / % \square / all \square		61.0	15.	0	10.4		
Comments: - Longitudinal	& Transverse cracks over the	culvert						
	essive edge cracks at the road							
Recommended Work:	Rehab	□Replac		Maintenance Needs:				
	□1-5 years	□6-10 ye	ears	☐Urgent ☐1 year		☐1 year	☐2 year	
				Asphalt r	epairs			
			_	·				
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	North - South		Height:					
Material:			Count:		1			
Element Type:			Total Quar	ntity:	1			
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		1					
Comments: Light plant gro		road side						
Comments. Eight plant gro	will off the waterway rediffer	Todd side						
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance	Needs:		
	1-5 years	□ 6-10 ye		Urge	nt	☐1 year	2 year	
	,			Drain ma		-	<u> </u>	
				Diam ma	c.iaile	~		

T1 . NT	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:			Height:					
Material:			Count:		5			
Element Type:			Total Quai	ntity:	5			
Environment:			Limited In	spection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fair	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square}$	m □/ each ☑/ % □/ all □		5					
Comments: In Good Co	ndition	,		<u> </u>	I			
Recommended Work	: Rehab	Rehab Replace		Mainte	nance	Needs:		
	□1-5 years	□6-10 уе	ears	□Urgeı	nt	□1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Slope Protection		Width:					
Location:			Height:					
Material:	Masonry		Count:		1			
Element Type:	Hand laid Riprap				1			
Environment:								
Protection System:			Limited In	F			Perform.	
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \square / n^2}$	$m \square / each \square / \% \square / all \square$		1	1 442		1001		
Comments: In good Condition, located at the embankment facing the culvert South elevation								
Comments: In good Cor	attion, located at the embankme	nt racing the curver	rt South elevatio	On				
Recommended Work	: Rehab	Replace	e	Mainte	nance	Needs:		
				Urgei			☐2 year	
		\Box 1-5 years \Box 6-10 years				L I y Cai		
			ears			<u>-</u>	<u></u>	
			ears	Orgen				
			ears	Lorge				
				Lorger				
Element Group:			Length:					
Element Name:			Length:			-		
Element Name: Location:			Length: Width: Height:					
Element Name: Location: Material:			Length: Width: Height: Count:			J		
Element Name: Location: Material: Element Type:			Length: Width: Height: Count: Total Quan	ntity:		5		
Element Name: Location: Material: Element Type: Environment:			Length: Width: Height: Count:	ntity:		-		
Element Name: Location: Material: Element Type:			Length: Width: Height: Count: Total Quan	ntity:			Perform.	
Element Name: Location: Material: Element Type: Environment: Protection System:	Units	Exc.	Length: Width: Height: Count: Total Quan	ntity:		Poor*		
Element Name: Location: Material: Element Type: Environment: Protection System:	Units m □/ each □/ % □/ all □		Length: Width: Height: Count: Total Quan	ntity:			Perform.	
Element Name: Location: Material: Element Type: Environment: Protection System:			Length: Width: Height: Count: Total Quan	ntity:			Perform.	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/			Length: Width: Height: Count: Total Quan	ntity:			Perform.	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/	m		Length: Width: Height: Count: Total Quar Limited In	ntity: spection Fair			Perform.	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \square /$ Comments:	m □/ each□/ % □/ all□ :: □ Rehab	□Replace	Length: Width: Height: Count: Total Quan Limited In	ntity: aspection Fair	nance	Poor* Needs:	Perform. Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \square /$ Comments:	m		Length: Width: Height: Count: Total Quan Limited In	ntity: spection Fair	nance	Poor*	Perform.	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/ Comments:	m □/ each□/ % □/ all□ :: □ Rehab	□Replace	Length: Width: Height: Count: Total Quan Limited In	ntity: aspection Fair	nance	Poor* Needs:	Perform. Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/ Comments:	m □/ each□/ % □/ all□ :: □ Rehab	□Replace	Length: Width: Height: Count: Total Quan Limited In	ntity: aspection Fair	nance	Poor* Needs:	Perform. Deficiencies	



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:							
Charles N. a. L.	10 (F. 1 (A)						
Structure Number	19 (Formerly 64)						
Hwy/Road Name	North Talbot Road						
Structure Location	0.60 km East from Oldcastle	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 Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List				
Span Length	1.20	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐				
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: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	1999		Year of Last Major Rehab.				
Last OSIM Inspection	1		Last Evaluation				
Last Enhanced OSIM			Current Load Limit 5.0 (tonnes)				
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Insp	ection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:								
Date of Inspection	Ja	anuar	ry 27, 2016						
Inspector	Н	Iossaı	m Bakr (Dille	on Cons	ulting I	Ltd)			
Others in Party									
Access Equipment Used	N	/leasu	ring Tape, M	1 easurin	g Whee	el, and H	ammer		
Weather	N	lostly	y Cloudy, Pro	obability	of Snc	ow 3%			
Temperature	0	(1/-	-3) Celsius						
	<u> </u>								
Overall Structure Notes:									
Recommended Work on S	Structure	□Nor	ne [□Mino	r Rehab	•	□Мај	or Rehab.	Replace
Timing of Recommended	Work [□ 1 to	5 years [☐6 to 1	0 years				
Overall Comments Generally, Culvert barrel edges are was observed at the wearing surfactor of the approaches. The waterway of the approaches are was observed at the wearing surfactor of the approaches.			ace over t	he culvert	section.	Wide progressive e	dge cracks at both sides		
Date of Next Inspection									
Element Data:									
Element Group:	Signs				ngth:				
Element Name:	Signs				dth:				
Location: Material:					ight: unt:		2		
Element Type:	Speed Limit / Maximu	um We	eight .		al Quan	ntity:	2		
Environment:	Speed Emilit / Waximit	uiii vv	JI GIII			spection			
Protection System:						P			Perform.
Condition Data:	Units ☐/ each ☑/ % ☐/ a	J1 🗖	Exc.		ood 2	Fai	ir	Poor*	Deficiencies
Comments: - Exisiting signs			d at both road a	I					
	nstallation of Object Ma						o Traffic	Manual	
Recommended Work:	Rehab)	□Repla	ace		Mainte	enance	Needs:	
	□1-5 ye	ars	□6-10	years		□Urge	nt	□1 year	☐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 Quar	ntity:	75.4 S	a.m	
Environment:			Limited In	•	П	4,	
Protection System:			Ziiiiiii da	эрссион			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	\square / each \square / $\%$ \square / all \square	LAC.	68.0	7.4		1 001	Belleteneres
Comments: In Good conditi	on with distored edges at the	Southern outlet.					
Recommended Work:	k: Rehab Replace			Mainta		Needs:	
Recommended work:		•••••					Па
	□ 1-5 years	□6-10 y	ears	Urge	nt	□1 year	☐2 year
Element Group:	Decks		Length:		4.5 m		
Element Name:	Wearing Surface		Width:		7.2 m		
Location:			Height:				
Material:	 		Count:				
Element Type:		Total Quar	ntity:	y: 32.4 Sq.m			
Environment:				spection			
Protection System:							Perform.
G 1111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each□/ % □/ all□		32.4				
l ,				1			
Comments: In good condition	OII						
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:	
	□1-5 years	□6-10 y		L.		□1 year	☐2 year
	— 1 0 70 010					— 1 ,	— – y • • • •
Element Group:	A		Lanath		- 0		
	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface		Width:		7.2 m		
Location:	4 1 1		Height:				
Material:	Asphalt		Count:	-4:4	2		
Element Type: Environment:			Total Quar	•	86.4 S	q.m	
			Limited In	spection	<u> </u>		D C
Protection System:	TT 1	-		Б.		D 4	Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² ✓/m	\square / each \square / % \square / all \square		40.9	35.:	5	10.0	
Comments: - Wide progress	sive edge cracks on both sides	of the approaches	S				
- split crack bet	ween the new asphalt over cu	lvert and approach	nes				
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	11-5 years	☐6-10 y		Urge		☐1 year	2 year
	<u></u>			Asphalt re			<u> </u>
				гариан п	cpans		

Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	North - South		Height:				
Material:			Count:	2	2		
Element Type:			Total Qua	ntity: 2	2		
Environment:			Limited Ir	spection			
Protection System:				•			Perform.
	Units	Exc.	Good	Fair		Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each□/ % □/ all □		1	1			
Comments: The waterway is		I I		<u>i</u>	<u> </u>		
Comments. The waterway is	s olocked with plants on both	ir sides dild severiy	on the Bouth ou	tiot.			
Recommended Work:	Rehab	Replac	ee	Maintenance Needs:			
	□ 1-5 years	□ 6-10 у	ears	Urgent	t	☐1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		4		
Element Type:			Total Qua		4		
Environment:							
Protection System:			Limited Ir				Perform.
	Units	Exc.	Good	Fair		Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square		4				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Replac	ee	Mainten	nance N	leeds:	
	□1-5 years	 □6-10 y		Urgent	t	☐1 year	☐2 year
	<u>— J</u>			8	-		
Element Group:	Embankments & Streams		Length:				
Element Name:	Slope Protection		Width:				
Location:	South Side		Height:				
Material:	Masonry		Count:	2	2		
Element Type:	Hand laid Riprap		Total Qua	ntity: 2	2		
Environment:			Limited Ir	spection [
Protection System:				•			Perform.
G 1111 B	Units	Exc.	Good	Fair		Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	/ each/ %/ all		2				
L.,	-		2				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Replac	e e	Mainten	nance N	leeds:	
	☐1-5 years	☐ 6-10 y		Urgent		1 year	2 year
				- 5 - 111	-		
i e							



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:							
Circuit and Ni and an	20 (F. 1 (2)						
Structure Number	20 (Formerly 63)						
Hwy/Road Name	Oldcastle Road	Didcastie Road					
Structure Location		At intersection with North Talbot Road					
Structure Type	Corrugated Steel Pipe	Corrugated Steel Pipe					
Latitude	42° 14' 06.57" N		Longitude 82° 56' 53.52" W				
Owner(s)	Town of Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List				
Span Length	1.5	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑				
Total Deck Length	22.0	(m)	Posted Speed No. of Lanes 2				
Overall Str. Width	170	(m)	AADT % Trucks				
Total Deck Area	33	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	2011		Year of Last Major Rehab.				
Last OSIM Inspection	n		Last Evaluation				
Last Enhanced OSIM	Inspection		Current Load Limit (tonnes)				
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Insp	pection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:							
Date of Inspection	Jai	January 27, 2016						
Inspector	Но	ossam Bakr (Dil	lon Consulting 1	Ltd)				
Others in Party		<u>:</u>	-	<u></u>				
Access Equipment Used	M	easuring Tape, I	Measuring Whee	el, and Hammer				
Weather	M	ostly Cloudy, Pi	robability of Sno	ow 3%				
Temperature		0 (1 / -3) Celsius						
-		· /						
0 110								
Overall Structure Not	es:							
Recommended Work on S	Structure	None	☐Minor Rehab	. Пмај	or Rehab.	Replace		
Timing of Recommended	Work 🗆	1 to 5 years	☐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								
	<u> </u>							
Element Data:								
Element Group:			Length:					
Element Name:			Width:					
Location:	-		Height:					
Material:			Count:					
Element Type:			Total Quar	ntity:				
Environment:			Limited In	spection				
Protection System:			1	T	T	Perform.		
Condition Data: ${m^2 \square / m \square}$	Units \Box / each \Box / $\%$ \Box / al	Exc.	Good	Fair	Poor*	Deficiencies		
Comments:		<u>- — </u>						
Recommended Work:	Rehab	□Rep	lace	Maintenance	Needs:			
	□1-5 yea) years	Urgent	☐1 year	☐2 year		
				I .				



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



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

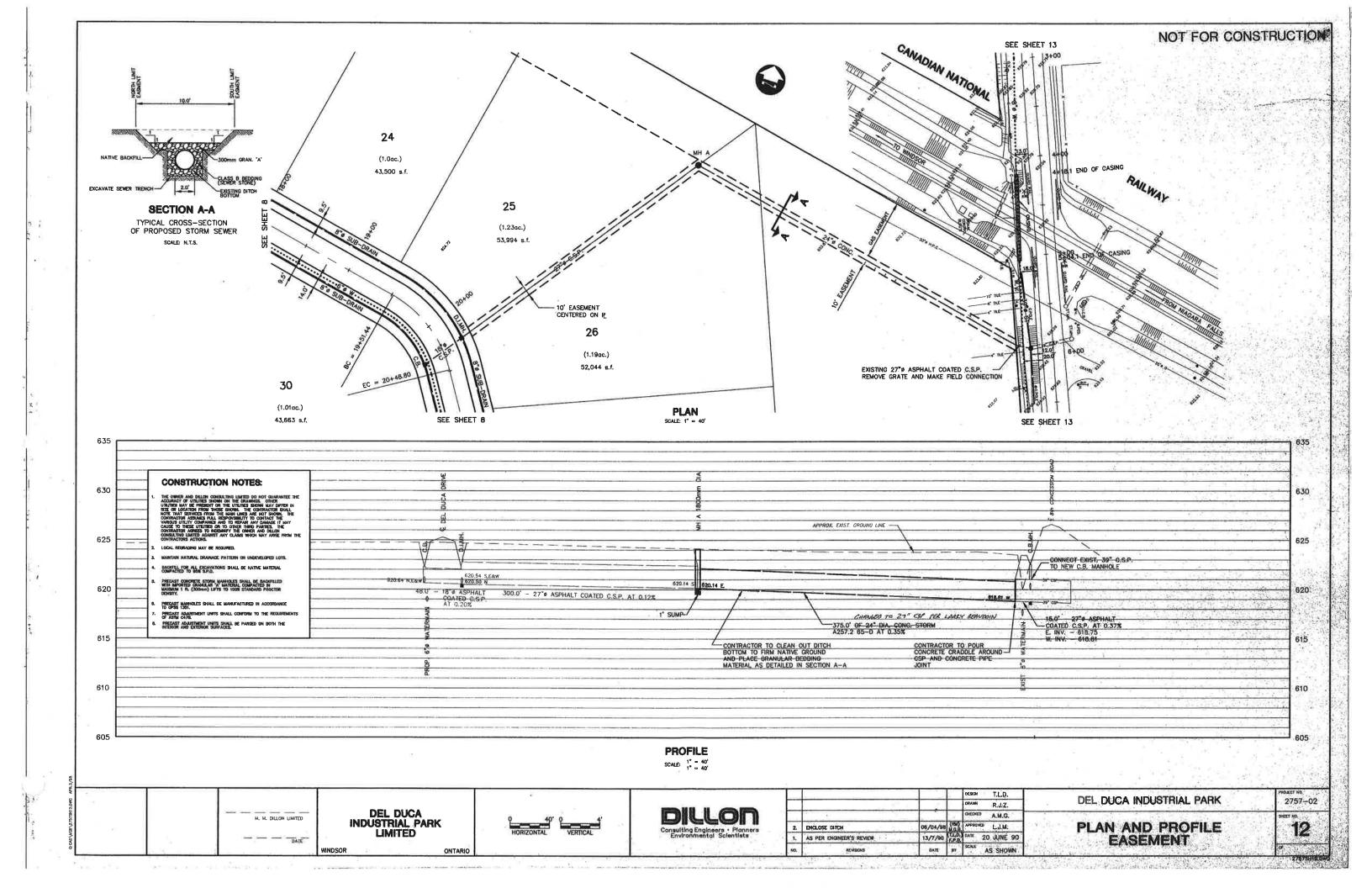


Photograph 3 – Road condition at North Talbot Road



Photograph 4 – East Elevation

Inventory Data:							
Structure Number	21 (F. 1. 20)						
	21 (Formerly 30)						
Hwy/Road Name	8th Concession Road	th Concession Road					
Structure Location	0.60 km north from North T	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 Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List				
Span Length	0.6	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑				
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2				
Overall Str. Width		(m)	AADT % Trucks				
Total Deck Area	4.320	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle				
Roadway Width	7.2	(m)	Detour Length Around Bridge 5.2 (km)				
Fill on Structure		(m)	Direction of Structure N				
Skew Angle	0°	(Degrees)	No. of Spans				
Historical Data:							
Year Built	1970		Year of Last Major Rehab.				
Last OSIM Inspection	1		Last Evaluation				
Last Enhanced OSIM	Inspection		Current Load Limit (tonnes)				
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Insp	ection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							



Inventory Data:			
Cton atoms Namel an	g, , , , , , ,		
Structure Number	Structure 62		
Hwy/Road Name	Ure Street		
Structure Location	At intersection with North T	`albot Road	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 9.492"		Longitude -82° 57' 4.068"
Owner(s)	Town of Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.45	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	17.7	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	33.5	(m)	AADT % Trucks
Total Deck Area	7.965	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	17.7	(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
Historical Data:			
Year Built	1990		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:										
Date of Inspection	February 1, 2016										
Inspector		Hossam Bakr (Dillon Consulting Ltd)									
Others in Party		`									
Access Equipment Used	(Came	ra, Measurin	ng Tap	oe, Measuri	ing Whee	el, and	Hammer			
Weather			y, Probabilit								
Temperature			-1) Celsius								
-	Temperature 1 (0 / -1) Colsius										
Overall Structure Not	tes:										
Recommended Work on S	Structure	□No	ne	Пмі	inor Rehab.		□Мај	or Rehab.	Replace		
Timing of Recommended	Work	□1 to	5 years	□ 6 t	o 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 Quan		1				
Environment:					Limited Ins	spection					
Protection System:					1		ı		Perform.		
Condition Data: ${m^2 \square / m}$							Deficiencies				
Comments: - Existing Sign		ıs.		ct Marl	kings to meet	the Ontario	Traffic	Manual			
Recommended Work:	Reha	ıb	□Repl	lace		Mainte	enance	Needs:			
	□1-5 y	ears	□6-10) year	S	□Urge	nt	□1 year	☐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 Qua	ntity:	47.4 Sc	ı.m			
Environment:			Limited In	spection					
Protection System:			•				Perform.		
C III D	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		47.4						
Comments: Limited inspection (partially accessible). The structure is assumed to be in good condition.									
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:			
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year		
							*		
TI G	To t		T .1		1				
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 C								
Environment:			Limited In	ispection		T			
Protection System:					. 1		Perform.		
Condition Data:	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
m ² /m	\square / each \square / % \square / all \square								
Comments: Limited Inspection - Covered Manhole									
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:			
	□1-5 years	□6-10 y	ears	□Urge	nt	□1 year	☐2 year		
Element Group:	Embankments & Streams		Length:						
Element Name:	Embankments		Width:						
Location:	West Side		Height:						
Material:			Count:		2				
Element Type:			Total Qua	ntity:	2				
Environment:			Limited In	-					
Protection System:							Perform.		
	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: m ² /m	□/ each □/ % □/ all □		2		-				
Comments: In good Conditi	, L	I				<u> </u>			
Recommended Work:	Rehab	Replac	e e	Mainte	enance	Needs:			
	11-5 years	☐6-10 y		Urge		☐1 year	2 year		

Element Group:	Decks	Length:					
Element Name:	Wearing Surface		Width:	Width:			
Location:		Height:					
Material:	Asphalt	Count:					
Element Type:			Total Qua	ntity:	8.0 Sq.m	ı	
Environment:			Limited Ir	nspection			
Protection System:			•	•			Perform.
~	Units	Exc.	Good	Fair		Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		8.0				
<u> </u>	·]		· I	l l		
Comments: In Good Condit	.1011						
Recommended Work:	Rehab	Replac	ce	Mainte	nance N	Needs:	
	□1-5 years	□6-10 y		Urger		☐1 year	☐2 year
	шт э усаго	шо 10 у	Cars			шт усы	ш2 усы
Element Group:	A		Longth		6.0		
Element Name:	Approaches		Length: Width:		6.0 m		
Location:	Wearing Surface North - South		Height:		17.7 m		
Material:			Count:		2		
Element Type:	Asphalt		Total Qua	ntitu			
Environment:					212.4 Sq	.m	
			Limited Ir	ispection	Ц		D 6
Protection System:	T			Б.		TD str	Perform.
Condition Data:	Units	Exc.	Good	Fair		Poor*	Deficiencies
m²⊔/m	\square / each \square / % \square / all \square		212.4				
Comments: In Good Condit	ion						
D 1 1 1 1 1 1 1				1261		T 1	
Recommended Work:	Rehab	Replac		Mainte			
	□1-5 years	□6-10 y	ears	Urger	ıt	☐1 year	☐2 year
			1				
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:	. • .	1		
Element Type:			Total Qua		1		
Environment:			Limited Ir	ispection			
Protection System:		Г		1			Perform.
Condition Data:	Units	Exc.	Good	Fair	•	Poor*	Deficiencies
$m^2 \square / m$	□ / each □ / % □ / all		1				
Comments: Covered waterv	way East from Ure Street						
	•						
				1		· ·	
Recommended Work:	☐ Rehab	Replac		Mainte	nance N	Veeds:	
	☐1-5 years	□6-10 y	ears	Urger	nt	☐1 year	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 T	albot Road	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 19.716"		Longitude -82° 57' 3.3114"
Owner(s)	Town of Tecum	seh	Heritage Designation: Not Cons. Cons./not App. List/not Desig Desig./not List Desig. & List
Span Length	0.9	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	8.8	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	17.7	(m)	AADT % Trucks
Total Deck Area	7.920	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	8.8	(m)	Detour Length Around Bridge [1.8] (km)
Fill on Structure	1.1	(m)	Direction of Structure NW
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1981		Year of Last Major Rehab.
Last OSIM Inspection	1		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:									
Date of Inspection	February 1, 2016									
Inspector	Но	Hossam Bakr (Dillon Consulting Ltd)								
Others in Party		, 6 m/								
Access Equipment Used	Ca	mera. Measurii	ng Tape, Measur	ing Wheel.	and Ham	mer				
Weather		oudy, Probabili								
Temperature	+	6 / -1) Celsius	ty of fam 170							
remperature	1 (07-1) Ceisius								
Overall Structure Not	tes:									
D 1 1W 1	g									
Recommended Work on S		None	☐Minor Rehab	. Ц	Major Re	ehab.	Replace			
Timing of Recommended	Work	1 to 5 years	☐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										
	l									
Element Data:										
Element Group:	Signs		Length:							
Element Name:	Signs			Width:						
Location:			Height:							
Material:			Count:	<u> </u>						
Element Type:	N/A		Total Quar	ntity: 0						
Environment:			Limited In							
Protection System:							Perform.			
Condition Data: $\frac{1}{m^2 \prod / m}$	Units ☐/ each ☑/ % ☐/ all	Exc.	Good	Fair	I	Poor*	Deficiencies			
Comments: - Upgrade and i			ect Markings to meet	the Ontario Ti	raffic Manu	al				
	·		-							
Recommended Work:	Rehab	□Rep	olace	Maintena	ance Need	ls:				
	1-5 year		0 years	Urgent		□1 year	☐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 Qua	intity:	50.0 Sq	.m	
Environment:			Limited In	nspection			
Protection System:							Perform.
C IV D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / $\%$ \square / all \square		50.0				
Comments: In Good Condit	·	ll_				L	
Comments. In Good Condit	10113						
Recommended Work:	☐ Rehab	Replac	ee	Mainte	enance	Needs:	
	□1-5 years	□ 6-10 у	ears	Urge	nt	□1 year	☐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 Qua	antity:	Sq.m			
Environment:		Limited I					
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$							
Comments: Limited Inspect					t		
Comments. Limited hispect	ion - Covered Mannole						
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	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 Qua	antity:	1		
Environment:			Limited I	•			
Protection System:							Perform.
~ ~	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \mathbb{F}/m}$	□/ each ☑ / % □ / all □		1				
Comments: In Good Condit	(<u> </u>				ı.	
Comments: in Good Condit	10113						
Recommended Work:							
r recommended work:	□ D-1-1	1.		Maint	200000	Moode	
Ttooming the state of the state	Rehab	Replac				Needs:	По
	☐ Rehab ☐1-5 years	☐ Replac ☐ 6-10 y		Mainte Urge		Needs:	2 year
							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 Qua	ntity:	7.9 Sq.	m	
Environment:			Limited In	spection			
Protection System:				•			Perform.
G 1111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		6.0	1.9)		
Comments: The asphalt surf	•	ole over the culvert		1			
Comments. The aspirant surf	race has wide transverse crac	k over the curvert	section.				
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	□1-5 years	 □6-10 y		□Urge	nt	□1 year	☐2 year
				Asphalt R			
				Tispital 1	· · · · · · · · · · · · · · · · · · ·		
Element Group:	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface		Width:		8.8 m		
Location:	North - South		Height:		0.0 111		
Material:			Count:		2		
Element Type:				antity: 105.6 Sq.m			
Environment:		Limited In	•	103.0 1	5q.III		
Protection System:			Limited in	ispection	Ц		Perform.
Trotection bystem.	Units	Exc.	Good	Fai		Poor*	Deficiencies
Condition Data:	\square / each \square / % \square / all \square	EXC.		га	1	F001 ·	Deficiences
m² U/m			105.6	1			
Comments: In Good Condition	ions						
Recommended Work:	Rehab	Replac	20	Mainte	nanca	Needs:	
Recommended work.							П2 тгоот
	□1-5 years	□6-10 y	ears	□Urge	III	☐1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:	Last - West		Count:		1		
Element Type:			Total Quar	ntity:	1		
Environment:			Limited In	•			
Protection System:			Limited III	ispection	<u> </u>		Perform.
Trotection bystem.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	·			1 'ai	1	1 001	Deficiencies
•			1				
Comments: Covered waterw	vay East from Ure Street						
Recommended Work:	☐ Rehab	Replac	<u></u>	Mainte	nance	Needs:	
Accommended WOIK.		-				l e	П 2
	□1-5 years	□6-10 y	ears	Urge	111	☐1 year	2 year

Element Group:		Embankments & Streams		Length:	Length:			
Element Name:		Embankments		Width:	Width:			
Location:			Height:					
Material:			Count:					
Element Type:				Total Qua	intity:	4		
Environment:				Limited In	nspection			
Protection System	:			-				Perform.
G IV. D		Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: n	$n^2\square/m$]/ each [☑ / % [☐ / all [☐	4					
Comments: In Exc		L			1		l.	
Comments. In Exc	chem Co.	nations						
Recommended V	Work:	Rehab	□Repla	ce	Mainte	enance	Needs:	
		□1-5 years	□6-10 y	/ears	□Urge	nt	☐1 year	☐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 Qua	intity:			
Environment:		Trand Eard Riprap		Limited I	•			
Protection System	•			Eminted in	ispection	<u> </u>		Perform.
Trotection System	•	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	₂ □/m [\square / each \square / $\%$ \square / all \square	LAC.	Good	1 41	1	1 001	Deficiences
L	11/111 _							
Comments:								
Recommended V	Vork:	Rehab	Repla	Ce	Mainte	enance	Needs:	
Trecommended v	· OIK.	1-5 years	□6-10 y		Urge	☐2 year		
		шт-5 years	ш0-10 у	Cars	Lorge	111	☐1 year	□2 ycai
Ti G				7 .				
Element Group:				Length:				
Element Name:				Width:				
Location:				Height:				
Material:				Count:				
Element Type:				Total Qua	-	_		
Environment:				Limited I	nspection	Ц	-[
Protection System	:			~ .				Perform.
Condition Data:		Units	Exc.	Good	Fai	r	Poor*	Deficiencies
n	$n^2 \square / m$	/ each/ %/ all						
Comments:								
Recommended V	Work:	Rehab	□Repla	ce	Mainte	enance	Needs:	
		☐1-5 years	□6-10 y		Urge		□1 year	☐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 wit	h Ure Street	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 27.852"		Longitude -82° 57' 2.6994"
Owner(s)	Town of Tecumseh		Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.6	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	8.0	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	15.25	(m)	AADT % Trucks
Total Deck Area	4.800	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1981		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection	F	ebruary 1,	2016						
Inspector	Н	Iossam Ba	kr (Dillo	on Consulting I	Ltd)				
Others in Party									
Access Equipment Used	C	amera, M	easuring	Tape, Measuri	ing Whee	el. and	Hammer		
Weather				of rain 1%	-	,			
Temperature		(6 / -1) Co		01 14111 170					
1 (07 1) Colsius									
Overall Structure Not	tes:								
Recommended Work on Structure None Mino						ПМаіл	or Rehab.	Replace	
				_	•	— IVIAJ	or Kenao.	Пкергаес	
Timing of Recommended Overall Comments		☐1 to 5 years ☐6 to 10 years The culvert barrel is in good condition. However, severe map cracking was spreading over the							
Overall Comments	good condition. Ho approaches.	wever, seve	ere map	cracking was sprea	ding over the culvert				
Date of Next Inspection									
Element Data:									
Element Data.									
Element Group:	Signs			Length:	Length:				
Element Name:	Signs			Width:					
Location:				Height:					
Material:				Count:		0			
Element Type:	N/A			Total Quan	-	0			
Environment:				Limited Ins	spection				
Protection System:			1			1		Perform.	
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑ / % ☐/ a		KC.	Good	Fai	r	Poor*	Deficiencies	
Comments: - Upgrade and i			nd Object	Markings to meet	the Ontario	Traffic	Manual		
	·		·						
Recommended Work:	□Rehab		Repla				Needs:		
	□1-5 ye	ars	□ 6-10	years	□Urge	nt	□1 year	☐2 year	
					l				

Element Group:	Culverts			Length:		15.25 m			
Element Name:	Barrels		Width:	Width:		0.5 m (Dia.)			
Location:			Height:						
Material:	Corrugated Steel		Count:						
Element Type:			Total Qua	Total Quantity: 24.0 S					
Environment:			Limited Ir	nspection					
Protection System:							Perform.		
G III D	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each□/%□/ all□		24.0						
Comments: In Good Condi		l .		I .	ı				
Recommended Work:	Rehab	Replac	ee	Mainte	Needs:				
	1-5 years	 □6-10 y	•••••	□Urge	ent	□1 year	☐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 Ir	•	П				
Protection System:				эрссион			Perform.		
	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$			3004	1 43		1001			
<u> </u>		1							
Comments: Not active									
Recommended Work:	Rehab	Replac	re	Mainte	enance	Needs:			
Recommended Work.	☐1-5 years	□6-10 y		Urgent		1 year	☐2 year		
	шт-э years	шо-10 у	Cars	Lorge	/11t	шт усаг	□2 year		
E1	Tp 1 1		T		1				
Element Group:	Embankments & Streams		Length:						
Element Name:	Embankments		Width:						
Location:			Height:						
Material:			Count:		6				
Element Type:		Total Quantity: 6							
- ·				•					
Environment:			Limited Ir	•					
Environment: Protection System:			Limited Ir	nspection			Perform.		
Protection System:	Units	Exc.		•		Poor*	Perform. Deficiencies		
Protection System:	Units ☐/ each ☑/ % ☐/ all ☐	Exc.	Limited Ir	nspection		Poor*			
Protection System: Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		Limited Ir	nspection		Poor*			
Protection System:	□/ each □/ % □/ all □		Limited Ir	nspection		Poor*			
Protection System: Condition Data: m²□/m Comments: In Excellent Co	□/ each □/ % □/ all □	6	Limited Ir Good	rspection Fai					
Protection System: Condition Data: ${m^2 \square / m}$	□/ each ☑/ % □/ all □ ondition □ Rehab	6 □Replac	Good Good	rispection Fai	ir enance	Needs:	Deficiencies		
Protection System: Condition Data: m²□/m Comments: In Excellent Co	☐/ each ☑/ % ☐/ all ☐ ondition	6	Good Good	rspection Fai	ir enance				
Protection System: Condition Data: m²□/m Comments: In Excellent Co	□/ each ☑/ % □/ all □ ondition □ Rehab	6 □Replac	Good Good	rispection Fai	ir enance	Needs:	Deficiencies		

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			n				
Environment:			Limited In	Limited Inspection						
Protection System:							Perform.			
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: ${m^2 \square / m}$	□/ each □ / % □ / all □		1.5	2.5	5					
Comments: The asphalt surf	·	L L	ert section.	I						
Recommended Work:	Rehab	Replac	e	e Maintenance N						
	□1-5 years	ears	Urge	nt	☐1 year	☐2 year				
			Asphalt R							
			F	P						
Element Group:	Approaches		Length:		6.0 m					
Element Name:	Wearing Surface		Width:		8.0 m					
Location:	East - West	East - West								
Material:	Asphalt	Count:	Height: 2							
Element Type:			Total Qua	ntity:	96.0 Sq	.m				
Environment:			Limited In	spection						
Protection System:	Perform.									
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: ${m^2 \square / m}$	□/ each □ / % □ / all □		30.0	48.0	0	18.0				
Comments: The asphalt surface has a moderate map cracking along both approaches.										
Comments. The asphalt sun	race has a moderate map crac	cking along both ap	proacties.							
Recommended Work:	Rehab	Replac	e	Mainte						
	□1-5 years	□6-10 y	ears	□Urgent □1 yea			☐2 year			
				Asphalt Repair						
Element Group:			Length:							
Element Name:			Width:							
Location:			Height:							
Material:			Count:							
Element Type:			Total Qua	ntity:						
Environment:			Limited In	spection						
Protection System:							Perform.			
Condition Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □									
Comments:					L	<u> </u>				
Comments.										
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance l	Needs:				
	☐1-5 years	□6-10 y	ears	Urge	nt	☐ 1 year	2 year			
				T						



Photograph 1 – Road over Culvert (Looking North)



Photograph 2 – Culvert Barrel



Photograph 3 – North Elevation



Photograph 4 – South Elevation



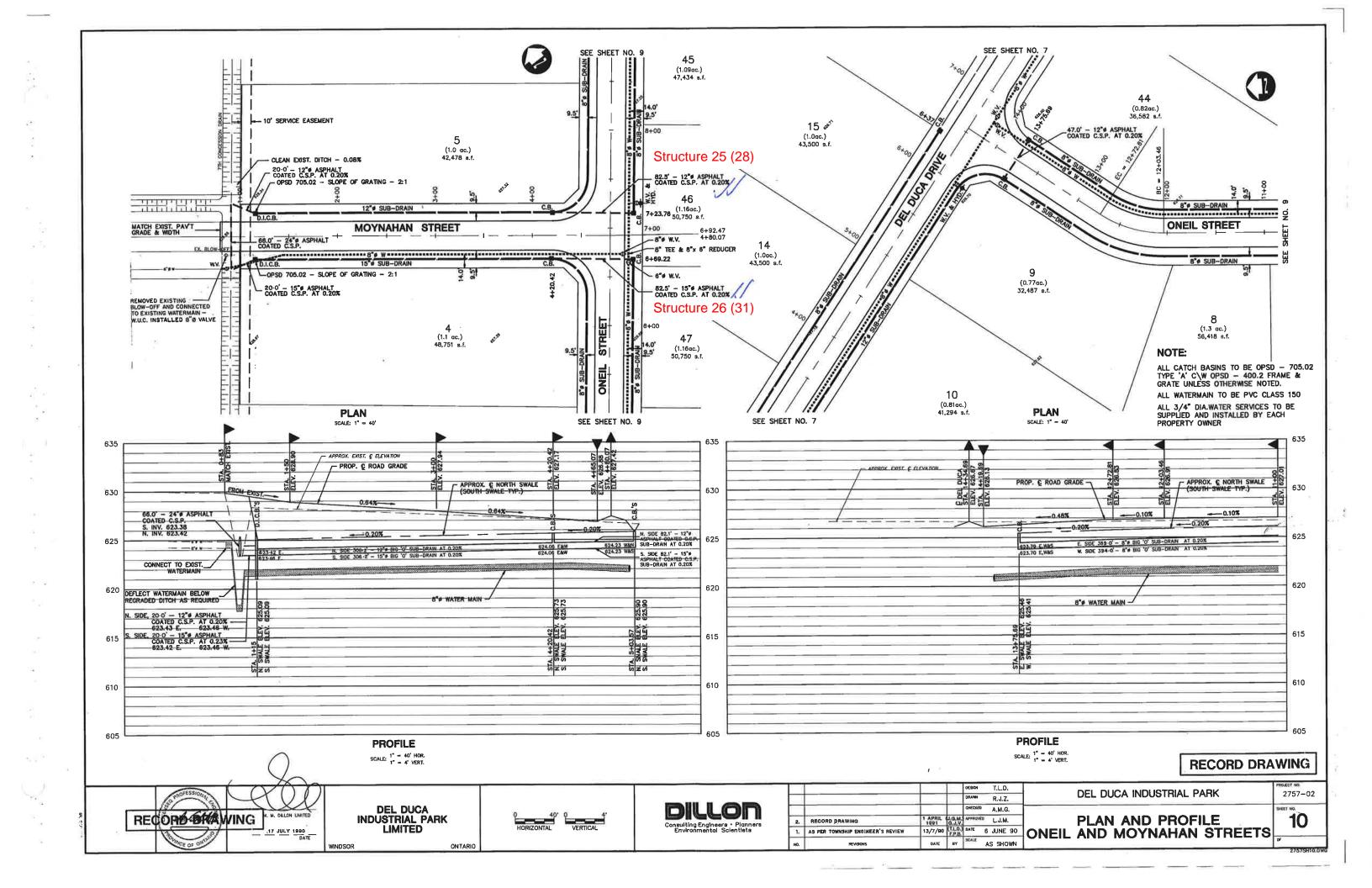
Photograph 5 – Wearing Surface over Culvert (Looking South)



Photograph 6 – Wearing Surface at West Approach

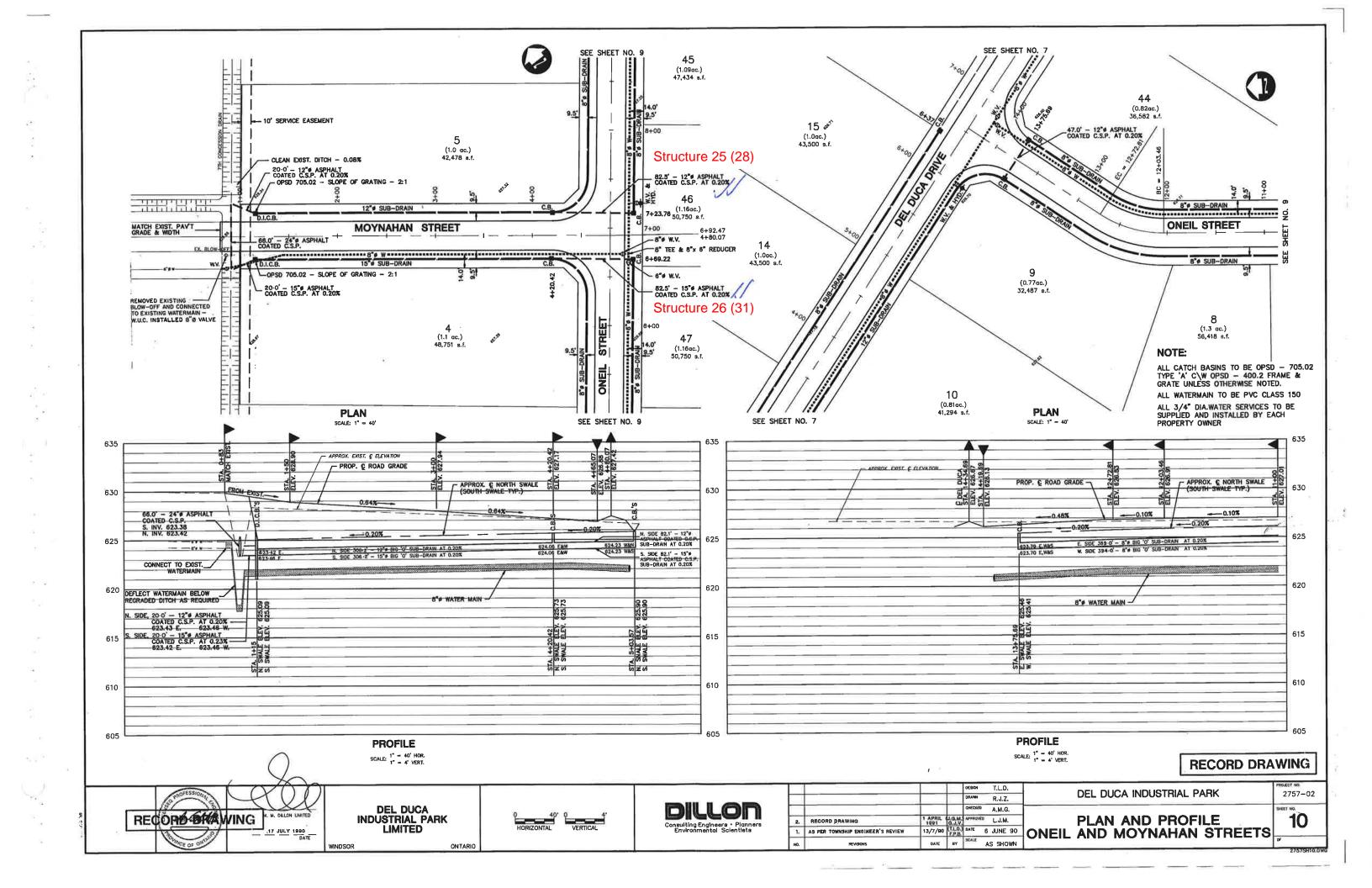
Inventory Data:			
Characteria Neverlan	25 (F. 1, 29)		
Structure Number	25 (Formerly 28)		
Hwy/Road Name	O'Neil Dr.		
Structure Location	North from the intersection	with Moynahan Stre	eet
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 26"		Longitude -82° 57' 14"
Owner(s)	Town of Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.3	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	25	(m)	AADT % Trucks
Total Deck Area	2.160	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1975		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		Februa	ary 1, 2016						
Inspector		Hossa	m Bakr (Dill	lon Co	onsulting L	Ltd)			
Others in Party									
Access Equipment Used		Came	ra, Measurin	ıg Tape	e, Measuri	ing Whee	el, and	Hammer	
Weather		Cloud	y, Probabilit	ty of ra	ain 1%				
Temperature		1 (6 /	-1) Celsius						
Overall Structure Not	es:								
Recommended Work on S	Structure	✓No	ne	□Min	nor Rehab.	•	□Majo	or Rehab.	Replace
Timing of Recommended	Work	□1 to 5 years □6 to 10 years							
Overall Comments	Limited inspection - The structure was buried under the road. Record drawings was provided by the Town for reporting.					as provided by the			
	Town for reporting.								
Date of Next Inspection									
Element Data:									
Element Group: Element Name:					Length: Width:				
Location:					Height:				
Material:					Count:				
Element Type:					Total Quan	titv:			
Environment:					Limited Ins				
Protection System:						•			Perform.
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units ☐/ each ☐/ % ☐/	′ all □	Exc.	(Good	Fai	ir	Poor*	Deficiencies
Comments:	<u> </u>	a11 🗀							
Comments:									
Recommended Work:	□Reha		Repl				enance		
	□1-5 y	ears_	□6-10) years		□Urge	ent	□1 year	☐2 year



Inventory Data:			
G			
Structure Number	26 (Formerly 31)		
Hwy/Road Name	O'Neil Dr.		
Structure Location	South from the intersection	with Moynahan St	treet
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 9.492"		Longitude -82° 57' 4.068"
Owner(s)	Town of Tecumseh		Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.4	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	25	(m)	AADT % Trucks
Total Deck Area	2.880	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	7.2	(m)	Detour Length Around Bridge [1.25] (km)
Fill on Structure	0.6	(m)	Direction of Structure N
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1970		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
			(comes)
Enhanced Access Eq (ladder, boat, lift, etc			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection	on Infor	mation:								
Date of Inspection	on		Febru	ary 1, 2016						
Inspector			Hossa	m Bakr (Dill	lon Con	sulting L	Ltd)			
Others in Party										
Access Equipme	nt Used		Came	Camera, Measuring Tape, Measuring Wheel, and Hammer						
Weather			Cloud	Cloudy, Probability of rain 1%						
Temperature			1 (6 /	(6 / -1) Celsius						
Overall Struct	ure Not	es:								
Recommended V	Recommended Work on Structure None Minor Re			or Rehab.	. [⊐Maj	or Rehab.	Replace		
Timing of Recor	nmended	Work	☐1 to 5 years ☐6 to 10 years							
Overall Commer			Limited inspection - The structure was buried under the road. Record drawings was provided by the Town for reporting.					as provided by the		
Date of Next Ins	pection									
Element Data:										
Element Group: Element Name:						ength: idth:				
Location:						eight:				
Material:						ount:				
Element Type:						tal Quan	tity:			
Environment:							spection			
Protection System	n:									Perform.
Condition Data:	m²∏/m [Units □/ each □/ % □/	اران	Exc.	G	ood	Fair	•	Poor*	Deficiencies
Comments:	<u> </u>		an							
Recommended	Work:	Reha	ab	□Repl	lace		Mainte	nance	Needs:	
	-	□1-5 y		□6-10			□Urgen		□1 year	☐2 year



Inventory Data:			
Campatona Normalian	27 (F. 1.50)		
Structure Number	27 (Formerly 59)		
Hwy/Road Name	Moynahan Street		
Structure Location	0.12 km West from O'Neil I	Orive	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 26.16"		Longitude -82° 57' 19.188"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.6	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	19.0	(m)	AADT % Trucks
Total Deck Area	4.320	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	7.2	(m)	Detour Length Around Bridge 1.3 (km)
Fill on Structure	1.5	(m)	Direction of Structure E
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1975		Year of Last Major Rehab.
Last OSIM Inspection	1		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection	January 29, 2016								
Inspector				on Consulting	I td)				
	1.	108881	II Daki (Dili	on Consuming	Liu)				
Others in Party									
Access Equipment Used	C	Camer	a, Measuring	g Tape, Measu	ring Whe	el, and	Hammer		
Weather	N	Mostly	Sunny, Pro	bability of Rai	n 1%				
Temperature	-2	2 (-1 /	-5) Celsius						
Overall Structure Not	tes:								
Recommended Work on Structure None				☐Minor Rehal	b.	□Мај	or Rehab.	Replace	
Timing of Recommended	Work [□1 to	5 years	☐6 to 10 years	5				
Overall Comments The asphalt surface has wide traverse of edge cracks. Limited inspection - The required.									
Date of Next Inspection									
Element Data:									
Element Data.									
Element Group:	Signs			Length:	Length:				
Element Name:	Signs			Width:					
Location:				Height:					
Material:				Count:		0			
Element Type:	N/A			Total Qua	•	0			
Environment:				Limited In	nspection		1		
Protection System:				Г	_			Perform.	
Condition Data:	Units ☐/ each ☑/ % ☐/ a	ol1 🗖	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Comments: - Upgrade and is			ions and Object	Markings to mee	t the Ontario	n Traffic	Manual		
Comments Opgrade and h	installation of object M	iaikei s	igns and Object	. Warkings to mee	t the Ontario	o Traine	Manual		
Recommended Work:	Rehal	b	□Repla	ace	Mainte	enance	Needs:		
	□1-5 ye	ears	□6-10	years	□Urge	nt	□1 year	☐2 year	

Element Group:	Culverts		Ü		19.0 m		
Element Name:	Barrels				0.6 m		
Location:			Height:				
Material:	Corrugated Steel		Count:				
Element Type:			Total Quantity: 35.8 Sq.m			ı.m	
Environment:			Limited Inspection				
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	□/ each □ / % □ / all □						
Comments: Inaccessible - C	Culvert was submerged under	water.				·	
Recommended Work:	Rehab	Replac		Mainte	enance	Naads:	
Recommended work.	1-5 years		Urge			2 year	
	i;1-3 years	□6-10 ye	2018	Ulge	111	1 year	ij 2 year
Elamant Casan	F 1 1		I am adla.				
Element Group: Element Name:	Embankments & Streams		Length: Width:				
Location:	Embankments	Height:					
Material:		<u> </u>					
			Count: 6 Total Quantity: 6				
Element Type:					6		
Environment: Protection System:			Limited In	ispection	<u> </u>		D 0
Protection System.	TT '.	Б		Г.		D *	Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m			6				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Domloo		Maint	enance	Noods:	
Recommended work:		Replac					<u> </u>
	1-5 years	□6-10 ye	ears	Urgent		1 year	2 year
T	Т						
Element Group:	Embankments & Streams		Length:				
Element Name:	Slope Protection		Width:				
Location:	North Side		Height:				
Material:	Masonry		Count:		1		
Element Type:	Hand Laid Riprap		Total Quar	-	1		
Environment:			Limited In	spection	<u></u>	Т	
Protection System:					. 1		Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	□/ each ☑ / % □ / all □			1			
Comments:							
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
					nt	1 vear	2 vear
	1-5 years	6-10 ye		Urge	nt	1 year	2 year
					nt	1 year	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 Quar	ntity:	4.3 Sq.1	m	
Environment:			Limited In	spection			
Protection System:							Perform.
G 111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		1.4	1.5	;		
Comments: Wide longitudin		l l		1	Į.		
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	□1-5 years	□6-10 ye		Urge	nt	□1 year	☐2 year
	шт э усигэ			Asphalt R		<u> Птусит</u>	<u> </u>
				Aspiiait N	срап		
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 Quar	Total Quantity: 86.4 Sq.m				
Environment:			Limited In	spection			
Protection System:							Perform.
C IV. D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □ / % □ / all □		60.0	26.4	4		
Comments: - Wide traverse	cracks extending over the co	alvert section		1		L	
	ressive edge cracks on both						
	Ü	C					
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	□1-5 years	□6-10 ye	ears	□Urge	nt	☐1 year	☐2 year
				Asphalt R			
				1	•		
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	North - South		Height:				
Material:			Count:		1		
Element Type:			Total Quar	ntity:	1		
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □			1			
Comments: Excessive plant		1		1 -		L	
Comments. Excessive plant	growth along the water sites	aiii					
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance	Needs:	
	1-5 years			Urge	nt	☐ 1 year	2 year
							-
				Drain Ma	intenance	e	
				Drain Ma	intenance	e	



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	20 (F 1 50)		
	28 (Formerly 58)		
Hwy/Road Name	Moynahan Street		
Structure Location	West of the intersection with	1 Hennin Street	
Structure Type			
Latitude	42° 14' 26.3034"		Longitude -82° 57' 23.4714"
Owner(s)	Town of Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.40	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	12.5	(m)	AADT % Trucks
Total Deck Area	2.880	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	7.2	(m)	Detour Length Around Bridge 1.3 (km)
Fill on Structure	0.90	(m)	Direction of Structure E
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1975		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:									
Date of Inspection	Ja	January 29, 2016								
Inspector	Н	Hossar	n Bakr (Dil	lon Con	sulting I	Ltd)				
Others in Party										
Access Equipment Used	C	Camera	a, Measurin	g Tape.	Measuri	ing Whee	el. and	Hammer		
Weather							,			
Temperature		Mostly Sunny, Probability of Rain 1% -2 (-1 / -5) Celsius								
Tomperature	-2 (-1 / -3) Cosius									
Overall Structure Not	tes:									
Recommended Work on S	Structure [□Non		□Mino	r Rehab		Пмаі	or Rehab.	✓ Replace	
Timing of Recommended				_		•	— IVIaj	or Kenao.	Керіасс	
Overall Comments				□6 to 1						
Overan Comments	p	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 Data:										
Element Group:	Signs			Le	ngth:					
Element Name:	Signs				Width:					
Location:				He	Height:					
Material:				Co	Count: 0					
Element Type:	N/A				Total Quantity: 0					
Environment:				Liı	nited Ins	spection			T	
Protection System:				1			1		Perform.	
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ a	all 🗆	Exc.	G	ood	Fai	r	Poor*	Deficiencies	
Comments: - Upgrade and i			igns and Objec	t Marking	gs to meet	the Ontario	Traffic	Manual		
Recommended Work:	Rehat	h	Rep	lace		Mainte	enance	Needs:		
Tito mineraed Work.	□1-5 ye		□fc-10			Urge		1 year	☐2 year	
								-		

Element Group:	Culverts		Length:		12.5 m			
Element Name:	Barrels	Width:			0.4 m			
Location:			Height:	Height:				
Material:	Corrugated Steel - Concrete	:	Count:					
Element Type:			Total Qua	ntity:	15.7 Sc	ı.m		
Environment:			Limited Ir	•	П			
Protection System:				F			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square	Exc.	9.5	3.2		3.0		
1.					I	ı		
Comments: Limited inspect	ion However, the corrugated	steel section is in	poor condition w	vith severe c	orrosion	•		
Recommended Work:	Rehab	Repla	26	Mainte	nance	Needs:		
Recommended work.	☑1-5 years	□6-10 y		Urge		1 year	☐2 year	
	∠ 11-3 years	⊔0-10 у	ears	Lorge	111		□ 2 year	
	T		T					
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	North - South		Height:					
Material:			Count:		1			
Element Type:		Total Qua						
Environment:			Limited Ir	spection		<u> </u>		
Protection System:							Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m$	□/ each □ / % □ / all □		1					
Comments: In Good Condit	rion	_		•				
Commency, as easy comme								
				•				
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 у	ears	□Urge	nt	□1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:	North - South sides		Height:					
Material:			Count:		5			
Element Type:			Total Qua	ntity:	5			
Environment:			Limited Ir		Π			
Protection System:			2mmed n	вресноп			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \square / m}$	□/ each □/ % □/ all □	Exc.		1 41	1	1 001	Beneficiences	
L	, 4		5		ļ			
Comments: In Good Condit	ion							
Recommended Work:	Rehab	Repla				Needs:		
	☐1-5 years	□6-10 y	ears	Urge	nt	☐1 year	2 year	

Element Group:	Decks		Length:		0.4 m			
Element Name:	Wearing Surface		Width:	Width:				
Location:			Height:					
Material:	Asphalt		Count:					
Element Type:			Total Quar	ntity:	2.9 Sq.1	m		
Environment:			Limited In	spection				
Protection System:			•				Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² [7]/m	\square / each \square / % \square / all \square		1.4	1.5				
Comments: Wide longitudir	·	dina ayan tha aylya			1			
Comments: wide longitudin	iai and traverse cracks exten	ding over the curve	it section.					
Recommended Work:	Rehab	☑ Replace	e	Mainte	enance	Needs:		
	□ 1-5 years	□6-10 ye		Urge		□1 year	☐2 year	
	што усыв					шт усы	<u> Ш</u> 2 усы	
Element Group:	Approaches		Length:		6.0 m			
Element Name:	Wearing Surface		Width:		7.2 m			
Location:	East - West		Height:		7.2 111			
Material:			Count:		2			
Element Type:	Asphalt	Total Quantity: 86.4 Sq.m						
Environment:				80.4 Sq	,m			
Protection System:	Limited Inspection							
Flotection System.	TT	Б.	C 1	г.:		D *	Perform. Deficiencies	
Condition Data:	Units	Exc.	Good	Fai		Poor*	Deficiencies	
<u>m²</u> <u>∟</u> /m	□/ each □ / % □ / all □		60.0	26.	4			
Comments: - Wide traverse								
- Medium Progr	ressive edge cracks on both 6	edges.						
Recommended Work:	Rehab	☑ Danlaa		Maint	enance	Noods:		
Recommended work:		☑Replac					Па	
	□ 1-5 years	□6-10 ye	ears	□Urge	nt	□1 year	☐2 year	
Element Group:			Lanath		I			
Element Name:			Length: Width:					
Location:			Height:					
Material:			Count:					
Element Type:			Total Our					
			Total Quan	-	П			
Environment:			Total Quar Limited In	-			D (
Protection System:	11.7	т.	Limited In	spection		D *	Perform.	
Protection System:	Units	Exc.		-		Poor*	Perform. Deficiencies	
Protection System:	Units ☐/ each ☐/ % ☐/ all ☐		Limited In	spection		Poor*		
Protection System:			Limited In	spection		Poor*		
Protection System: Condition Data: m²□/m			Limited In	spection		Poor*		
Protection System: Condition Data: m²□/m Comments:	/ each/ %/ all		Limited In Good	Fai	r			
Protection System: Condition Data: m²□/m	/ each/ %/ all Rehab	Replac	Good e	Fai Mainte	enance	Needs:	Deficiencies	
Protection System: Condition Data: m²□/m Comments:	/ each/ %/ all		Good e	Fai	enance			
Protection System: Condition Data: m²□/m Comments:	/ each/ %/ all Rehab	Replac	Good e	Fai Mainte	enance	Needs:	Deficiencies	



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:			
Campatona Normalian	20 (F 1.57)		
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 Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.40	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	12.5	(m)	AADT % Trucks
Total Deck Area	2.880	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	7.2	(m)	Detour Length Around Bridge N/A (km)
Fill on Structure	0.90	(m)	Direction of Structure E
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1975		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Info	rmation:									
Date of Inspection		Janua	ry 29, 2016							
Inspector		Hossam Bakr (Dillon Consulting Ltd)								
Others in Party										
Access Equipment Used		Came	ra, Measurin	ng Tai	pe, Measur	ing Whe	el, and	Hammer		
Weather		Camera, Measuring Tape, Measuring Wheel, and Hammer Mostly Sunny, Probability of Rain 1%								
Temperature			/ -5) Celsius							
			·							
Overall Structure No	tes:									
Recommended Work on	Structure	□No	na	Пм	inor Rehab		Пмаі	or Rehab.	☑ Replace	
Timing of Recommended						•	— IVIAJ	or Kenao.	Керіасс	
Overall Comments	1 WOIK				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: Material:					Height: Count:		0			
Element Type:	N/A				Total Quar	ntity:	0			
Environment:	IVA				Limited Inspection					
Protection System:				<u> </u>		special			Perform.	
Condition Data: $\frac{1}{m^2 \square / m}$	Units ☐/ each ☑/ % ☐	/ all \square	Exc.		Good	Fai	ir	Poor*	Deficiencies	
Comments: - Upgrade and			signs and Object	ct Mar	kings to meet	the Ontario	Traffic	Manual		
Comments. opgrade and			orgins und Gojet		angs to meet					
Recommended Work:	□Rel	nab	□Repl			Maint	enance	Needs:		
	□1-5	years	□ 6-10) year	'S	□Urge	nt	□1 year	☐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 Quar	ntity:	15.7 Sc	q.m			
Environment:		Limited In	spection					
Protection System:							Perform.	
C = 1'4' = = D = 4 = =	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square					15.7		
Comments: The Structure is		parrel is severely co	arroded					
Comments. The Structure is	s in 1 oor Condition. Curvert b	direct is severely ed	moded.					
Recommended Work:	Rehab	Replac	e	Mainte	nance	Needs:		
	□ 1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐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:		1.5 111				
Element Type:	Irregular Concrete Blocks	Total Quantity: 2.35 Sq.m			n m			
Environment:	megalar concrete Blocks		Limited Inspection					
Protection System:			_ Zimited in	Бресноп			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square	Exc.	G00 u	1.85		0.5		
L.				1.0.	,	0.3		
Comments: In Fair to Poor	Condition - Loose blocks							
Recommended Work:	Rehab	Replac	e.	Mainte	enance	Needs:		
Trecommended work.	☑1-5 years	□6-10 ye		Urge		□1 year	☐2 year	
•••••	El 3 years	ото ус		Потдо		Шт усаг	□2 year	
Element Group:	Cularanta		Lanath		2.0			
Element Name:	Culverts Outlet Components		Width:	Length:		3.0 m		
Location:	Outlet Components South Side		Height:		0.4 m			
Material:	Precast concrete		Count:		1.3 m			
Element Type:			Total Quar	ntity:	2050			
Environment:	Irregular Concrete Blocks		Limited In		3.9 Sq.	III		
Protection System:			Limited in	spection	<u> </u>		Perform.	
Trotection System.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:		Exc.	Good				Deficiencies	
· .	□/ each □ / % □ / all □			3.1		0.8		
Comments: In Fair to Poor	Condition - Loose blocks							
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance	Needs:		
		□6-10 ye	ears	Urge	nt	☐1 year	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 Quar	Total Quantity: 2.9 Sq.m					
Environment:			Limited In	Limited Inspection					
Protection System:			•	•			Perform.		
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		1.4	1.5					
Comments: Wide traverse co	racks extending over the cul-	vert section.							
Recommended Work:	Rehab	- <u>-</u>	Maintenance Needs:						
Recommended work.	☑1-5 years			Urge		1 year	☐2 year		
	■1-3 years	0-10 у	zais	Lorge	111	□1 year	□2 yeai		
				I					
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 Quar	ntity:	86.4 Sc	д. m			
Environment:			Limited In	spection					
Protection System:							Perform.		
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		86.4						
Comments: - Wide traverse cracks extending over the culvert section Medium Progressive edge cracks on both edges.									
Recommended Work:	Rehab	✓ Replac	Maintenance		enance	Needs:			
	□ 1-5 years	 □6-10 ye				□1 year	☐2 year		
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	North - South		Height:						
Material:			Count:		1				
Element Type:			Total Quar	ntity:	1				
Environment:			Limited In		П				
Protection System:			2mmed m	spection			Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all ☑		1	1 41	1	1 001			
Comments: Light plants gro	. '		1	1					
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance	Needs:			
	☐1-5 years	☐ 6-10 ye	ears	Urge	nt	☐1 year	2 year		

Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		5		
Element Type:			Total Qua	Total Quantity: 5			
Environment:			Limited In	spection			
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m \square}$	□/ each ☑/ % □/ all □		5				
Comments: In Good Condit	I	L		1			
Comments. In Good Conditi	lion						
Recommended Work:	Rehab	ce	Mainte	enance	Needs:		
	☐1-5 years	 ☐6-10 y		Urge	nt	□1 year	☐2 year
						— 1 year	<u> </u>
Elamant Cassas			I am adla.				
Element Group: Element Name:			Length: Width:				
Location:							
			Height:				
Material:			Count: Total Quar				
Element Type:							
Environment:			Limited In	spection	Ш		
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$							
Comments:							
D 1 1 1 1 1 1 1 1	—			1			
Recommended Work:	Rehab	Repla					
	□1-5 years	□6-10 y	ears	□Urge	ent 🔲 1 year		☐2 year
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Qua	ntity:			
Environment:			Limited In	-			
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $m^2 \square / m$							
				1			
Comments:							
<u> </u>				1			
Recommended Work:	Rehab	Repla				Needs:	
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐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:			
Campatona Novales	20 (F. 1.50)		
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 Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.90	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	12.5	(m)	AADT % Trucks
Total Deck Area	6.480	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	7.2	(m)	Detour Length Around Bridge N/A (km)
Fill on Structure	0.90	(m)	Direction of Structure E
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1990		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection	I	[aniiat	ry 29, 2016						
Inspector			<u> </u>	on Consulting 1	[td)				
-		1088a	III Daki (Dili	on Consuming I	Liu)				
Others in Party									
Access Equipment Used	C	Camei	ra, Measuring	g Tape, Measur	ing Whee	el, and	Hammer		
Weather	N	Mostl	y Sunny, Pro	bability of Rair	1%				
Temperature		2 (-1	/ -5) Celsius						
Overall Structure Not	tes:								
Recommended Work on Structure			☐Minor Rehab		□Maj	or Rehab.	Replace		
Timing of Recommended	Work	□1 to	5 years	☑6 to 10 years					
Wearing surface was observed with				eserved with wide t	corroded. Randomly placed concrete blocks are used for end treatment. ed with wide traverse cracks extending over the culvert section. e replacement will be required in 6 - 10 Years.				
Date of Next Inspection									
1									
Element Data:									
Element Group:	Signs			Length:					
Element Name:	Signs			Width:					
Location:				Height:					
Material:	27/4			Count:	-4:4	0			
Element Type: Environment:	N/A			Total Quar		0			
Protection System:				Limited In	spection	<u> </u>		D C	
Trotection system.	Units		Exc.	Good	Fai	r	Poor*	Perform. Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / :	all□	EAC.	Good	1 'ai	1	1 001	Deficiencies	
Comments: - Upgrade and is			signs and Object	Markings to meet	the Ontario	Traffic	Manual		
Recommended Work:	Reha	☐ Rehab ☐ Replace				enance	Needs:		
	□1-5 ye		<u>□</u> 6-10		□Urge	nt	□1 year	☐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 Sc	ı.m			
Environment:			Limited In	spection					
Protection System:			-	•			Perform.		
G 111 B	Units	Exc.	Good	Fair Poor*		Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / $\%$ \square / all \square		8.85	26.5	55				
Comments: The Structure is in Fair Condition. Culvert barrel is moderately corroded.									
Recommended Work:	d Work: ☐ Rehab ☐ Replace			Mainte	Needs:				
	□1-5 years	2 6-10 y€	ears	Urge	nt	☐1 year	☐2 year		
	*	-					*		
El . C	0.1		T .1		1				
Element Group:	Culverts		Length:		4.5 m				
Element Name:	Inlet Components		Width: Height:		0.4 m				
Location:					1.6 m				
Material:	Precast concrete	Count: Total Quan	ntity: 725am						
Element Type:	Irregular Concrete Blocks				7.2 Sq.	m			
Environment:			Limited In	spection		1			
Protection System:	TT 1:					TD - 1/2	Perform.		
Condition Data:	Units ☐/ each ☐/ % ☐/ all ☐	Exc.	Good	Fai	r	Poor*	Deficiencies		
m ² ☑/m			7.2	!					
Comments: In Fair Condition									
Recommended Work:	Rehab	☑ Replac				i			
	□1-5 years	□ 6-10 ye	ears	□Urgent		□1 year	☐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:		1.0 III				
Element Type:	Irregular Concrete Blocks		Total Quar	ntity:	7.2 Sq.	m			
Environment:	Moderate Moderate		Limited In	-	Π	111			
Protection System:	Moderate		Elilited III	вресноп			Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data:	\square / each \square / % \square / all \square	Exc.	3004	7.2		1 001	Belleteneres		
Comments: In Fair Condition				1.2	·	l			
Recommended Work:	Rehab	e	Mainte	enance	Needs:				
	1-5 years			Urge		1 year	2 year		
	Li 3 years	<u> </u>	-u10	Cige	111	L i year			

Element Group:	Decks		Length:		0.9 m				
Element Name:	Wearing Surface		Width:	Width:					
Location:			Height:						
Material:	Asphalt		Count:						
Element Type:			Total Qua	Total Quantity:		m			
Environment:			Limited In	spection					
Protection System:							Perform.		
G 111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		3.6	3.0	5				
Comments: Wide traverse c									
Comments, which have been	rucks extending over the cur	vert section.							
Recommended Work:	☐ Rehab	☑ Replace	ce	Maint	enance	Needs:			
	□1-5 years	⊿ 6-10 y	ears	Urge	nt	☐1 year	☐2 year		
Element Group:	Approaches		Length:		6.0 m				
Element Name:	Wearing Surface		Width:		7.2 m				
Location:	East - West		Height:						
Material:	Asphalt				2				
Element Type:			Total Quantity: 86.4 Sq.m						
Environment:			Limited In	•	П	1			
Protection System:							Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: m ² / m	\square / each \square / % \square / all \square		86.4		_				
Comments: In Good Condition									
Comments: In Good Condit	cion								
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:			
	□1-5 years	□6-10 y		□Urge	nt	□1 year	☐2 year		
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	North - South		Height:						
Material:			Count:		1				
Element Type:			Total Qua	ntity:	2				
Environment:			Limited In	spection					
Protection System:							Perform.		
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all ☑		1						
Comments: In Good Condit	'	l l		1	l	l			
Comments. In Good Condit	lion								
Recommended Work:	Rehab	Replac	ce	Maint	enance	Needs:			
	☐1-5 years	□6-10 y	ears	Urge	nt	☐ 1 year	2 year		
						-			

Element Group:	Embankments & Streams		Length:							
Element Name:	Embankments		Width:							
Location:			Height:							
Material:			Count:		4					
Element Type:			Total Qua	ntity:	4					
Environment:			Limited Ir							
Protection System:			•				Perform.			
	Units	Exc.	Good	Fai	Fair Poor*		Deficiencies			
Condition Data: $\frac{1}{m^2 \prod / m}$	\square / each \square / % \square / all \square		4							
			-			1				
Comments: In Good Condi	tion									
Recommended Work:	Rehab	Repla	CP	Mainte	nance	Needs:				
Recommended work.	☐1-5 years ☐6-10 years			Urge		1 year	☐2 year			
	□1-3 years		/Cars	Lorge	111	□1 year	□2 yeai			
	1		1							
Element Group:			Length:							
Element Name:			Width:							
Location:		Height								
Material:		Count:								
Element Type:			Total Qua							
Environment:		Limited Inspection								
Protection System:							Perform.			
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □									
Comments:										
Comments.										
Recommended Work:	Rehab	□Repla	ce	Maintenance Needs:						
	1-5 years	 □6-10 y		ПUrge	Urgent 1 year		☐2 year			
El . C	I		T 41		1					
Element Group:			Length:							
Element Name:			Width:							
Location:			Height:							
Material:			Count:							
Element Type:			Total Qua	-						
Environment:	-		Limited Ir	ispection	Ц	T				
Protection System:		1					Perform.			
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
$m^2 \square / m$	□/ each □ / % □ / all □									
Comments:					-					
Commence.										
Recommended Work:	Rehab	Repla	CP	Mainta	nance	Needs:				
recommended WOIK.		□Kepia □6-10 y			Maintenance Needs: ☐ Urgent ☐ 1 year		Потост			
	□1-5 years		vears	_ ⊔ ∪rge	111	□1 year	☐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.	1.5.1	
Structure Location	At the Intersection with Old	castle Road	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 47.496"		Longitude -82° 57' 22.6434"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.80	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
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: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	13.0	(m)	Detour Length Around Bridge N/A (km)
Fill on Structure	0.60	(m)	Direction of Structure
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	2000		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit 5.0 (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			
i			

Field Inspection Infor	mation:								
Date of Inspection		Januar	ry 22, 2016						
Inspector		Hossa	m Bakr (Dil	lon C	Consulting L	Ltd)			
Others in Party									
Access Equipment Used		Camer	ra, Measurin	ıg Tap	pe, Measuri	ing Whee	el, and	Hammer	
Weather			, Probability						
Temperature			-8) Celsius						
Overall Structure Not	es:								
Recommended Work on Structure			inor Rehab.		□Maj	or Rehab.	Replace		
Timing of Recommended	Work □1 to 5 years □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.					Outlet. Wearing surface		
Date of Next Inspection									
	<u>'</u>								
Element Data:									
Element Group:	Signs				Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material:					Count:		0		
Element Type:					Total Quan		0		
Environment:					Limited Ins	spection		1	
Protection System:					G 1				Perform.
Condition Data: ${m^2 \square / m}$	Units \square / each \square / $\%$ \square /	′all□	Exc.		Good	Fai	r	Poor*	Deficiencies
Comments: - No Signs, burried structure with two (2) covered manholes at both inlets									
Recommended Work:	Reh		Repl					Needs:	_
	□1-5 y	ears	□6-10) year	'S	□Urge	nt	□1 year	☐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: 7.3			ı.m				
Environment:			Limited Ir	Limited Inspection						
Protection System:							Perform.			
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
m ² m/m	\square / each \square / $\%$ \square / all \square									
Comments: Limited Inspec	tion Covered Manholes				<u>'</u>					
Recommended Work:	Rehab	□Replac	e	Mainte	enance	Needs:				
	☐1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐2 year			

Element Group:	Culverts		Length:		m					
Element Name:	Inlet Components		Width:		m m					
Location:	North Side		Height:		m					
Material:	Troftii Bide	Count:		***						
Element Type:					Total Quantity: Sq.m					
Environment:			Limited Ir		П					
Protection System:				F			Perform.			
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: m ² /m	\square each \square / $\%$ \square / all \square									
L.	Comments: Limited Inspection - Covered Manhole									
Recommended Work:	Rehab	□Replac	e Maintenanc		enance	Needs:				
	□1-5 years	□6-10 ye	ears	□Urge	ent 🔲 1 year		☐2 year			
Element Group:	Culverts		Length:		m					
Element Name:	Outlet Components		Width:		m					
Location:	South Side		Height:		m					
Material:			Count:							
Element Type:			Total Qua	ntity:	Sq.m					
Environment:			Limited Ir	spection						
Protection System:							Perform.			
Canditian Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square									
Comments: Limited Inspec	ction - Covered Manhole				1					
Recommended Work:	Rehab	e Maintenance N			Needs:					
	☐1-5 years	☐ Replac ☐ 6-10 ye		Urge		☐1 year	2 year			
				80	-					

Element Group:	Decks	Length:		0.60 m			
Element Name:	Wearing Surface	Width:	Width:		13.0 m		
Location:		Height:					
Material:	Asphalt		Count:				
Element Type:			Total Quai	ntity:	7.80 Sc	q.m	
Environment:			Limited In	spection			
Protection System:							Perform.
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		4.30	3.5	0		
Comments: In Fair Condition							
	ressive Edge Cracks						
D 1 1777 1				1			
Recommended Work:	Rehab	Replac				Needs:	
	□1-5 years	□6-10 у	ears	Urge	nt	☐1 year	☐2 year
	1		1				
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 Quar		156.0 \$	Sq.m		
Environment:		Limited In	spection				
Protection System:		· ·		1			Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	□/ each □ / % □ / all □		29.0	110	.0	17.0	
Comments: - East Approach	1:						
- Map Cracking							
	ressive Edge Cracks						
Recommended Work:	Rehab	□Replac	ce			Needs:	
	□1-5 years	□6-10 у	ears	☐Urgent ☐1 year		☐1 year	☐2 year
				Asphalt l	Repairs		
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Quai	ntity			
Environment:			Limited In		П		
Protection System:			Limited in	spection	<u> </u>		Perform.
Trotection bystem.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square		Good	1 'ai	1	1 001	Deficiencies
Comments:							
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:	
	1-5 years			Urge	nt	☐ 1 year	2 year
				1			



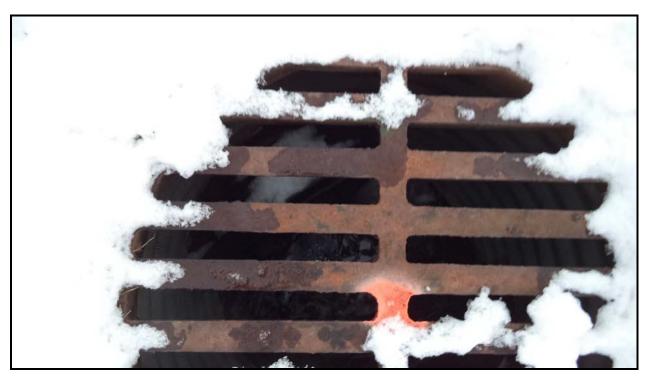
Photograph 1 – Road over Culvert (Looking South)



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:			
			1
Structure Number	32 (Formerly 54)		
Hwy/Road Name	Oldcastle Road		
Structure Location	1.10 km South from North T	Talbot Road	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 42.9234"		Longitude -82° 57' 28.872"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	0.80	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
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: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	6.70	(m)	Detour Length Around Bridge 4.60 (km)
Fill on Structure	0.60	(m)	Direction of Structure
Skew Angle	32°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1985		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit 5.0 (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:									
Date of Inspection	Ja	January 22, 2016								
Inspector	Н	Hossam Bakr (Dillon Consulting Ltd)								
Others in Party										
Access Equipment Used	C	Camera, Measuring Tape, Measuring Wheel, and Hammer								
Weather										
		Sunny, Probability of rain 1%								
Temperature -6 (-2/-8) Celsius										
Overall Structure Not	tes:									
D 1 1W 1	a F	7								
Recommended Work on S		None	☐Minor Rehab). ЦМ	Iajor Rehab.	Replace				
Timing of Recommended	Work	1 to 5 years	☐6 to 10 years							
Overall Comments	th	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:	Height:						
Material:			Count:	0						
Element Type:			Total Quai	Total Quantity: 0						
Environment:			Limited In	spection						
Protection System:						Perform.				
Condition Data:	Units ☐/ each ☑/ % ☐/ a	Exc.	Good	Fair	Poor*	Deficiencies				
Comments: - No Signs, burn			les at the Western Ou	tlet		1				
Comments. 100 digits, our	ned structure with One ((1) covered mainton	ics at the Western Ou							
Recommended Work:	Rehab	□Re	place	Maintenan	ce Needs:					
	□1-5 ye	ars □6-1	10 years	Urgent	□1 year	☐2 year				

Element Group:	Culverts	Culverts			14.0 m			
Element Name:	Barrels	Barrels			0.60 m			
Location:								
Material:	Corrugated Steel	Corrugated Steel						
Element Type:	Multi-Plate CSP		Total Quan	ntity:	3.95 Sq.	.m		
Environment:			Limited Ins	spection				
Protection System:							Perform.	
G 11:1 D 1	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \mathbf{v}}$	/m □/ each □/ % □/ all □							
	pection - Covered Manholes and	condition is unknown	ayn.	l	Į.	<u> </u>		
Comments. Emilieu ins	pection - Covered Mannoles and	condition is unknow	WII.					
Recommended Wor	k: Rehab	Replace	2	Mainte	enance l	Needs:		
	□1-5 years	 ☐6-10 ye		□Urge	nt	□1 year	☐2 year	
Element Group:	Culverts		Length:					
Element Name:	Inlet Components		Width:		m			
Location:			Height:		m			
Material:	East Side	East Side			m			
Element Type:					C			
Environment:		_			Total Quantity: Sq.m Limited Inspection □			
Protection System:			Limited in	spection	Ш		D C	
Frotection System.	TT.:'4:	Б.	C 1	E.		D	Perform. Deficiencies	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² L	/m □/ each □/ % □/ all □							
Comments: Limited Ins	pection - Structure is submerged	below water spring	and condition is	unknown.				
Danaman dad Wan	- □n.1.1	□n1	_	Mainte		Manda.		
Recommended Wor		Replace			enance Needs:		По	
	□1-5 years	□6-10 ye	ars	☐Urgent		☐1 year	☐2 year	
Element Group:	Culverts		Length:		m			
Element Name:	Outlet Components		Width:		m			
Location:	West Side		Height:		m			
Material:			Count:					
Element Type:					Sq.m			
			Total Quan	Limited Inspection				
Environment:				spection				
Environment: Protection System:				spection			Perform.	
Protection System:	Units	Exc.		spection Fai	<u>п</u>	Poor*	Perform. Deficiencies	
Protection System:	Units /m □/ each □/ % □/ all □	Exc.	Limited Ins	1	r	Poor*		
Protection System: Condition Data: m ² v	/m □/ each □/ % □/ all □		Limited Ins	1	r	Poor*		
Protection System: Condition Data: m ² v			Limited Ins	1	r	Poor*		
Protection System: Condition Data: m ² C Comments: Limited Insert	/m □/ each □/ % □/ all □ pection - Covered manhole and c	ondition is unknow	Good n.	Fai				
Protection System: Condition Data: m ² v	/m	ondition is unknow	Good n.	Fai Mainte	enance l	Needs:	Deficiencies	
Protection System: Condition Data: m ² C Comments: Limited Insert	/m □/ each □/ % □/ all □ pection - Covered manhole and c	ondition is unknow	Good n.	Fai	enance l			
Protection System: Condition Data: m ² C Comments: Limited Insert	/m	ondition is unknow	Good n.	Fai Mainte	enance l	Needs:	Deficiencies	

Element Group:	Decks	Length:		0.60 m				
Element Name:	Wearing Surface	Width:	Width:					
Location:		Height:						
Material:	Asphalt	Count:						
Element Type:			Total Quar	ntity:	4.00 Sc	ą.m		
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	□/ each □/ % □/ all □		0.50	2.0	0	1.50		
Comments: In Fair Condition (All Cracks are filled) - Medium Progressive Edge Cracks								
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:		
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year	
	-			Asphalt I	Repairs			
Element Group:	Approaches		Length:		6.0 m			
Element Name:	Wearing Surface		Width:		6.70 m			
Location:	North - South		Height:		0.70 111			
Material:	Asphalt		Count:		2			
Element Type:	Aspitat		Total Quantity: 80.40 Sq.m					
Environment:					П	54.111		
Protection System:	Limited Inspection Perform.							
	Units Exc. Good			Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \sqrt{m}}$	\square / each \square / % \square / all \square		18.0			12.40	Deficiencies	
m² □/m □/ each □/ % □/ all □ 18.0 50.0 12.40 Comments: North and South Approaches - Map Cracking - Longitudinal and Traversal Cracks - Medium Progressive Edge Cracks								
Recommended Work:	Rehab	Replac	e	Maintenance Needs:				
	□1-5 years	□6-10 y	ears	☐Urgent ☐1 year			☐2 year	
	***************************************			Asphalt Repairs				
	T							
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East Side		Height:		_			
Material:			Count:		2			
Element Type:			Total Quar		2			
Environment:			Limited In	spection		1		
Protection System:							Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m$	□/ each □/ % □/ all 🗹			2				
Comments: Excessive plant	growth along the water stre	am on the East Side	blocking the wa	nter flow, w	ith recor	nmendation to be sh	naved.	
Recommended Work:		Replac	e	Mainte	enance	Needs:		
	☑1-5 years	☐ 6-10 ye		Urge		☐1 year	2 year	
	<u></u>	<u> </u>					<u> </u>	



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:			
G. ST.			
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 Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	0.7	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	23.0	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	45.5	(m)	AADT % Trucks
Total Deck Area	16.100	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	23.0	(m)	Detour Length Around Bridge N/A (km)
Fill on Structure	0.8	(m)	Direction of Structure E
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	1980		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:									
Date of Inspection		January 29, 2016								
Inspector		Hossam Bakr (Dillon Consulting Ltd)								
Others in Party										
Access Equipment Used		Camera	, Measurin	ng Ta	pe, Measuri	ing Whe	el, and	Hammer		
Weather					lity of Rain					
Temperature		-2 (-1 / -5) Celsius								
-		`	,							
Overall Structure Not	tes:									
Recommended Work on S	Structure	✓None	<u> </u>	□м	inor Rehab.		□Mai	or Rehab.	Replace	
Timing of Recommended					to 10 years			<u> </u>	Птортись	
Overall Comments	· WOIR									
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: Environment:	Stop Sign				Total Quantity: 1 Limited Inspection □					
Protection System:					Limited ins	spection			D C	
Trottection System.	Unite		Eve		Good	Fai	r	Poor*	Perform. Deficiencies	
Condition Data: ${m^2 \square / m}$	ondition Data:				Good	га	II	F001 ·	Deficiencies	
Comments: In Excellent Co	onditions									
Recommended Work:	□Reh		□Repl					Needs:		
	□1-5	years	□ 6-10) year	rs .	□Urge	nt	□1 year	☐2 year	

Element Group:	Culverts		Length:			45.5 m		
Element Name:	Barrels	Width:	Width:					
Location:		Height:						
Material:	Corrugated Steel	Count:						
Element Type:			Total Qua	ntity:	100.0 c	ı.m		
Environment:			Limited Ir	spection				
Protection System:							Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	\square / each \square / % \square / all \square		100.0					
Comments: Limited inspect	ion and assumed to be in gen	erally in good cor	ndition.					
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y	ears/	Urge	nt	☐1 year	☐2 year	
		-						
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments & Streams Embankments		Width:					
Location:	Embankments		Height:					
Material:			Count:		4			
Element Type:	Total Q			ntity	4			
Environment:		_ `	Inspection					
Protection System:			Limited ii	ispection	<u> </u>		Perform.	
Trotection bystem.	Units	Exc.	Good	Fai		Poor*	Deficiencies	
Condition Data:		EXC.		га	Γ	Poor	Deficiencies	
L.	□/ each □ / % □ / all □		4					
Comments: In Good Condit	ion							
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y	ears/	□Urge	Jrgent □1 year		☐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 Qua	ntity:	1			
Environment:	T of		Limited Ir					
Protection System:				Бресион			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \Pi/m}$	□/ each		1		_			
Comments:		I	<u> </u>			I		
Recommended Work:	Rehab	Repla	ce	Mainte	enance	Needs:		
recommended work.	1-5 years	☐ 6-10 y		Urge		1 year	2 year	
	LI-5 years	По-10 ў	cars	L Oige	111	□ 1 year	□ 2 ycai	

Element Group:	Decks		Length:		0.7 m		
Element Name:	Wearing Surface	Width:		23.0 m			
Location:			Height:				
Material:	Asphalt		Count:				
Element Type:			Total Qua	Total Quantity: 16.1 Sq.m			
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	□/ each □/ % □/ all □		16.1				
Comments: In Good Condit	ion				•	<u>.</u>	
D 1 1 1 1 1 1 1				1 36 1			
Recommended Work:		Rehab Replace			enance l		— -
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐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 Qua	-	276.0 Se	q.m		
Environment:	Limited Inspection						
Protection System:		1					Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	□/ each □ / % □ / all □		276.0				
Comments: In Good Condit	ion						
				1			
Recommended Work:	Rehab	Replac					
	□1-5 years	□6-10 y	ears	Urgent		☐1 year	☐2 year
	I		ı	•	1		
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	North - South		Height:				
Material:			Count:		1		
Element Type:			Total Quar	-	1		
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	□/ each □/ % □/ all 🗹		1				
Comments: In Good Condit	ion						
D 1 1337 1				1 36 1		AT 1	
Recommended Work:	_ ~						
	Rehab	Replac		Mainte			—
	☐ Rehab ☐ 1-5 years	∐ Replac ☐ 6-10 y		Mainte		1 year	2 year
		-					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:			
Circuit and National Action	24 (F. 1.20)		
Structure Number	34 (Formerly 29)		
Hwy/Road Name	Pulleyblank Street		
Structure Location	0.7 km South from North Ta	ılbot Road	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 14' 6.684"		Longitude 82° 58' 17.1114"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	1.5	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	28.0	(m)	AADT % Trucks
Total Deck Area	10.800	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1995		Year of Last Major Rehab.
Last OSIM Inspection	1		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:							
Date of Inspection	Ja	nuary 29, 2016						
Inspector	Н	ossam Bakr (Dill	on Consulting I	Ltd)				
Others in Party								
Access Equipment Used	Ca	mera, Measuring	g Tape, Measur	ing Wheel, a	nd Hammer			
Weather	М	ostly Sunny, Pro	bability of Rain	1%				
Temperature	-2	(-1 / -5) Celsius						
	<u> </u>							
Overall Structure Not	tes:							
Recommended Work on S	Structure	None	☐Minor Rehab		Major Rehab.	□ Danlaga		
Timing of Recommended	_			. ur	viajor Kenab.	Replace		
Overall Comments		☐1 to 5 years ☐6 to 10 years Generally, the structure is in good condition. Wide transverse and longitudinal cracks in the asphalt over						
Generally, the structure in the culvert.			e is in good condition	n. Wide transve	erse and longitudinal c	racks in the asphalt over		
D. CV. I								
Date of Next Inspection								
Element Data:								
	1							
Element Group: Element Name:	Signs		Length: Width:					
Location:	Signs		Height:					
Material:			Count:	0				
Element Type:	N/A		Total Quar					
Environment:			Limited In:					
Protection System:			•	•		Perform.		
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units ☐/ each ☑/ % ☐/ al	Exc.	Good	Fair	Poor*	Deficiencies		
Comments:		- 1	1	I		ı		
Recommended Work:	Rehab	□Repl	ace	Maintenar	Maintenance Needs:			
	□1-5 yea			□Urgent	□1 year	☐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 Quar	Total Quantity:		Sq.m		
Environment:			Limited Inspection					
Protection System:							Perform.	
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		132.0					
Comments: In Good Condit	, L			•		,		
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:		
				Urge		□1 year	☐2 year	
El . C	G 1		T .1					
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: Total Quan	utity: 36.8 Sq.m					
Element Type:	Mortar Bags with Top Bean	Mortar Bags with Top Beam				ı.m		
Environment:			Limited In	spection		T		
Protection System:				T	1		Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$ m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square $								
Comments: In Good Condition								
Recommended Work:	Rehab	Replac						
	□1-5 years	□6-10 ye	ears	☐Urgent ☐1 year		□1 year	☐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:		2.0 111			
Element Type:	Mortar Bags with Top Bean	n	Total Quar	ntity:	46.0 Sc	1. m		
Environment:	moran Bago wan Top Bean	•	Limited In	-	П	1,		
Protection System:			Ziiiitea iii	Бресноп			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square	2.101	46.0	1	-	1 0 0 1		
Comments: In Good Condit			40.0	1				
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:		
	1-5 years	☐ 6-10 ye		Urge		1 year	2 year	
	<u></u>					<u>1 </u>	<u> </u>	

Element Group:	Decks		Length:	Length:				
Element Name:	Wearing Surface		Width:		7.2 m			
Location:			Height:	Height:				
Material:	Asphalt		Count:					
Element Type:			Total Quar	Total Quantity: 10.8 Sq.m				
Environment:	Bengin		Limited In	Limited Inspection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		7.0			3.8		
Comments: - Wide longitud		1						
				_				
Recommended Work:	☐ Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 у	ears	□Urge	nt	□1 year	☐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 Quar	Total Quantity: 86.4 Sq.:		g.m			
Environment:			Limited In	•	П	•		
Protection System:							Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² /m	□/ each □/ % □/ all □							
<u>L</u> .		<u> </u>						
Comments: In Good Condit	ons							
Recommended Work:	Rehab	Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y		☐Urgent ☐1 yea			2 year	
	шт э усыгэ		Curs	Asphalt Repairs			<u></u>	
				Aspirati Repairs				
				1				
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East - West		Height:					
Material:			Count:		1			
Element Type:			Total Quar	ntitv:	1			
Environment:			Limited In		П			
Protection System:							Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$				1 43		1 001		
	'		1					
Comments: In Good Condit	tons							
Recommended Work:	Rehab	Repla	ne	Mainte	enance	Needs:		
100011111011000 WOLK.	☐ 1-5 years	☐ 6-10 y		Urge		1 year	2 year	
	□1-5 years	□0-10 y	cars	I U Oige	111	□ 1 year	□ 2 year	

Element Group:		Embankments & Streams		Length:				
Element Name:		Embankments		Width:				
Location:				Height:				
Material:				Count:		4		
Element Type:				Total Quantity: 4				
Environment:				Limited In	Limited Inspection			
Protection System	n:			_				Perform.
C III D		Units	Exc.	Good	Fai	Fair Poor*		Deficiencies
Condition Data:	m²□/m [□/ each ☑ / % □/ all □		4				
Comments: In Go	ood Condit	L	L				L	
Recommended	Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
			ears	□Urge	nt	□1 year	☐2 year	
					 8-		— - <i>J</i>	
Element Group:		Culverts		Length:		16.0 m		
Element Name:		Inlet Components		Width:		0.75 m		
Location:		East side		Height:		0.73 m		
Material:		†	Cast-in-place concrete			0.30 III	•	
Element Type:		Headwall		Count:	Total Quantity: 21.6 Sq.m			
Environment:		neadwaii	icauwan			121.0 50	վ.III	
Protection System	n·			Limited I	iispection	<u> </u>		DC
Trotection system		Units	Exc.	Good	Fai		Poor*	Perform. Deficiencies
Condition Data:	m 2 1/ /m [☐/ each ☐/ % ☐/ all ☐	EXC.		га	Ι	POOL	Deficiencies
Comments: In go	od conditio	on.						
Recommended	Work	Rehab	Replac	20	Mainte	enance	Needs:	
Recommended	WOIK.	☐1-5 years	□ Kepia				1 year	☐2 year
		□1-3 years	<u> </u>	ears	rs			⊔2 yeai
		Г		<u> </u>				
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 Qua		22.7 Sc	q.m	
Environment:				Limited In	nspection			
Protection System	n:							Perform.
Condition Data:		Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data.	m²☑/m [22.7				
Comments: In go	od conditio	on.						
Comments.								
Recommended	Work	Rehab	Replac	20	Maint	nance	Needs:	
Accommended	WOIK.		.				L L	По жала
		□1-5 years	□6-10 y	ears	□Urge	11t	□1 year	☐2 year
					1			



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:			
C N. 1	0.00 1.50		
Structure Number	36 (Formerly 50)		
Hwy/Road Name	Blackacre Drive		
Structure Location	At intersection with Outer D	Prive	
Structure Type	Corrugated Steel Pipe Arch		
Latitude	42° 14' 11.6154"		Longitude -82° 58' 44.3634"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	1.8	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐
Total Deck Length	15.0	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	292	(m)	AADT % Trucks
Total Deck Area	27	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
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 Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Info	mation:								
Date of Inspection		Ianuar	y 29, 2016						
Inspector					Consulting L	td)			
_		поѕѕа	III Daki (Di	HOII C	Johnsulting L	λα)			
Others in Party									
Access Equipment Used		Camer	a, Measurii	ng Ta	pe, Measuri	ng Whe	el, and	Hammer	
Weather		Mostly	Sunny, Pr	obabi	lity of Rain	1%			
Temperature		-2 (-1	/ -5) Celsiu	S					
Overall Structure Not	tes:								
Decemberded Work on	Cturratura	Edni.		Пм	inor Rehab.		Пхс	D .11	□D1
							шмај	or Rehab.	Replace
Timing of Recommended	Work	∐l to	5 years	∐6 t	to 10 years				
Overall Comments Limited inspection to the culver				vert barrel due	to the stru	acture ler	ngth. Culvert condi	tion assumed to be good.	
Date of Next Inspection									
Element Data:									
Pi . G					Y .1				
Element Group: Element Name:	Signs Signs				Length: Width:				
Location:	Signs				Height:				
Material:					Count:		1		
Element Type:	Stop Sign				Total Quan	tity:	1		
Environment:	. 5				Limited Ins				
Protection System:				•					Perform.
Condition Data:	Units		Exc.		Good	Fai	ir	Poor*	Deficiencies
$m^2 \square / m$	□/ each ☑/ % □	/ all□	1						
Comments: In Excellent Co	ondition								
D 1 1 1 1 1 1						361		X 1	
Recommended Work:	□ Rel		□Rep					Needs:	Па
	□1-5	years	□6-10	o year	rs	□Urge	ent	□1 year	☐2 year

Element Group:	Culverts	Length:		292 m				
Element Name:	Barrels		Width:	Width:		1.8 m		
Location:			Height:		1.2 m			
Material:	Corrugated Steel		Count:					
Element Type:			Total Quantity: 1743			q.m		
Environment:			Limited In	spection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fai	Fair Poor*		Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		1743.0					
Comments: Limited inspect	ion - Culvert assumed in good	d condition.		1		,		
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:		
	□1-5 years	ears	Urge	nt	☐1 year	☐2 year		
	-					•		
El . C	0.1		T .1					
Element Group:	Culverts		Length:		m			
Element Name:	Inlet Components		Width:		m			
Location:	North Side	Height:		m				
Material:	27/4	Count:	ntitu					
Element Type:	N/A	Total Quar	•	Sq.m				
Environment:			Limited In	spection		1		
Protection System:	TT 1.			T		TD 44	Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	\square / each \square / % \square / all \square							
Comments:								
Recommended Work:	Rehab	Replac						
	□1-5 years	□6-10 y	ears	☐Urgent ☐1 year			☐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:		2.0 111			
Element Type:	Mortar Bags with Top Head	lwall	Total Quar	ntity:	11.4 Sc	1. m		
Environment:	Moran Bags with 10p House		Limited In			1,		
Protection System:			2	эрссион			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² /m	\square / each \square / % \square / all \square		11.4		_			
Comments: In Good Condit		I_	11.4			I		
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:		
	1-5 years	□6-10 y		Urge		☐1 year	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 Quai	Total Quantity: 27.0 Sq.m			
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square	27.0					
Comments: In Good Condit	•	l .		-1		Į.	
Comments com							
Recommended Work:	☐ Rehab	e	Mainte	enance	Needs:		
	□1-5 years	□6-10 ye	ears	□Urge	nt	□1 year	☐2 year
				I			
Element Group:	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface		Width:		15.0 m		
Location:	East - West		Height:				
Material:	Asphalt	Count:					
Element Type:		Total Quar	ntity:	180.0 S	q.m		
Environment:			Limited In	spection			
Protection System:							Perform.
Canditian Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $m^2 \square / m$	\square / each \square / % \square / all \square		180.0				
Comments: In Good Condit	ion			•	•		
Commency, as even comme							
Recommended Work:	Rehab	□Replac				Needs:	
	□1-5 years	□6-10 у€	ears	Urgent		☐1 year	☐2 year
	1						
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	North - South		Height:				
Material:			Count:		1		
Element Type:			Total Quar	-	1		
Environment:			Limited In	spection		T	
Protection System:		F _					Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$			1				
Comments: In Good Condit	ion						
D 1 1 1 1 1 1 1	-			36.1		NT 1	
Recommended Work:	Rehab	Replac			enance		— -
		1 1 (1 ()					
	☐1-5 years	☐ 6-10 ye	ears	Urge	nt	☐ 1 year	2 year
	∐1-5 years	□ 6-10 ye	ears	⊔ Urge	nt	∐1 year	∐2 year

Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		4		
Element Type:			Total Qua	ntity:	4		
Environment:			Limited In	spection			
Protection System:			•				Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		4				
Comments: In Good Condit	ion	1		1			
Recommended Work:	Rehab	Repla	ce	Mainte	enance	Needs:	
	1-5 years	□6-10 y		Urge		1 year	☐2 year
	<u> </u>		Cars	Lorge		<u></u>	<u></u> 2 your
FI C			T .1				
Element Group: Element Name:	Embankments & Streams		Length:				
	Slope Protection		Width:				
Location:	North Side		Height:				
Material:	Masonry		Count:		1		
Element Type:	Hand Laid Riprap		Total Quar	•	1		
Environment:			Limited In	spection			
Protection System:	TT 1	Б.		T		D 4	Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	□/ each ☑/ % □/ all □		1				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:	
	□1-5 years	□6-10 y	years	□Urge	nt	□1 year	☐2 year
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Qua	ntitv:			
Environment:			Limited In	-	П		
Protection System:	1			p			Perform.
·	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m!}$	\square / each \square / % \square / all \square	2.10.	000	1		1 001	
Comments:		<u> </u>		1			
Recommended Work:	Rehab	Repla	ce	Mainte	enance	Needs:	
	1-5 years	□6-10 y		Urge		□1 year	☐2 year
	<u></u>			c.gc		<u></u>	<u></u>



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:			
Company No. 1	25 (F) 1 (C)		
Structure Number	37 (Formerly 49)		
Hwy/Road Name	Outer Drive		
Structure Location	At intersection with Outer D	Prive Connector	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 13' 59.3034"		Longitude -82° 59' 3.0474"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	1.0	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	2005		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		Januar	y 29, 2016						
Inspector			m Bakr (Dill	lon C	Consulting I	Ltd)			
Others in Party			•						
Access Equipment Used		Camer	ra, Measurin	ıg Ta	ne. Measuri	ing Whe	el. and	Hammer	
Weather			y Sunny, Pro						
Temperature			/ -5) Celsius		nty of Rain	. 170			
Temperature		-2 (-1	/ -3) Celsius	•					
Overall Structure Not	es:								
Recommended Work on S	Structure	✓Noı	ne	Пм	inor Rehab.		ПМаі	or Rehab.	Replace
Timing of Recommended		☐1 to 5 years ☐6 to 10 years					Птершее		
Overall Comments	WOIK				to 10 years				
Overan Comments		In Exce	llent Condition	1					
Date of Next Inspection									
Element Data:									
Element Group:	Signs				Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material: Element Type:	Cmood Limit				Count: Total Quan	ıtitx:	1		
Environment:	Speed Limit				Limited Ins	•			
Protection System:					Limited Inc	spection	<u> </u>		Perform.
	Units		Exc.		Good	Fa	ir	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each 🗹 / % 🗖	⁄ all□	1						
Comments: - Existing Sign	in Excellent Condition	on							
Recommended Work:	□Reh	ah	□Repl	lace		Maint	enance	Needs:	
Titooninionada (voik.	□1-5 <u>1</u>		□fc-10		rs	Urge		1 year	☐2 year
		<u> </u>	10	<i>j</i>			-		

Element Group:	Culverts		Length:		38.0 m		
Element Name:	Barrels		Width:		1.0 m (Dia.)	
Location:			Height:				
Material:	Corrugated Steel		Count:				
Element Type:			Total Quar	ntity:	119.4 S	Sq.m	
Environment:			Limited In	spection			
Protection System:							Perform.
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square	119.4					
Comments: In Excellent Co	ndition	,			"	,	
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:	
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐2 year
		-					
Elamant Commi	Cularanta		T				
Element Group:	Culverts		Length:		m		
Element Name:	Inlet Components		Width:		m		
Location:	NE Side		Height:		m		
Material:	27/4		Count:		~		
Element Type:	N/A		Total Quar	•	Sq.m		
Environment:			Limited In	spection		1	
Protection System:	TT 1:			T		TD als	Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	\square / each \square / % \square / all \square						
Comments:							
Recommended Work:	Rehab	Replac				Needs:	
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐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 Quar	ntity:	Sq.m		
Environment:			Limited In	-			
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² /m	□/ each □/ % □/ all □						
Comments:				1	l		
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	☐1-5 years	☐ 6-10 ye		Urge		☐1 year	2 year
					-		— – Jun

Element Group:	Decks		Length:		1.0 m		
Element Name:	Wearing Surface		Width:		12.0 m		
Location:			Height:				
Material:	Asphalt		Count:				
Element Type:			Total Qua	ntity:	12.0 Sq	.m	
Environment:			Limited In	nspection			
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	□/ each □ / % □ / all □		12.0				
Comments: In Good Condit	ion			•	•		
				1			
Recommended Work:	Rehab	Replac			enance l	J	
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐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 Qua	-	144.0 S	q.m	
Environment:			Limited In	nspection			
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	□/ each □ / % □ / all □		144.0				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Replac			enance :	L L	
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year
TI G	1		T .				
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:	mtitru	1		
Element Type:			Total Qua	-	1 		
Environment: Protection System:			Limited In	ispection	Ш	I	D 6
Protection System.	I In:to	F	Card	Es:	_	D*	Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$			1				
Comments: In Good Condit	ion						
Recommended Work:	□ D -11-	□ D1	20	Maint	enance l	Noods:	
Recommended WOFK:	☐ Rehab	Replac					
	□1-5 years	□ 6-10 y	ears	Urge	nι	☐1 year	2 year
	□1-3 years		ears	∪rge	Πι	□1 year	□ 2 year

Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		4		
Element Type:			Total Qua	ntity:	4		
Environment:			Limited Ir	spection			
Protection System:				•			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		4				
Comments: In Good Condi	tion					1	
Recommended Work:	Rehab	□Repla				Needs:	
	□1-5 years	□6-10 y	ears	☐Urge	nt	☐1 year	☐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 Qua	ntity:	2		
Environment:	n n n n p np		Limited Ir	•			
Protection System:							Perform.
-	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \prod / m}$	\square / each \square / % \square / all \square		2				
		Į.					
Comments: In Good Condit	non						
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:	
	☐1-5 years	□6-10 y		□Urge	nt	□1 year	☐2 year
	<u>J</u>						
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Qua	ntity			
Environment:			Limited Ir	-	П		
Protection System:	_		Limited ii	ispection	<u> </u>	1	DC
Trotection System.	Units	Erro	Cood	Foi		Poor*	Perform. Deficiencies
Condition Data:		Exc.	Good	Fai	I	POOL	Deficiencies
m²∟/m	□/ each □ / % □ / all □						
Comments:							
				•			
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:	
	□1-5 years	[6-10 չ	ears	□Urge	nt	□1 year	☐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	38		
Hwy/Road Name	Malden Road		
Structure Location	At the intersection with Sou	th Talbot Rd	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 2.8434"		Longitude -82° 54' 0.8634"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	2.20	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	70.10	(m)	Posted Speed 80 No. of Lanes 2
Overall Str. Width	70.10	(m)	AADT % Trucks
Total Deck Area	154.220	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	15.25	(m)	Detour Length Around Bridge (km)
Fill on Structure	0.60	(m)	Direction of Structure N
Skew Angle	0°	(Degrees)	No. of Spans
Historical Data:			
Year Built	2005		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit 5.0 (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	y		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection	Γ	Decer	nber 16, 2015	5					
Inspector	ŀ	Hossa	m Bakr (Dill	lon C	onsulting L	Ltd)			
Others in Party									
Access Equipment Used	N	Meası	ıring Tape, M	Measu	uring Whee	l, and Ha	ammer		
Weather	N	Mostl	y Cloudy, Af	fterno	on Shower	•			
Temperature	(11/3)	Celsius						
Organial Street aturns No.	hom								
Overall Structure Not	tes:								
Recommended Work on S	Structure [□No	ne [□Мі	inor Rehab.	,	□Maj	or Rehab.	Replace
Timing of Recommended	Work [□1 to	5 years	□6 to	o 10 years				
Overall Comments	Т	This str	_	d with	roadside safe	ty concern	where p	arallel culvert shou	er the culvert section. Id be tapered to match
Date of Next Inspection									
	<u> </u>								
Element Data:									
Element Data.									
Element Group:	Signs]	Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material:					Count:		2		
Element Type: Environment:	Stop, Single maximum	m wei	ght Signs		Total Quan		2		
Protection System:					Limited Ins	spection			Df
	Units		Exc.		Good	Fai	r	Poor*	Perform. Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ a	all□	1						
Comments: - Existing Sign - Upgrade and i	in Excellent Condition nstallation of Object M		signs and Object	et Mark	kings to meet	the Ontario	Traffic	Manual	
Recommended Work:	□Rehal		□Repl					Needs:	
	□1-5 ye	ears	□6-10	year	S	□Urge	nt	□1 year	☐2 year

Element Group:	Culverts		Length:		70.10 n	1	
Element Name:	Barrels		Width:		2.20 m		
Location:			Height:				
Material:	Corrugated Steel		Count:				
Element Type:	Multi-Plate CSP		Total Quar	ntity:	266.50	Sq.m	
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each□/ %□/ all□	266.50					
Comments: In Excellent Co.						<u>l</u>	
Comments, in Execution Co.	nution, Recently Replaces						
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	☐1-5 years	 □6-10 ye		Urge	nt	☐1 year	☐2 year
Element Group:	Decks		Length:		2.20 m		
Element Name:	Wearing Surface		Width:		15.25 m	n	
Location:	Wearing Burrace		Height:		10.20 11	1	
Material:	Asphalt		Count:				
Element Type:	Aspiiait		Total Quar	ntity:	33.55 S	a m	
Environment:	†		Limited Inspection		Π	4. 111	
Protection System:			Lilling III	spection	<u> </u>		Perform.
Troceron by stem.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	☐/ each ☐/ % ☐/ all ☐	EAC.		+		1 001	Delicioneros
.			28.0	5.55)		
Comments: - Medium Trans							
- Medium Long	itudinai Crack						
Recommended Work:	Rehab	Replac		Mainte	enance	Needs:	
Recommended work.	☐ Renab	□ Replac □6-10 ye		Urge		□1 year	☐2 year
	□1-5 years	□0-10 y¢	2418	LUIEC	III	Li yeai	⊔∠ year
TI	т. ,		T		ı		
Element Group:	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface		Width:		15.25 m	1	
Location:			Height:		_		
Material:	Asphalt		Count:		2		
Element Type:	 		Total Quar	-	183.0 S	q.m	
Environment:			Limited In	spection	Ц		~ C
Protection System:	¥ 7 *.		C . 1	Г.:		D	Perform.
Condition Data:	Units	Exc.	Good	Fai		Poor*	Deficiencies
m²☑/m	□/ each □ / % □ / all □		173.0	10.0	0		
Comments: - Edge Cracks (South Approach)						
- Medium Long	itudinal Crack						
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	1-5 years	 ☐ 6-10 ye		Urge		1 year	2 year

Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:		1		
Element Type:			Total Quar	ntity:	1		
Environment:			Limited In	spection			
Protection System:			•				Perform.
G 1111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² /m [□/ each □/ % □/ all ☑		1				
Comments: In Good Condition	, L				L		
Comments. In Good Conditi	Oli						
Recommended Work:	Rehab	Replac	e	Mainte	enance l	Needs:	
	□1-5 years	□6-10 ye		□Urge	nt	□1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:	Emountments		Height:				
Material:			Count:		4		
Element Type:			Total Quar	ntity:	4		
Environment:			Limited In		in .		
Protection System:				эрссион			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \prod / m \rfloor}$	\square / each \square / % \square / all \square	EAC.	4	1 41		1001	
L.	. <u>.</u> .						
Comments: In Good Condition	on						
Recommended Work:	Rehab	Replac	e	Mainte	enance l	Needs:	
	☐1-5 years	□6-10 ye		Urge		□1 year	☐2 year
	— 1 0) cars						1 12 7541
				Lorge	111	<u> Птусат</u>	□ 2 year
				Lorge	111	<u></u> пусаг	□2 yeai
				Uorge	iii.	<u> Птусаг</u>	<u>□</u> 2 уеаг
Element Group:	Embankments & Streams					— Пусаг	□2 year
Element Group: Element Name:	Embankments & Streams Slope Protection		Length: Width:	Потде		Птуса	□2 year
			Length:	Шогде		Птуса	□2 year
Element Name:			Length: Width:	Uorge	4	Пуса	Li Z year
Element Name: Location: Material:	Slope Protection		Length: Width: Height:			Пуса	∐2 yeai
Element Name: Location:	Slope Protection Masonry		Length: Width: Height: Count:	ntity:	4 4	Пуса	□2 year
Element Name: Location: Material: Element Type:	Slope Protection Masonry		Length: Width: Height: Count: Total Quar	ntity:	4 4	Пуса	
Element Name: Location: Material: Element Type: Environment: Protection System:	Slope Protection Masonry	Exc.	Length: Width: Height: Count: Total Quar Limited In	ntity:	4 4	Poor*	Perform. Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data:	Masonry Hand laid Riprap Units	Exc.	Length: Width: Height: Count: Total Quar Limited In	ntity:	4 4		Perform.
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m [Slope Protection Masonry Hand laid Riprap Units / each / % / all	Exc.	Length: Width: Height: Count: Total Quar Limited In	ntity:	4 4		Perform.
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data:	Slope Protection Masonry Hand laid Riprap Units / each / % / all	Exc.	Length: Width: Height: Count: Total Quar Limited In	ntity:	4 4		Perform.
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m [Slope Protection Masonry Hand laid Riprap Units / each / % / all	Exc.	Length: Width: Height: Count: Total Quar Limited In	ntity:	4 4		Perform.
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m [Slope Protection Masonry Hand laid Riprap Units / each / % / all		Length: Width: Height: Count: Total Quar Limited In	ntity: spection Fai	4 4	Poor*	Perform.
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m □ Comments: In Good Condition	Slope Protection Masonry Hand laid Riprap Units // each // % // all // ion Rehab	Replac	Length: Width: Height: Count: Total Quar Limited In Good 4	ntity: spection Fai	4 4 7 r	Poor*	Perform. Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m □ Comments: In Good Condition	Slope Protection Masonry Hand laid Riprap Units / each / % / all		Length: Width: Height: Count: Total Quar Limited In Good 4	ntity: spection Fai	4 4 7 r	Poor*	Perform.
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m □ Comments: In Good Condition	Slope Protection Masonry Hand laid Riprap Units // each // % // all // ion Rehab	Replac	Length: Width: Height: Count: Total Quar Limited In Good 4	ntity: spection Fai	4 4 7 r	Poor*	Perform. Deficiencies



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:			
Constant No. 1	20		
Structure Number	39		
Hwy/Road Name	Concession Road 10		
Structure Location	At the intersection with Sou		
Structure Type	Non-Rigid Frame Open Foo	ting Culvert	
Latitude	42° 12' 16.4514"		Longitude -82° 54' 55.116"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	1.60	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	7.90	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	7.90	(m)	AADT % Trucks
Total Deck Area	12.640	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1965		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		Decer	nber 16, 201:	5					
Inspector			m Bakr (Dill		ing I	Ltd)			
Others in Party									
Access Equipment Used		Came	ra, Measurin	g Tape, Me	asuri	ing Whe	el, and	Hammer	
Weather			y Cloudy, Af						
Temperature		(11/3)	Celsius						
Overall Structure Notes:									
Recommended Work on Structure				ehab.		□Maj	or Rehab.	Replace	
Timing of Recommended	d Work □1 to 5 years □6 to 10 years								
Overall Comments Culvert structure was identified with narrow horizontal cracking at the headwalls, and light map at the wearing surface at the south approach. Waterway with moderate plant growth. The culvert marked with roadside safety concerns, where the concrete headwalls are a hazard that vehicles shaprotected from.					vth. The culvert is				
Date of Next Inspection									
Element Data:									
Element Group:	Signs			Lengt					
Element Name:	Signs			Width					
Location:				Heigh Count					
Material: Element Type:	Stop Sign			Total		ıtitsı:	1		
Environment:	Stop Sign					spection			
Protection System:				Limit	JG IIII	spection			Perform.
Condition Data:	Units ☐/ each ☑/ % ☐	/ all□	Exc.	Good		Fai	ir	Poor*	Deficiencies
Comments: - Existing Sign		on		t Markings to	meet	the Ontario	o Traffic	Manual	
Recommended Work:	□Reh	ab	□Repl	ace		Maint	enance	Needs:	
	□1-5	years	□6-10	years		□Urge	ent	□1 year	☐2 year
	11-3 years 10-10 years 10 or 10 years 10 or 10 years 12 years 12 years 12 years 12 years 12 years 12 years 13 years 12 years 13 years 12 years 13 y								

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 Quar	ntity:	38.0 Sq	.m		
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $m^2 \square / m$	□/ each□/ %□/ all□		38.0					
Comments: In Good Conditi				.1				
Comments, in coor condi-	ЮП							
Recommended Work:	Rehab	Replace	e	Mainte	enance			
	□1-5 years	□6-10 ye		Urge	nt	☐1 year	☐2 year	
	.							
Element Group:	Culverts	Culverts			3.7 / 4.2) m		
Element Name:	Inlet Components	Length: Width:		0.3 m	Z III			
Location:	East Side	Height:		2.1 m				
Material:	Cast-in-place concrete	Count:		2.1 111				
Element Type:	Wingwall	Total Quar	ntity:	16.6 Sq	m			
Environment:	Tring truit		Limited In		П	.111		
Protection System:	 	Perform.						
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	□/ each □/ % □/ all □	LAC.	16.6	1 111	1	1001	Delicitation	
Comments: Generally, in Go	ood Condition with minor nar	row horizontal cra-	ck					
Recommended Work:	Rehab	Replace	e	Mainte	enance	Needs:		
	1-5 years	□6-10 ye		Urgent		□1 year	☐2 year	
	што уста	-ر ۱۰ ۵ ۵	7 41 5		110	<u> </u>		
Element Group:	Culverts		Length:		1			
Element Group: Element Name:	1		Width:		1.6 m			
Location:	Outlet Components East Side		Height:		0.3 m 0.5 m			
Material:			Count:		0.5 m			
Element Type:	Cast-in-place concrete		Total Quar	ntitu:	0000			
Environment:	Headwall				0.8 Sq.1	m		
Protection System:	+		Limited In	spection	<u> </u>		Df-2	
Frotection System.	Units	Evo	Good	Fai		Poor*	Perform. Deficiencies	
Condition Data:		Exc.		Ган	r	POOL.	Deficiencies	
m ² /m			0.80					
Comments: In Good Condition	ion							
Recommended Work:	☐ Rehab	Replace	e	Mainte	enance	Needs:		
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	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 Quar	ntity:	18.0 Sq.	.m	
Environment:			Limited In		П		
Protection System:	†			вресил			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	\square / each \square / % \square / all \square	EAC.		1 41	1	1 001	Deficiencies
			18.0				
Comments: In Good Condition	ion						
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				1			
Recommended Work:	Rehab	Replac		Maintenance Needs:			_
	□1-5 years	□6-10 y	ears	Urge	nt	□1 year	☐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:		0.0			
Element Type:	Headwall	Total Quar	ntity:	0.8 Sq.r	n		
Environment:	Headwaii	_	•	0.8 54.1	11		
Protection System:							
Troccuon byscin.	Units	Good	Fai		Poor*	Perform. Deficiencies	
Condition Data:		Exc.		Ган	ır	P001**	Deficiencies
m²┗/m i	□/ each □/ % □/ all □		0.8				
Comments: In Good Condition	ion						
~ 1 1 XX 1				T 3.5		· · · ·	
Recommended Work:	Rehab	Replac		Maintenand			
	□1-5 years	□6-10 y	ears	Urgent		□1 year	☐2 year
					ı		
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 Quar	ntity:	12.6 Sq	.m	
Environment:			Limited In	spection			
Protection System:							Perform.
G 1111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$			10.0	2.6			
V.,			10.0	2.0	,		
Comments: In Good Condition	ion						
Recommended Work:	Rehab	□ Danlar		Mointe	enance l	Noods:	
Recommended work.		Replac					Па
	☐1-5 years	□6-10 y	ears	Urge	nt	☐1 year	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 Quar	ntity:	86.4 Sc	ı.m	
Environment:			Limited In	spection			
Protection System:							Perform.
C THE DATE	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² /m	□/ each □/ % □/ all □		80.0	6.4	ļ		
Comments: Light map crace	L	ıth approach		<u> </u>	1	<u>ı</u>	
	8						
				1		•	
Recommended Work:	Rehab	Replac				Needs:	
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year
				ı			
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways						
Location:	East - West	Height:					
Material:		Count:		1			
Element Type:		Total Quar	ntity:				
Environment:		Limited In	spection				
Protection System:	,						Perform.
	Units Exc.		Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \square / m}$	□/ each □/ % □/ all ☑			1			
Comments: Moderate plant		1		1			
Comments: woderate plant	growin at the watercourse.						
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:	
	☐1-5 years	□6-10 y		□Urge	nt	□1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments & Streams Embankments		Width:				
Location:	Embankments		Height:				
Material:			Count:		8		
Element Type:			Total Quar	ntity	8		
Environment:			Limited In				
Protection System:	-		Limited in	ispection			DC
Trotection System.	Units	Erro	Good	Eci		Poor*	Perform. Deficiencies
Condition Data:		Exc.		Fai	Г	Poor	Deficiencies
l.	□/ each ☑ / % □ / all □		8				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	□Replac	ce	Mainte	enance	Needs:	
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year
	***************************************	<u></u>				***************************************	*



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 (F. 1. 101)								
	40 (Formerly 101)								
Hwy/Road Name	South Talbot Road								
Structure Location	0.1 km West from Concession	0.1 km West from Concession Road 10							
Structure Type	Non-Rigid Frame Open Foo	ting Culvert							
Latitude	42° 12' 17.7474"		Longitude -82° 54' 59.112"						
Owner(s)	Town of Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List						
Span Length	1.7	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐						
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: ☐ Transit ☐ Truck ☐ School ☐ 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						
Historical Data:									
Year Built	Unknown		Year of Last Major Rehab.						
Last OSIM Inspection	n		Last Evaluation						
Last Enhanced OSIM	<u> </u>		Current Load Limit N/A (tonnes)						
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #						
Last Underwater Insp	ection		By-Law Expiry Date						
Last Condition Surve	у								
Rehab History:									

Field Inspection Infor	mation:								
Date of Inspection	De	cember 16, 201	5						
Inspector	Но	ssam Bakr (Dil	lon Consulting 1	Ltd)					
Others in Party		`							
Access Equipment Used	Ca	mera. Measurin	g Tape, Measur	ing Wheel.	and Hammer				
Weather			fternoon Showe						
Temperature		/3) Celsius							
Temperature (11/3) Celsius									
Overall Structure Not	tes:								
Recommended Work on Structure None Minor Rehab					Major Rehab.	Replace			
				· <u> </u>	Tiviajoi Renao.	Пкершее			
Overall Comments			6 to 10 years	***		d 11			
Overan 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									
	L								
Element Data:									
Element Group:	Signs		Length:						
Element Name:	Signs		Width:						
Location:	Ü		Height:						
Material:			Count:	1					
Element Type:	Hazard Marker Sign		Total Quar	ntity: 1					
Environment:			Limited In	spection [
Protection System:						Perform.			
Condition Data:	Units ☐/ each ☑/ % ☐/ all	Exc.	Good	Fair	Poor*	Deficiencies			
m ² □/m Comments: - Existing Sign		<u> </u>							
	nstallation of Object Mar	ker signs and Objec	et Markings to meet	the Ontario T	raffic Manual				
Recommended Work:	Rehab	□Rep		Maintena	ance Needs:				
	□1-5 year	rs 🗆 6-10	years	□Urgent	☐1 year	r □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 Qua	ntity:	59.25 S	Sq.m		
Environment:				Limited In	spection				
Protection System	1:							Perform.	
C - 1'' - D - 1 - 1		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	m²☑/m	□/ each□/ %□/ all□		57.25	2.0)			
Comments: In Goo		, 1				ı.			
					-				
Recommended V	Work:	Rehab	Replac	ce	Mainte	Maintenance Needs:			
		☐1-5 years ☐6-10 year		ears	□Urge	nt	□1 year	☐2 year	
Element Group:		Culverts				3.0 m			
Element Name:		Inlet Components	Length: Width:		0.3 m				
Location:		South Side	Height:		2.5 m				
Material:		Cast-in-place concrete	Count:		2				
Element Type:		Wingwall	Total Qua	ntity:	15.0 Sc	ı.m			
Environment:			Limited Ir	nspection		-			
Protection System	1:	Per							
	Units Exc		Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $m^2 \square / m \square / each \square / \% \square / all \square$			15.0						
Comments: In Goo			L		II.		1		
Comments. in doc	ou Conun	ion							
Recommended V	Work:	Rehab	Replac	ce	Mainte	enance	Needs:		
		□1-5 years	□6-10 y	ears	Urgent		☐1 year	☐2 year	

Element Group:		Culverts		Length: 1.7 I					
Element Name:		Outlet Components		Width:		0.3 m			
Location:		South Side		Height:		0.5 m			
Material:		Cast-in-place concrete		Count:		0.0 111			
Element Type:		Headwall		Total Qua	ntity:	0.85 Sc	ı.m		
Environment:				Limited In			11		
	1:							Perform	
Protection System	1:	Units	Exc.	•	Fai	r	Poor*	Perform. Deficiencies	
Protection System		Units	Exc.	Good	Fai	r	Poor*	Perform. Deficiencies	
Protection System Condition Data:	m²☑/m	□/ each□/ % □/ all□	Exc.	•	Fai	r	Poor*		
Protection System	m²☑/m	□/ each□/ % □/ all□	Exc.	Good	Fai	r	Poor*		
Protection System Condition Data: T Comments: In Good	m ² ☑/m od Conditi	□/ each□/ % □/ all□ ion		Good 0.85					
Protection System Condition Data:	m ² ☑/m od Conditi	□/ each□/ % □/ all□ ion □ Rehab	□Replac	Good 0.85	Mainte	enance	Needs:	Deficiencies	
Protection System Condition Data: T Comments: In Good	m ² ☑/m od Conditi	□/ each□/ % □/ all□ ion		Good 0.85		enance			
Protection System Condition Data: T Comments: In Good	m ² ☑/m od Conditi	□/ each□/ % □/ all□ ion □ Rehab	□Replac	Good 0.85	Mainte	enance	Needs:	Deficiencies	

Element Group:	Decks		Length:		1.7 m				
Element Name:	Wearing Surface		Width:						
Location:			Height:						
Material:	Asphalt		Count:						
Element Type:			Total Quar	ntity:	12.25 Se	q.m			
Environment:			Limited In	spection					
Protection System:				Perform.					
Condition Data:	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
m ² m/m	□/ each □ / % □ / all □		8.45	3.8	3				
Comments: Wide traversal crack over the culvert section									
Recommended Work:	Rehab	ee	Mainte	Needs:					
	□1-5 years	□ 6-10 у	ears	□Urge	nt	☐1 year	☐2 year		
	-	Asphalt	repair		-				
Element Group:	Approaches		Length:		6.0 m				
Element Name:	Wearing Surface	Width:		7.2 m					
Location:	East - West	Height:		7.2 111					
Material:	Asphalt	Count:		2					
Element Type:	1 Iophan		Total Quar	ntitv:	86.4 Sq.	.m			
Environment:			Limited In	•					
Protection System:	Perform.								
	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: m ² m ²	\square / each \square / % \square / all \square		86.4						
Comments: In Good Condition									
Recommended Work:	Rehab	Replac		Maintenance			По		
	□1-5 years	□6-10 у	ears	□Urge	ent	□1 year	2 year		
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	North - South		Height:						
Material:			Count:		1				
Element Type:			Total Quar	ntity:	1				
Environment:			Limited In	spection					
Protection System:				•			Perform.		
Condition Data:	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies		
Condition Data: $m^2 \square / m$	□/ each □/ % □/ all ☑		1						
$m^2 / m / each / % / all / 1$ Comments: Light plant growth, with recommendation to be shaved									
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance l	Needs:			
Recommended Work:	☐ Rehab	☐ Replac				Needs:	2 year		
Recommended Work:				Urge		□1 year	2 year		

Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		5		
Element Type:			Total Qua	ntity:	5		
Environment:			Limited Ir	spection			
Protection System:							Perform.
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each ☑ / % □/ all □			5			
Comments: In Fair Condition. Embankments are lacking erosion protection.							
Recommended Work:	Rehab	□Repla	ce	Mainte	enance		
	□1-5 years	☐1-5 years ☐6-10 years		□Urge	nt	☐1 year	☐2 year
	•			Erosion 1		X	***************************************
El . C			T .1				
Element Group:			Length:				
Element Name:		Width:					
Location:		Height: Count:					
Material:							
Element Type:			Total Qua	•	_		
Environment:			Limited Ir	ispection	Ц	1	
Protection System:			T			Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	$m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square$						
Comments:							
Recommended Work:	Rehab	Repla		Maintenance Needs:			
	□1-5 years	□6-10 y	ears	□Urge	nt	□1 year	☐2 year
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Qua	ntity:			
Environment:			Limited Ir	-			
Protection System:	1			Бресион			Perform.
·	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $m^2 \square / m$	\square / each \square / % \square / all \square	Exc.	3004	1 41		1 001	
Comments:							
Recommended Work:	Rehab	Repla	re	Mainte	enance	Needs:	
Recommended WOIK.	1-5 years	☐6-10 y		Urge		1 year	☐2 year
	□1-3 years	□0-10 <u>)</u>	Ed18	orge	111	□1 year	⊔∠ 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 (F 1.75)		
	41 (Formerly 75)		
Hwy/Road Name	Concession Road 9		
Structure Location	At the intersection with Sou	th Talbot Rd	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 30.9594"		Longitude -82° 55' 53.616"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	1.10	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	8.50	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	18.60	(m)	AADT % Trucks
Total Deck Area	9.350	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1990		Year of Last Major Rehab.
Last OSIM Inspection	1		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		Decemb	per 16, 201	5					
Inspector					Consulting L	td)			
Others in Party			,						
Access Equipment Used		Measuri	ing Tape, I	Meas	suring Whee	and H	ammer		
Weather					noon Shower				
Temperature		(11/3) C	-	110111					
Temperature (11/3) Celsius									
Overall Structure Notes:									
Recommended Work on S	Ctomatura	□None			Iinor Rehab.		Пма:	D-1h	□D1000
							∟lViaj	or Rehab.	Replace
Timing of Recommended	Work								
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.						ous deficiencies;			
Date of Next Inspection									
Element Data:									
Element Data.									
Element Group:	Signs				Length:				
Element Name:	Signs				Width:		<u> </u>		
Location:	<u> </u>				Height:		ļ		
Material:	<u></u>			\dashv	Count:	. • .	1	_	_
Element Type:	Stop Sign				Total Quan		1		
Environment: Protection System:	 				Limited Ins	spection			DCa
Flotection System.	Units	$\overline{}$	Exc.	\top	Good	Fai		Poor*	Perform. Deficiencies
Condition Data: ${m^2 \square / m \square}$	□/ each □/ % □	/ all□	1 Exc.	+	Good	1 ai	.I	F001	Deficiences
Comments: -In Excellent Co	ondition	•						•	
Recommended Work:	□Reh	hah	□Repl	1000		Maint	onance	Needs:	
Recommended work.	□ Ren		□Kepl			Urge		□1 year	☐2 year
	□ 1-J	years	L 0-10) уса	IS	Liorge	Πι	Li yeai	⊔∠ yeai

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 Qua	ntity:	64.3 Sc	ı.m		
Environment:				Limited In	nspection				
Protection System:								Perform.	
Con I'd' on Date		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2}$	² ☑/m[\square / each \square / $\%$ \square / all \square		51.4	12.	9			
Comments: Light co.	orrosion	at the bottom half of the culv	vert barrel.		1		,		
Recommended Work:		Replac	ce	Mainte	enance	Needs:			
		□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year	
								-	
Element Crown		D 1		Lanath		4.40			
Element Group: Element Name:		Decks		Length: Width:		1.10 m			
		Wearing Surface		Height:		8.50 m			
Location:									
Material:		Asphalt	Count:						
Element Type:					otal Quantity: 9.35 Sq.m imited Inspection □				
Environment:				Limited Ii	ispection	Ш	1		
Protection System:		** .	-		T		75 di	Perform.	
Condition Data:		Units	Exc.	Good	Fai		Poor*	Deficiencies	
$m^2 \square / m \square / each \square / \% \square / all \square$			6.25	2.0)	1.1			
		rerse and longitudinal cracks essive edge cracks over the c							
Recommended W	ork:	Rehab Replace		ce	Mainte	enance	Needs:		
		□1-5 years	□6-10 у	ears	Urge	nt	t □1 year □2 year		
					Asphalt	Repair			
Element Group:		Approaches		Length:		6.0 m			
Element Name:		Wearing Surface		Width:	Width:		8.5 m		
Location:		North - South			Height:				
Material:		Asphalt			Count:				
Element Type:			Total Qua	ntity:	102.0 Sq.m				
Environment:				Limited In	nspection				
Protection System:								Perform.	
Condition Data:		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$\frac{\text{Collution Data.}}{\text{m}^2}$	² ☑/m[66.5	25.	5	10.0		
		verse and longitudinal cracks		es, and pothole a	at North app	roach.			
Recommended We	ork:	Rehab	Replac	ce	Mainte	enance	Needs:		
		1-5 years	□6-10 y			Urgent		2 year	
					Asphalt		☐1 year		
					print	-1			

Element Group:	Embankments & Streams I		Length:				
Element Name:	Streams and Waterways W		Width:				
Location:	East - West H		Height:				
Material:			Count:		3		
Element Type:			Total Quar	ntity:	3		
Environment:			Limited In	spection			
Protection System:				•			Perform.
G 111 B	Units	Exc.	Good	Fair	•	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all ☑		3				
Comments: In Good Condit	•	<u> </u>		1			
Comments. In Good Condit	IOII						
Recommended Work:	Rehab	Replac	e	Mainte	nance N	Needs:	
	□1-5 years	□6-10 y	ears	Urgen	nt	☐1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:	Emountments		Height:				
Material:			Count:		8		
Element Type:			Total Quar		8		
Environment:		Limited In					
Protection System:					_		Perform.
	Units	Exc.	Good	Fair		Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / $\%$ \square / all \square		8	1 411	•	1 001	
<u> </u>			0				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Replac	e	Mainte	nance N	Needs:	
	□1-5 years	 □6-10 ye		Urgen	nt	□1 year	☐2 year
	<u>— J</u>	,					
Element Group:	Embankments & Streams		Length:				
Element Name:	Slope Protection		Width:				
Location:			Height:				
Material:	Masonry		Count:		2		
Element Type:	Hand laid Riprap		Total Quar	ntity:	2		
Environment:			Limited In	spection			
Protection System:							Perform.
C III D	Units	Exc.	Good	Fair	•	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each			2			
Comments: In Fair Condition	-	LL			ı	L	
Comments. In Pan Conduc	Ш						
Recommended Work:	☐ Rehab	Replac	e	Mainte	nance N	Needs:	
	1-5 years	□ 6-10 y		Urgen	nt	☐1 year	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:			
G	(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c		
Structure Number	42 (Formerly 79)		
Hwy/Road Name	Snake Lane Road		
Structure Location	At the intersection with Sou	th Talbot Rd.	
Structure Type	Non-Rigid Frame Open Foo	ting Culvert	
Latitude	42° 12' 40.8234"		Longitude -82° 56' 33.756"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	1.8	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	7.2	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	9.8	(m)	AADT % Trucks
Total Deck Area	12.960	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1965		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp			By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			
-			

Field Inspection Infor	mation:									
Date of Inspection		Dagas	nhar 16, 201	5						
-		December 16, 2015 Hossam Bakr (Dillon Consulting Ltd)								
Inspector		Hossa	ım Bakr (Dil	ion	Consulting 1	_ta)				
Others in Party										
Access Equipment Used		Came	ra, Measurin	ıg T	ape, Measuri	ing Whe	el, and	Hammer		
Weather		Mostl	y Cloudy, A	fteri	noon Shower	r				
Temperature		(11/3	3) Celsius							
Overall Structure Not	tes:									
		I								
Recommended Work on Structure			ne		Minor Rehab	•	☑Maj	or Rehab.	Replace	
Timing of Recommended Work			o 5 years	□ 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:										
TI	1				¥ .1					
Element Group: Element Name:	Signs				Length: Width:					
Location:	Signs				Height:					
Material:					Count: 2					
Element Type:	Stop Sign, Hazard Marker Sign				Total Quantity: 2					
Environment:					Limited Inspection					
Protection System:						•			Perform.	
Condition Data: Units Exc.					Good F		Fair Poor*		Deficiencies	
$m^2\square/m$			1					1		
Comments: - The object ma - Upgrade and i	rker sign is broken a nstallation of Object			ct Ma	arkings to meet	the Ontari	o Traffic	Manual		
Recommended Work:	□Reh	ehab		lace	e Mai		Maintenance Needs:			
	□1-5	years	□6-10) yea	ars	□Urge	ent	□1 year	☐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 Quar	ntity:	53.0 Sc	ą.m	
Environment:			Limited In	spection			
Protection System:							Perform.
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		27.5	15.:	3	10.2	
Comments: Concrete spalls	s at soffit and side walls with	exposed and light	corroded reinfor	cement, and	d mediui	m scaling	
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	□ 1-5 years	□6-10 ye	ears	□Urge	nt	☐1 year	☐2 year
				-			
FI G	la.		T .1				
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:					
Element Type:	Wingwall	Total Quantity: 18.75 Sq.m			Sq.m		
Environment:			Limited In	spection	Ш		
Protection System:					1		Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	\square / each \square / % \square / all \square		10.0	5.0)	3.75	
Comments: Concrete spalls	at the culvert edges, and Seve	ere alkali aggregate	e reaction, and m	nedium scal	ing		
Recommended Work:	☑ Rehab □ Replace		e	Mainte	enance	Needs:	
		□6-10 у€	ears	□Urge	nt	□1 year	☐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:		0.0 111		
Element Type:	Headwall		Total Quar	ntity:	1.1 Sq.	m	
Environment:	Treat war	Limited In	-	П			
Protection System:				эрссион			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² /m	□/ each □/ % □/ all □			0.5		0.6	
Comments: Severe concret		urface, and mediun	n scaling	0.5	'	0.0	
Recommended Work:		Replac	e	Mainte	enance	Needs:	
	☑ 1-5 years	☐ 6-10 ye		Urge		1 year	2 year
	<u> </u>	<u>_</u> 010 y		c.gc		<u>1 </u>	<u> </u>

Element Group:	Culverts	Length:		3.0 / 4.8 m					
Element Name:	Outlet Components V		Width:	Width:		0.3 m			
Location:	West Side		Height:	Height:		2.4 m			
Material:	Cast-in-place concrete		Count:		2				
Element Type:	Wingwall		Total Qua	ntity:	18.75 S	Sq.m			
Environment:			Limited Ir	spection					
Protection System:							Perform.		
Condition Date	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		11.25	2.5	5	5.0			
Comments: Concrete spalls	at the culvert edges with wa	ter leak signs		1	'				
Recommended Work:	☑ Rehab	re	Mainte	enance	Needs:				
Recommended work.	☑1-5 years	□Replac □6-10 y		Urge		1 year	☐2 year		
	■1-5 years	<u> </u>	Cars		111	<u> Птусат</u>	□ 2 year		
Elamant Crount	C 1		Lamath		4.0				
Element Group: Element Name:	Culverts		Length: Width:		1.8 m				
Location:	Outlet Components West Side	Height:		0.3 m 0.6 m					
Material:		Count:		0.0 III					
Element Type:	Cast-in-place concrete Headwall		Total Quantity: 1.1 Sq.m						
Environment:	Headwall	_	Limited Inspection						
Protection System:			Limited ii	ispection	Ш		Perform.		
Trotection System.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data:	\square / each \square / % \square / all \square		Good				Deficiencies		
<u> </u>	·	l l		0.5	l.	0.6			
Comments: Severe concrete	spalls at the Headwall top s	urface with expose	d reinforcement,	, and mediur	n scaling	5			
Recommended Work:	✓ Rehab	Replac	re	Mainte	enance	Needs:			
Tree of the first	☑1-5 years	□6-10 y		Urge		□1 year	☐2 year		
	EII 5 years	шо то у	Curs	Lorge	110	шт усы	□2 усы		
Element Group:	Decks		Length:		1.8 m				
Element Name:	Wearing Surface		Width:		7.2 m				
Location:	_		Height:						
Material:	Asphalt		Count:						
Element Type:			Total Qua	ntity:	13.0 Sc	ı.m			
Environment:			Limited Ir	spection					
Protection System:				*			Perform.		
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: m ² [7]/m	□/ each □/ % □/ all □		8.0	3.0)	2.0			
<u>'</u>		l l	0.0	3.0	,	2.0			
Comments: - Light map crae	ressive edge cracks at South	approach							
- Light Flushing		ирргоиси							
Recommended Work:	☐ Rehab	Replace Replace	ce	Mainte	enance	Needs:			
	□ 1-5 years			Urge	nt	☐1 year	2 year		
ĺ									

Element Group:	Approaches		Length:			6.0 m		
Element Name:	Wearing Surface W		Width:	Width:		7.2 m		
Location:	North - South		Height:	Height:				
Material:	Asphalt		Count:	Count:				
Element Type:			Total Qua	ntity:	86.4 Sq	.m		
Environment:			Limited Ir	nspection				
Protection System:							Perform.	
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		38.4	24.0	0	24.0		
Comments: - Pothole at the		L L		-	<u>L</u>	l.		
	ressive edge cracks at South	approach						
- Light Flushing								
Recommended Work:	rk: ☐ Rehab ☐ Replace		ce	Mainte	enance l	Needs:		
	☑ 1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year	
		3						
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East - West		Height:					
Material:			Count:		1			
Element Type:			Total Qua	ntity:	1			
Environment:			Limited Ir		П			
Protection System:				F			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \prod / m}$	\square / each \square / % \square / all \square		000	1 442	-	1 001		
		-			I			
Comments: In Good Condit	ion							
Recommended Work:	Rehab	□Repla	ce	Mainte	enance l	Needs:		
	□1-5 years	□6-10 y		□Urge	nt	☐1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:			Height:					
Material:			Count:		4			
Element Type:			Total Qua	ntity:	4			
Environment:			Limited Ir					
Protection System:	-						Perform.	
·	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m!}$			0000	1 41	-	1001		
		4						
Comments: In Good Condit	ion							
				T				
Comments: In Good Condit Recommended Work:	Rehab	□Repla			enance l			
		□Repla □6-10 y		Mainte		Needs:	□2 year	
	Rehab						□2 year	
	Rehab						□2 year	

Element Group:	Decks		Length:					
Element Name:	Deck Top		Width:		2.4 m			
Location:			Height:					
Material:	Cast-in-place concrete		Count:					
Element Type:			Total Qua	ntity:	23.5 Sc	q.m		
Environment:			Limited In	spection	V			
Protection System:							Perform.	
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $m^2 \boxed{m}/m$				11.7	75	11.75		
Comments: Limited inspection - Deck top condition is assumed based on the condition of the asphalt wearing surface on top.								
Recommended Work:			ce	Mainte	enance	Needs:		
	1 -5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year	
Concrete patch repair	•							
Elamant Comm			I am adla.					
Element Group: Element Name:			Length: Width:					
Location:			Height:					
Material:			Count:					
Element Type:			Total Quar	ntitu				
Environment:								
Protection System:			Limited In	ispection			D C	
Frotection System.	Units	E	Card	Fai		D *	Perform. Deficiencies	
Condition Data:	\Box / each \Box / % \Box / all \Box	Exc.	Good	Fai	Г	Poor*	Deficiencies	
Comments:	ar cuchiar 700 ar unio							
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y	ears ears	Urge	nt	☐1 year	☐2 year	
	•							
Element Group:			Length:					
Element Name:			Width:					
Location:			Height:					
Material:			Count:					
Element Type:			Total Qua	ntity:				
Environment:			Limited In	spection				
Protection System:				-			Perform.	
Condition Data: m²□/m[Units ☐/ each ☐ / % ☐ / all ☐	Exc.	Good	Fai	r	Poor*	Deficiencies	
Comments:	, , , , , , , , , , , , , , , , , , , 			ı		<u> </u>		
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	11-5 years	☐6-10 y		Urge		□1 year	☐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 Con	cession Road 8					
Structure Type	Corrugated Steel Pipe						
Latitude	42° 12' 45.432"		Longitude -82° 56' 52.7994"				
Owner(s)	Town of Tecumseh		Heritage □Not Cons. □ Cons./not App. □ List/not Designation: □Desig./not List □Desig. & List				
Span Length	1.00	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐				
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: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	2000		Year of Last Major Rehab.				
Last OSIM Inspection	n		Last Evaluation				
Last Enhanced OSIM			Current Load Limit N/A (tonnes)				
			Current Boud Emile (conness)				
Enhanced Access Eq (ladder, boat, lift, etc			Load Limit By-Law #				
Last Underwater Insp	pection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:								
Date of Inspection	I	Decer	mber 16, 2015	5					
Inspector	I	Hossa	m Bakr (Dill	on (Consulting I	Ltd)			
Others in Party									
Access Equipment Used	N	Measi	uring Tape, M	1eas	suring Whee	l, and H	ammer		
Weather	N	Mostl	y Cloudy, Af	tern	noon Shower	•			
Temperature	((11/3)	Celsius						
Overall Structure Not	toge								
Overan Structure Not	ies:								
Recommended Work on S	Structure [□None □Minor Rehab. □Major Rehab. □Rep					Replace		
Timing of Recommended	Work	□1 to 5 years □6 to 10 years							
Overall Comments		Light corrosion at the bottom half of the culvert barrel. Medium scour was observed at the northern							
	V	waterway.							
Date of Next Inspection									
Element Data:									
Element Group:	Signs				Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material:					Count:	4.4	0		
Element Type: Environment:					Total Quan		0		
Protection System:					Limited Ins	spection	Ш		Perform.
	Units		Exc.		Good	Fai	ir	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ a	all□	1						
Comments: - Upgrade and is	installation of Object M	1arker	signs and Object	t Ma	rkings to meet	the Ontario	o Traffic	Manual	
Recommended Work:	Reha	b	☐Repl	ace		Mainte	enance	Needs:	
	□1-5 ye		1 □6-10			□Urge		□1 year	☐2 year

Element Group:		Culverts		Length:		120.0 r	n		
Element Name:		Barrels		Width:		1.0 m ((Dia.)		
Location:		North - South		Height:					
Material:		Corrugated Steel		Count:					
Element Type:		Multi-Plate CSP		Total Qua	ntity:	377.0 \$	Sq.m		
Environment:				Limited In	spection				
Protection System	n:							Perform.	
Condition Data:		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	$m^2 \boxed{/m}$	\square / each \square / $\%$ \square / all \square		302.0	75.	0			
Comments: Ligh	Comments: Light corrosion at the bottom half of the culvert barrel								
Recommended	Work:	Rehab	☐ Rehab ☐ Replace		Mainte	enance	Needs:		
		□1-5 years	□6-10 ye	ears	□Urge	nt	□1 year	☐2 year	
								-	
Element Group:		Culverts		Length:					
Element Name:		Inlet Components		Width:					
Location:		North Side		Height:					
Material:		Nottii Side		Count:					
Element Type:				Total Qua	ntity:				
Environment:			Limited Inspe			П			
Protection System	m·			Limited III	ispection	<u> </u>		Perform.	
1 Totection Byster		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	m2[]/m		Exc.	Good	1 'ai	1	1 001	Deficiences	
Comments: The	m²☑/m ☐/ each ☐/ % ☐/ all ☐ Comments: The Inlet is located North, Culvert No. 67 Intersect with Culvert No. 68 at the South Side of South Talbot Road								
Recommended	Work:	Rehab	□Replac	e	Maintenar		Needs:		
		□1-5 years	□6-10 ye	ears	□Urge	nt	□1 year	☐2 year	
Element Group:		Decks		Length:		1.0 m			
Element Name:		Wearing Surface		Width:		9.75 m			
Location:				Height:)., c iii	·		
Material:		Asphalt		Count:					
Element Type:				Total Qua	ntity:	9.75 Sc	1.m		
Environment:				Limited In	-	П	1		
Protection System	n:				F			Perform.	
_		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	m ² [/m]	\square / each \square / % \square / all \square		7.75	2.0				
Comments: - Me	L	verse crack over the culvert l	ocation	7.13	2.0	,	l		
Recommended	Work:	Rehab	Replac	e	Maintenance Needs:				
		1-5 years	☐6-10 ye		Urge		☐1 year	2 year	
			10).		_ = =:50			<u> </u>	
					1				

Element Group:	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface		Width:		9.75 m	Į.	
Location:			Height:				
Material:	Asphalt		Count:		2		
Element Type:			Total Quar	ntity:	117.0 \$	Sq.m	
Environment:			Limited In	spection			
Protection System:			•	•			Perform.
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		102.0	15.	0		
Comments: - Medium trans					-		
	ressive Edge Cracks at North						
	C	11					
Recommended Work:	Rehab Replace		e	Maintenance Needs:		Needs:	
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	North - South		Height:				
Material:	Ttorur Bourn		Count:		2		
Element Type:			Total Quar	ntity:	2		
Environment:				spection	П		
Protection System:			Limited in	spection	<u> </u>		Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square		Good		1	1 001	Bettereneres
$m^2 \square / m \square / \operatorname{each} \square / \mathscr{m} \square / \operatorname{all} \square$							
Comments: Moderate scour	along the water stream at th	e North inlet					
Recommended Work:	Rehab	Replac	e.	Mainte	enance	Needs:	
	□1-5 years	□6-10 ye		Urge		□1 year	☐2 year
		шо 10 у	Zu13	Lorge	111	шт усаг	<u> </u>
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		5		
Element Type:			Total Quar	ntitv:	5		
Environment:			Limited In		П		
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$				1 41		1 001	
			5				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	☐1-5 years	☐ 6-10 ye		Urge		1 year	2 year
	LI 5 Jeuis	,				பரவ	<u></u>
				1			



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:			
G. V. I			
Structure Number	44 (Formerly 43)		
Hwy/Road Name	Sexton Side Road		
Structure Location	At the intersection with Sou	th Talbot Rd	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 12' 46.584"		Longitude -82° 56' 55.1034"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	1.20	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐
Total Deck Length	36.60	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	36.60	(m)	AADT % Trucks
Total Deck Area	43.920	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	12.20	(m)	Detour Length Around Bridge (km)
Fill on Structure	1.00	(m)	Direction of Structure N
Skew Angle	27°	(Degrees)	No. of Spans
Historical Data:			
Year Built			Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection		Decem	nber 16, 201	5					
Inspector		Hossai	m Bakr (Dill	llon Co	onsulting I	Ltd)			
Others in Party									
Access Equipment Used		Measu	ring Tape, N	Measu	ring Whee	el, and Ha	ammer		
Weather		Mostly	y Cloudy, At	fterno	on Shower	r			
Temperature		(11/3)	Celsius						
Overall Structure Notes:									
Recommended Work on S	Structure	✓ None ☐ Minor Rehab			nor Rehab.	•	□Maj	or Rehab.	Replace
Timing of Recommended	Work	$\Box 1$ to 5 years $\Box 6$ to 10 years							
Overall Comments		The Structure is in Excellent Condition, and appears to have been replaced recently							
Date of Next Inspection									
		<u>I</u>							
Element Data:									
Element Data.									
Element Group:	Signs			I	Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material:					Count:		1		
Element Type:	Stop Sign				Total Quan		1		
Environment: Protection System:				1	Limited Ins	spection			D (
Protection System.	Units		Eva	Т.	Good	Foi		Poor*	Perform. Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □	/ all□	Exc.	'	Good	Fai	ır	POOL	Deficiencies
Comments: -In Excellent Co	ondition			<u> </u>			l.	<u>'</u>	
Recommended Work:	□Rel	nab	□Repl	lace		Mainte	enance	Needs:	
	□1-5	years	□ 6-10		3	□Urge	nt	□1 year	☐2 year

Element Group:	Culverts		Length:		36.60 1	m	
Element Name:	Barrels		Width:		1.20 m		
Location:			Height:		1,20 11	•	
Material:	Corrugated Steel		Count:				
Element Type:	Multi-Plate CSP		Total Quar	ntity:	41.40 \$	Sa m	
Environment:	Water Flace Cipt		Limited In		Π	5q.m	
Protection System:			Limited in	ispection	Ш		Perform.
Trotection bystem.	Units	Exc.	Good	Fai		Poor*	Deficiencies
Condition Data:			Good	Гаі	1	POOL.	Deficiencies
L.,	□/ each □/ % □/ all □	41.40					
Comments: In Excellent Co	ondition, Recently Replaced						
D 1 1 W 1				1 3 5 1		> .	
Recommended Work:						Needs:	
	□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year
Element Group:	Decks		Length:		1.20 m	ı	
Element Name:	Wearing Surface		Width:		12.20 1	m	
Location:			Height:				
Material:	Asphalt		Count:				
Element Type:		Total Quar	ntitv:	14.65	Sa.m		
Environment:		Lin			П	- 1	
Protection System:				эрссион			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $m^2 \square / m$		14.65	Good	1 41	1	1 001	Bettereneres
'		14.05					
Comments:							
Recommended Work:	Rehab	□ D omlos		Mainta	nonco	Needs:	
Recommended work:							Па
	□1-5 years	□6-10 у	ears	□Urge	nt	□1 year	☐2 year
Element Group:	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface		Width:		12.20 1	m	
Location:			Height:				
Material:	Asphalt		Count:		2		
Element Type:			Total Quar	ntity:	146.4	Sq.m	
Environment:			Limited In	spection			
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □	146.40					
l .				1		<u> </u>	
Comments:							
D 1 1 1 1 1 1		— —		1361		- I	
Recommended Work:	Rehab	Replac				Needs:	
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	2 year

Element Group:	Embankments & Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:	East - West		Height:			
Material:			Count:	1		
Element Type:			Total Quar	ntity: 1		
Environment:			Limited In	spection		
Protection System:			•			Perform.
	Units	Exc.	Good	Fair	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \prod / m}$	□/ each □/ % □/ all ☑					
٧.,	•	1				
Comments: In Excellent Con	naition					
Recommended Work:	Rehab	<u></u>	Maintenand	ce Needs:		
	□1-5 years	☐Replac ☐6-10 ye		Urgent	□1 year	☐2 year
	<u> Птэ усигэ</u>	<u> </u>		Пответ	шт усы	<u></u>
F1 C	I		T .1	ı		
Element Group:	Embankments & Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	. 4		
Element Type:			Total Quar			
Environment:			Limited In	spection		
Protection System:		Г		T		Perform.
Condition Data:	Units	Exc.	Good	Fair	Poor*	Deficiencies
$m^2 \square / m$	□/ each 🗹 / % 🔲 / all 🔲	4				
Comments: In Excellent Con	ndition					
Recommended Work:						
Recommended work.	Rehab	□Replac	e	Maintenand	ce Needs:	
Recommended work.	☐ Rehab ☐1-5 years	□Replac □6-10 ye		Maintenand Urgent	ce Needs:	☐2 year
Recommended Work.						☐2 year
Recommended Work.						2 year
Recommended Work.						□2 year
Element Group:						□2 year
	□1-5 years		ears			□2 year
Element Group: Element Name: Location:	□1-5 years		Length:			2 year
Element Group: Element Name:	□1-5 years		Length: Width:			2 year
Element Group: Element Name: Location:	□1-5 years Embankments & Streams Slope Protection		Length: Width: Height:	Urgent		2 year
Element Group: Element Name: Location: Material:	Embankments & Streams Slope Protection Masonry		Length: Width: Height: Count:	Urgent 6 ntity: 6		□2 year
Element Group: Element Name: Location: Material: Element Type:	Embankments & Streams Slope Protection Masonry		Length: Width: Height: Count: Total Quar	Urgent 6 ntity: 6		2 year
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	Embankments & Streams Slope Protection Masonry	□6-10 ye	Length: Width: Height: Count: Total Quar	Urgent 6 ntity: 6		
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	Embankments & Streams Slope Protection Masonry Hand laid Riprap Units	□6-10 ye	Length: Width: Height: Count: Total Quar Limited In	Urgent 6 ntity: 6 spection	□1 year	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m	□1-5 years Embankments & Streams Slope Protection Masonry Hand laid Riprap Units □/ each □/ % □/ all □	□6-10 ye	Length: Width: Height: Count: Total Quar Limited In	Urgent 6 ntity: 6 spection	□1 year	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	□1-5 years Embankments & Streams Slope Protection Masonry Hand laid Riprap Units □/ each □/ % □/ all □	□6-10 ye	Length: Width: Height: Count: Total Quar Limited In	Urgent 6 ntity: 6 spection	□1 year	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m	□1-5 years Embankments & Streams Slope Protection Masonry Hand laid Riprap Units □/ each □/ % □/ all □	□6-10 ye	Length: Width: Height: Count: Total Quar Limited In	Urgent 6 ntity: 6 spection	□1 year	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m Comments: In Excellent Condition	Embankments & Streams Slope Protection Masonry Hand laid Riprap Units / each / % / all _ ndition	□6-10 ye	Length: Width: Height: Count: Total Quar Limited In	Urgent 6 ntity: 6 spection Fair	Poor*	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m	□ 1-5 years Embankments & Streams Slope Protection Masonry Hand laid Riprap Units □/ each □/ % □/ all □ ndition □ Rehab	□6-10 ye Exc. 6	Length: Width: Height: Count: Total Quar Limited In	Urgent 6 ntity: 6 spection Fair Maintenance	Poor*	Perform. Deficiencies
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m Comments: In Excellent Condition	Embankments & Streams Slope Protection Masonry Hand laid Riprap Units / each / % / all _ ndition	□6-10 ye	Length: Width: Height: Count: Total Quar Limited In	Urgent 6 ntity: 6 spection Fair	Poor*	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² □/m Comments: In Excellent Condition	□ 1-5 years Embankments & Streams Slope Protection Masonry Hand laid Riprap Units □/ each □/ % □/ all □ ndition □ Rehab	□6-10 ye Exc. 6	Length: Width: Height: Count: Total Quar Limited In	Urgent 6 ntity: 6 spection Fair Maintenance	Poor*	Perform. Deficiencies



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	U D 1	
Structure Location	At the Intersection with Wal		
Structure Type	Non-Rigid Frame Open Foo	ting Culvert	
Latitude	42° 12' 59.7234"		Longitude -82° 57' 51.4794"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	2.40	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1965		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit 5.0 (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			
1			

Field Inspection Infor	rmation:							
Date of Inspection	Dec	cember 23, 201	15					
Inspector			lon Consulting	Ltd)				
Others in Party			8					
Access Equipment Used	Car	nera Measurir	ng Tape, Measur	ring Wheel a	nd Hammer			
Weather		udy, Probabili		ing wheel, a				
Temperature		6/10) Celsius	ty 01 1am 5470					
remperature // (10/10) ceisius								
Overall Structure Not	tes:							
Recommended Work on	Structure	None	☐Minor Rehab	<u> П</u> х	Iajor Rehab.	∠ Replace		
Timing of Recommended		\square 1 to 5 years \square 6 to 10 years						
Overall Comments		Culvert needs full replacement - Large spalling in the deck soffit, severe scaling on the culvert sides,						
Overall Comments	corre	corroded and damaged reinforcement, and opening in the soffit. Dillon is in process of preparing of drawings for replacement. Steel plates have been installed over deck for temporary repair of the duntil structure can be replaced.				cess of preparing design		
Date of Next Inspection								
	•							
Element Data:								
Element Data:								
Element Group:	Signs		Length:					
Element Name:	Signs		Width:					
Location:			Height:					
Material:			Count:	1				
Element Type:	Load Limit Sign		Total Quar					
Environment:			Limited In	ispection \square		<u> </u>		
Protection System:			1		T	Perform.		
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ all	Exc.	Good	Fair	Poor*	Deficiencies		
Comments: Upgrade and in		,	Markings to meet t	lhe Ontario Traff	ic Manual	_ L		
Recommended Work:	Rehab	□Rep	lace	Maintenar	ice Needs:			
	□1-5 year	s □6-10) years	Urgent	☐1 year	□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 Quai	ntity:	39.0 Sc	Į.m		
Environment:			Limited In			-		
Protection System:			•	•			Perform.	
G 111 B	Units	Exc.	Good	Fair Poor*		Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / $\%$ \square / all \square			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:	Rehab	e	Mainte	Needs:				
	☑1-5 years	☑Replac ☐6-10 ye		Urge		□1 year	☐2 year	
	□0-10 years			Loige				
	Tu .		T					
Element Group:	Culverts		Length:		1.80 / 2			
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 Quar	•	6.90 Sc	ą.m			
Environment:		Limited Inspection						
Protection System:				1	1		Perform.	
Condition Data:	Units Exc.		Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m \square / each \square / \% \square / all \square$		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:	☑ Rehab	□Replac	e	Maintenance Needs:		Needs:		
	☑ 1-5 years	□6-10 y	ears	Urge	nt	□1 year	☐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:		0.00 111			
Element Type:	Headwall		Total Quar	ntity:	1.20 Sc	1. m		
Environment:	Treat war		Limited In	•	П	1,		
Protection System:			Ziiiited iii	Бресноп			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square		1.20		-	1 0 0 1		
Comments: - In Good Cond	, I		1.20	ı				
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:		
	1-5 years	☐6-10 y		Urge		☐1 year	2 year	
				0.50				

Element Group:	Culverts			1.80 / 2.80 m				
Element Name:	Outlet Components	Width:		0.30 m				
Location:	North Side		Height:	Height: 1.50 m				
Material:	Cast-in-place concrete		Count:		2			
Element Type:	Wingwall	Total Quar	Total Quantity: 6.90 Sq.m					
Environment:			Limited In	spection				
Protection System:			•			Perform.		
G 111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		6.9					
Comments: In Good Condition								
Comments. In Good Condit	1011							
Recommended Work:	Rehab	ce	Mainte					
	□1-5 years	 □6-10 y		Urge	☐Urgent ☐1 year		☐2 year	
	 -	······································			Lorgont Li 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:	0.50 m				
Element Type:	Headwall	Total Quar	ntity:	1 20 \$4	3 m			
Environment:	Headwall		Total Quantity: 1.20 Sq.m Limited Inspection					
Protection System:			Limited in	spection	<u> </u>		Perform.	
Trotection bystem.	Units	Exc.	Good	Fai		Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square	EXC.		Га	.1	roor.	Deficiencies	
<u>L</u> ,			1.20					
Comments: In Good Condit	ion							
Recommended Work:	Rehab	Replac	20	Mainte	enance	Needs:		
Recommended work.	☐1-5 years	□Керіас □6-10 у				1 year	☐2 year	
	□1-5 years	<u> </u>	cars	Lorge	Jurgent 🗀 i year		□ 2 year	
Element Group:	Decks		Length:		6 70 m			
Element Name:	Wearing Surface		Width:	Ü		6.70 m		
Location:	Wearing Surface		Height:		2.40 m			
Material:	Asphalt		Count:					
Element Type:	Asphan			Total Quantity: 16.10 Sq.m				
Environment:			Limited In	-		5q.III		
Protection System:	-		Limited in	spection	<u> </u>		Df	
Tiotection system.	Units	Exc.	Good	Fai		Poor*	Perform. Deficiencies	
Condition Data:		EXC.		Га	.I	POOL:	Deficiencies	
•	\square / each \square / % \square / all \square		16.1					
Comments: In Good Condit	ion							
December ded West-	□ n.1.1	□ n 1		Maint		Naada		
Recommended Work:	☐ Rehab	Replac				Needs:		
	□1-5 years	□6-10 у	ears	Urge	nt	☐1 year	☐ 2 year	

Element Group:		Approaches		Length:	Length:		6.70 m		
Element Name:		Wearing Surface		Width:			6.0 m		
Location:		East - West	Height:	Height:					
Material:		Asphalt	Count:		2				
Element Type:			Total Qu	Total Quantity: 80.4		80.40 Sq.m			
Environment:				Inspection		•			
Protection System	m:							Perform.	
		Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Condition Data:	m ² V/m	\square / each \square / % \square / all \square		71	9.40		9.40		
Comments: Wide Transverse crack on East Approach. The existing asphalt have been recently paved.									
Recommended Work:			ce	Maintenance Needs:					
		☑ 1-5 years	□6-10 y	ears/	□Urge	ent	☐1 year	☐2 year	
							-		
Element Group:		Embankments & Streams		Length:					
Element Name:		Streams and Waterways		Width:					
Location:		North - South		Height:					
Material:		Ttorin South		Count:		2			
Element Type:			Total Qu	antity:	2				
Environment:						\Box			
Protection System	m·	Emmed modelion						Perform.	
Condition Data:		Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
			EAC.		1 'ai	П	1 001	Deficiencies	
$m^2 \square / m \square / each \square / \% \square / all \square$ 2									
Comments: Moderate plant growth at the South Elevation slowing down the flow									
Recommended	Work	Rehab	Пропр	20	Mainte	ananca	Needs:		
Recommended	WOIK:		□Repla					Па	
		☐1-5 years	□6-10 y	/ears	ars		☐1 year	☐2 year	
		1		_		1			
Element Group:		Embankments & Streams		Length:					
Element Name:		Embankments		Width:					
Location:				Height:					
Material:					Count: 8				
Element Type:					Total Quantity: 8				
Environment:				Limited I	Limited Inspection				
Protection System	m:							Perform.	
Condition Data:		Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
Collultion Data.	$m^2\square/m$	□/ each ☑ / % □/ all □		8					
Comments: In G	ood Condit	ion			•	<u> </u>			
Comments									
Recommended	Work	☐ Rehab	Пропла	CO	Maint	ananaa	Needs:		
Recommended	WOLK:		☐ Repla			Maintenance Needs: ☐ Urgent ☐ 1		П э	
		☐ 1-5 years	☐ 6-10 y	/ears	Urge	:11t	☐ 1 year	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:			
G. N. I			
Structure Number	46		
Hwy/Road Name	South Talbot Road		
Structure Location	At the intersection with Hole		
Structure Type	Non-Rigid Frame Open Foo	ting Culvert	
Latitude	42° 13' 14.4834"		Longitude -82° 58' 51.1314"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	2.45	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1965		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	rmation:								
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 Not	tes:								
Recommended Work on	Structure	□No	ne	Пм	inor Rehab		ПМаі	or Rehab.	✓ Replace
Timing of Recommended					to 10 years	•	— IVIAJ	or Renau.	Керіасс
Overall Comments								1.1.16	
Overall Confinents	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 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. The existing concrete headwalls are hazard that vehicles should be protected from.								
Date of Next Inspection									
Element Data:									
Element Group: Element Name:	Signs				Length: Width:				
Location:	Signs				Height:				
Material:					Count:		1		
Element Type:	Hazard Marker Sign	1			Total Quar	ntitv:	1		
Environment:					Limited In:				
Protection System:						•			Perform.
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑ / % ☐ /	/ all 🗖	Exc.		Good	Fai	r	Poor*	Deficiencies
Comments: - Existing Sign		n	1 signs and Objec	ct Mar	kings to meet	the Ontario	Traffic	Manual	
Recommended Work:	□Reh	ab	□Repl	lace	e Maintenance Ne			Needs:	
	□1-5 y	years	□6-10) yeai	rs	□Urge	nt	□1 year	☐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 0			ntity:	44.3 Sq	.m		
Environment:		Limited Ins						
Protection System:					Perform.			
C IV. D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each□/ %□/ all□		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								
Comments: Generally, in re	in Condition, the ends are ext	ension from the off	igiliai cuiveit sec	лион. Арра	ieni scou	iring or rooting alor	ng the original section.	
Recommended Work:	mmended Work: Rehab Replace		Maintena		enance l	Needs:		
	□1-5 years	 ☐6-10 ye		Urge	nt	□1 year	☐2 year	
	што учито						ш- учи	
Elamant Crount	Culverts		Lanath		1			
Element Group:			Length:		1.5 / 3.3	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 Quan	•	8.2 Sq.r	n		
Environment:	_		Limited Ins	spection	Ц	Т		
Protection System:	<u> </u>			ı .			Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	□ / each □ / % □ / all □		3.4	2.0		2.80		
Comments: Concrete spalls at the top of the wingwalls with exposed, bended and corroded reinforcement								
. Continuenting Concrete spans	at the top of the wingwalls wa	ith exposed, bended	d and corroded r	einforceme	nt			
Comments, Concrete spans	at the top of the wingwalls w.	ith exposed, bended	d and corroded r	einforceme	nt			
Recommended Work:	at the top of the wingwalls wi	ith exposed, bended ☑Replace		Mainte	enance l			
			2		enance l	Needs:	☐2 year	
	Rehab	☑Replace	2	Mainte	enance l		□2 year	
	Rehab	☑Replace	2	Mainte	enance l		□2 year	
	Rehab	☑Replace	2	Mainte	enance l		□2 year	
Recommended Work:	□ Rehab ☑1-5 years	☑Replace	ars	Mainte	enance l		□2 year	
Recommended Work: Element Group:	☐ Rehab ☑1-5 years Culverts	☑Replace	e ars Length:	Mainte	enance Int		□2 year	
Recommended Work: Element Group: Element Name:	☐ Rehab ☐ 1-5 years Culverts Outlet Components	☑Replace	ars Length: Width:	Mainte	1.9 m 0.3 m		□2 year	
Recommended Work: Element Group: Element Name: Location:	☐ Rehab ☐ 1-5 years ☐ Culverts Outlet Components North Side	☑Replace	Length: Width: Height:	Mainte	enance Int		□2 year	
Recommended Work: Element Group: Element Name: Location: Material:	☐ Rehab ☐ 1-5 years ☐ Culverts Outlet Components North Side Cast-in-place concrete	☑Replace	Length: Width: Height: Count:	Mainte	1.9 m 0.3 m 0.5 m	□1 year	□2 year	
Recommended Work: Element Group: Element Name: Location: Material: Element Type:	☐ Rehab ☐ 1-5 years ☐ Culverts Outlet Components North Side	☑Replace	Length: Width: Height: Count: Total Quar	Mainte □Urge	1.9 m 0.3 m 0.5 m	□1 year	□2 year	
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment:	☐ Rehab ☐ 1-5 years ☐ Culverts Outlet Components North Side Cast-in-place concrete	☑Replace	Length: Width: Height: Count:	Mainte □Urge	1.9 m 0.3 m 0.5 m	□1 year		
Recommended Work: Element Group: Element Name: Location: Material: Element Type:	☐ Rehab ☐ 1-5 years Culverts Outlet Components North Side Cast-in-place concrete Headwall	☑Replace □ 6-10 ye	Length: Width: Height: Count: Total Quar	Mainte Urge	1.9 m 0.3 m 0.5 m	□1 year	Perform.	
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	☐ Rehab ☐ 1-5 years Culverts Outlet Components North Side Cast-in-place concrete Headwall Units	☑Replace	Length: Width: Height: Count: Total Quar	Mainte □Urge	1.9 m 0.3 m 0.5 m	.m Poor*		
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² ☑/m	□ Rehab □ 1-5 years Culverts Outlet Components North Side Cast-in-place concrete Headwall Units □/ each □/ % □/ all □	PReplace ☐6-10 ye Exc.	Length: Width: Height: Count: Total Quan Limited Ins	Mainte ☐Urge ntity: spection Fai	1.9 m 0.3 m 0.5 m	□1 year	Perform.	
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	□ Rehab □ 1-5 years Culverts Outlet Components North Side Cast-in-place concrete Headwall Units □/ each □/ % □/ all □	PReplace ☐6-10 ye Exc.	Length: Width: Height: Count: Total Quan Limited Ins	Mainte ☐Urge ntity: spection Fai	1.9 m 0.3 m 0.5 m	.m Poor*	Perform.	
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² ☑/m	□ Rehab □ 1-5 years Culverts Outlet Components North Side Cast-in-place concrete Headwall Units □/ each □/ % □/ all □	PReplace ☐6-10 ye Exc.	Length: Width: Height: Count: Total Quan Limited Ins	Mainte ☐Urge ntity: spection Fai	1.9 m 0.3 m 0.5 m	.m Poor*	Perform.	
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² ☑/m	□ Rehab □ 1-5 years Culverts Outlet Components North Side Cast-in-place concrete Headwall Units □/ each □/ % □/ all □	PReplace ☐6-10 ye Exc.	Length: Width: Height: Count: Total Quan Limited Ins	Mainte Urge ntity: spection Fai	1.9 m 0.3 m 0.5 m	.m Poor* 0.95	Perform.	
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \boxed{/m}$ Comments: Concrete spalls	☐ Rehab ☐ 1-5 years ☐ 1-5 years ☐ Culverts ☐ Outlet Components ☐ North Side ☐ Cast-in-place concrete ☐ Headwall ☐ Units ☐ / each ☐ / % ☐ / all ☐ ☐ at the top of the wingwalls with the t	Exc. ith exposed, bended	Length: Width: Height: Count: Total Quan Limited Ins	Mainte Urge httity: spection Fai einforceme	1.9 m 0.3 m 0.5 m 0.95 Sq	.m Poor* 0.95 Needs:	Perform. Deficiencies	
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \boxed{/m}$ Comments: Concrete spalls	☐ Rehab ☐ 1-5 years ☐ 1-5 years ☐ Culverts Outlet Components North Side Cast-in-place concrete Headwall ☐ Units ☐ / each ☐ / % ☐ / all ☐ at the top of the wingwalls with a contract of the c	Exc.	Length: Width: Height: Count: Total Quan Limited Ins	Mainte Urge ntity: spection Fai	1.9 m 0.3 m 0.5 m 0.95 Sq	.m Poor* 0.95	Perform.	
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m² ☑/m Comments: Concrete spalls	☐ Rehab ☐ 1-5 years ☐ 1-5 years ☐ Culverts ☐ Outlet Components ☐ North Side ☐ Cast-in-place concrete ☐ Headwall ☐ Units ☐ / each ☐ / % ☐ / all ☐ ☐ at the top of the wingwalls with the t	Exc. ith exposed, bended	Length: Width: Height: Count: Total Quan Limited Ins	Mainte Urge httity: spection Fai einforceme	1.9 m 0.3 m 0.5 m 0.95 Sq	.m Poor* 0.95 Needs:	Perform. Deficiencies	

Element Group:	Decks		Length:	Length:					
Element Name:	Wearing Surface		Width:		6.7 m				
Location:			Height:	Height:					
Material:	Asphalt		Count:						
Element Type:			Total Quar	ntity:	12.75 S	q.m			
Environment:			Limited In		П	•			
Protection System:				-F			Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$		Exc.	3.0	4.0		5.75			
L.,			3.0	4.0	,	3.73			
Comments: - Severe ravelling									
- Potholes on the South side, wide Longitudinal and traversal cracks.									
Recommended Work:				Moint	nonco	Noods:			
Recommended work:	Rehab	Replac		Maintenance Needs:		L.	П2		
	□ 1-5 years	□6-10 ye	ears	□Urge	nt	☐1 year	☐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 Quar	ntity:	80.4 Sq	.m			
Environment:						aspection			
Protection System:				-F			Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: $\frac{1}{m^2 \vec{k} /m}$	\square / each \square / % \square / all \square	Exc.	20.0	40.0	-	20.4	20110101010		
Comments: Asphalt surface	with wide longitudinal and tr	aversal cracks exte	ending over both	approache	s.				
Recommended Work:	Rehab	Replac		Mainte	enance l	Needs:			
Recommended work.							П2		
	☑ 1-5 years	□6-10 ye	ears	□Urge	nı	□1 year	☐2 year		
El C.			T		1				
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways			Width:					
Location:	North - South		Height:		l				
Material:	<u> </u>			Count: 1					
Element Type:				otal Quantity: 1					
Environment:	_		Limited In	spection		1			
Protection System:	<u> </u>			1			Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
$m^2 \square / m$	□/ each □ / % □ / all □		1						
Comments: Moderate plant	growth blocking the Northerr	n waterway, with r	ecommendation t	to be shave	d				
1	c c	•							
Recommended Work:	☐ Rehab	☐ Replac	e	Mainte	enance l	Needs:			
	☐1-5 years	□6-10 ye	ears	Urge	nt	☐ 1 year	2 year		

Element Group:		Embankments & Streams		Length:				
Element Name:		Embankments		Width:				
Location:				Height:				
Material:				Count:		6		
Element Type:				Total Quar	ntity:	6		
Environment:				Limited In	spection			
Protection System:				_				Perform.
		Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	$n^2 \square / m$]/ each []/ % []/ all []		6				
Comments: In Goo	od Condit	.	L.		I		l	
Comments, in cos	ou conun							
Recommended V	Vork:	Rehab	Replac	e	Mainte	enance	Needs:	
		☐1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year
			<u> </u>					
Element Group:		Embankments & Streams		Length:				
Element Name:		Slope Protection		Width:				
Location:		Blope I foteetion		Height:				
Material:				Count:		1		
Element Type:				Total Quar	ntity:	1		
Environment:			Limited Ir			П		
Protection System:	•			Limited in	spection	<u> </u>		Perform.
Trotection Bystein	-	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	² ∏/m [LAC.	Good	1		1 001	Beneficiences
I		² □/m □/ each ☑/ % □/ all □						
Comments: Locate	ed at the S	outh elevation on the Wester	n side of the water	rway. Stones are	partially blo	ocking the	he waterway	
Recommended V	Vork:	Rehab	Replac	·e	Mainte	nance	Needs:	
Trecommended v	· OIK.	1-5 years	□6-10 y		Urgent 1 year			☐2 year
		LII-3 years	шо-10 у	cars		11t	шт усаг	L 2 year
Ti G						l		
Element Group:				Length:				
Element Name:				Width:				
Location:				Height:				
Material:				Count:				
E1 + E				Total Quantity:				
Element Type:					-	_		
Environment:				Total Quan	-			
	:		_	Limited In	spection			Perform.
Environment: Protection System:		Units	Exc.		-		Poor*	Perform. Deficiencies
Environment: Protection System:	: n²□/m[Exc.	Limited In	spection		Poor*	
Environment: Protection System:			Exc.	Limited In	spection		Poor*	
Environment: Protection System: Condition Data:			Exc.	Limited In	spection		Poor*	
Environment: Protection System: Condition Data:	n²□/m []/ each		Limited In	Fai	r	Poor* Needs:	
Environment: Protection System: Condition Data: n Comments:	n²□/m []/ each∏/ %∏/ all∏ ☐Rehab	□Replac	Good Good	Fai	r	Needs:	Deficiencies
Environment: Protection System: Condition Data: n Comments:	n²□/m []/ each		Good Good	Fai	r		
Environment: Protection System: Condition Data: n Comments:	n²□/m []/ each∏/ %∏/ all∏ ☐Rehab	□Replac	Good Good	Fai	r	Needs:	Deficiencies



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:	Inventory Data:						
St. Marilan							
Structure Number	47						
Hwy/Road Name	South Talbot Road						
Structure Location	0.36 km East from County I	Road 9 (Howard Av	/e.)				
Structure Type	Corrugated Steel Pipe						
Latitude	42° 13' 25.4634"		Longitude -82° 59' 36.528"				
Owner(s)	Town of Tecum	nseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List				
Span Length	1.40	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐				
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: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	1999		Year of Last Major Rehab.				
Last OSIM Inspection	n		Last Evaluation				
Last Enhanced OSIM			Current Load Limit N/A (tonnes)				
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Insp	pection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:							
Date of Inspection	Is	anuary 22	2016					
		•		on Consulting I	(td)			
Inspector	П	OSSAIII D	aki (Dill	on Consulting I	<u>اللا)</u>			
Others in Party								
Access Equipment Used	C	amera, M	leasuring	g Tape, Measur	ing Whee	el, and	Hammer	
Weather	Si	Sunny, Probability of rain 1%						
Temperature	-6	-6 (-2/-8) Celsius						
Overall Structure Notes:								
0 (0 1 m 2 0 1 m 0 1 m 0 1 m								
Recommended Work on S	Structure	None		☐Minor Rehab		□Maj	or Rehab.	Replace
Timing of Recommended	Work	2 1 to 5 ye	ears [☐6 to 10 years				
Overall Comments The structure is in poor condition and further corroded with heavy loss at the bottom streatment need full replacement. Wearing longitudinal and traversal cracks extend				ss at the bottom sur acement. Wearing s	face along surface with	the sprin	ng line. The concrete es over the culvert s	e blocks used for end
Date of Next Inspection								
	•							
El 4D4								
Element Data:								
Element Group:	Signs			Length:	Length:			
Element Name:	Signs			Width:				
Location:				Height:				
Material:				Count:		1		
Element Type:	Stop Sign ahead (Sign	1)		Total Quar	•	1		
Environment:				Limited In	spection		ľ	
Protection System:					ı			Perform.
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units ☐/ each ☑/ % ☐/ a		xc.	Good	Fai	r	Poor*	Deficiencies
Comments: - Existing Sign				Markings to meet	the Ontario) Traffic	Manual	
Recommended Work:	□Rehab)	Repla	ace	Mainte	enance	Needs:	
	□1-5 ye	ars	□ 6-10	years	□Urge	nt	□1 year	☐2 year

Element Group:	Culverts		Length:		13.50 m		
Element Name:	Barrels		Width:				
Location:			Height:	Height:			
Material:	Corrugated Steel		Count:				
Element Type:	Multi-Plate CSP		Total Quar	ıtity:	20.80 S	q.m	
Environment:			Limited In	spection			
Protection System:							Perform.
C - 1'd' - Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $m^2 \square / m \rceil$	□/ each□/ %□/ all□			14.3	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:	Rehab	Replac	e	Mainte	enance	Needs:	
	■ 1-5 years	 ☐6-10 ye		Urge	nt	□1 year	☐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:		1.40 m		
Element Type:	Irregular Concrete Blocks		Total Quar	tity: 22.70 Sq.m			
Environment:	Illegulai Colletete Diocks		_	•	72.70 5	у.ш	
Protection System:	+	Limited Inspection					Df
Fronction System.	Units	Exc.	Good	Fai		Poor*	Perform. Deficiencies
Condition Data:		EXC.	Good	Гаі	r		Delicities
m ² m/m		L				22.7	
Comments: In Poor Condition Replacement is	recommended						
Recommended Work:	Rehab	☑ Replac				l l	_
	□ 1-5 years	□6-10 ye	ears	☐Urgent		□1 year	☐2 year
Element Group:	Culverts		Length:		2.0 / 2.0	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 Quar	ntity:	5.60 Sq	ı.m	
Environment:			Limited In	•		11	
Protection System:				<u></u>			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$		 		5.60	-		_
Comments: In Fair Condition		I		0.0	<u>-</u>		
Recommended Work:	Rehab	Replac	 re	Mainte	ntenance Needs:		
	11-5 years	☐ 6-10 ye		Urge		☐1 year	2 year
	— ,	_	our 5	– ~ - 5 -		ш. у	_ _ <i>J</i> - <i>J</i> - <i>m</i>

Element Group:	Decks		Length:		1.40 m		
Element Name:	Wearing Surface		Width:		6.70 m		
Location:	1		Height:	ŭ			
Material:	Asphalt		Count:				
Element Type:			Total Quan	ntity: 9.40 Sq.m		.m	
Environment:	1		Limited Ins	•			
Protection System:							Perform.
~ *** ***	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square			7.0		2.40	
Comments: In Poor Condition							
	on surface settlement.						
- Medium Map							
Recommended Work:	Rehab	Replace	e	Mainte	enance l	Needs:	
	☑1-5 years	□6-10 ye		Urge		□1 year	☐2 year
	<u></u>	<u> </u>	/ U I 5		111	 ,,	<u> </u>
Elamant Crouns	A		Langth		T 6 0		
Element Group: Element Name:	Approaches		Length: Width:		6.0 m		
Location:	Wearing Surface				6.70 m		
	East - West		Height:		 		
Material:			Count:	2			
Element Type:	<u> </u>	Total Quan	•	80.40 Se	q.m		
Environment:		Limited Inspection					
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² □/m	□/ each □/ % □/ all □					80.4	
Comments: In Poor Condition	on						
- Longitudinal (Cracks lanes median						
- Wide transvers				T			
Recommended Work:	Rehab				enance l		
	☑ 1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐2 year
Element Group:	Embankments & Streams		Length:		<u> </u>		
Element Name:	Streams and Waterways		Width:		ļ		
Location:	North - South		Height:		<u> </u>		
Material:	<u> </u>		Count:		2		
Element Type:			Total Quan	-	2		
Environment:			Limited Ins	spection			
Protection System:	<u> </u>			·			Perform.
Condition Data:	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies
Condition Data: $m^2 \square / m \mid$	□/ each □/ % □/ all ☑		2				
Comments: In Good Condit	•				L		
Comments, in Good Condit	ion						
Recommended Work:	Rehab	Replace	e	Mainte	enance l	Needs:	
	1-5 years	□ 6-10 ye		Urge	nt	☐1 year	2 year
			,				

Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:	Width:			
Location:			Height:				
Material:			Count:	10			
Element Type:			Total Qua	iantity: 10			
Environment:			Limited In	spection			
Protection System:			_				Perform.
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m \square}$	□/ each 🗹 / % 🔲 / all 🔲		10				
Comments: In Good Condition	L.		<u>-</u>			I	
Comments: in Good Conditi	IOII						
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	☐1-5 years	□6-10 y		Urge	nt	□1 year	☐2 year
		<u> </u>				<u></u>	ш2 усы
Elamant Casan			T an adla.				
Element Group: Element Name:			Length: Width:				
Location:			Height:				
Material:		Count:	. • .				
Element Type:	Total Q						
Environment:			Limited In	ispection	Ш	Т	
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	$m^2 \square / m \square / each \square / \% \square / all \square$						
Comments:							
Comments.							
Recommended Work:	Rehab	Replac			enance Needs:		
	□1-5 years	□6-10 у	ears	Urgent		□1 year	☐2 year
Element Group:			Length:				
Element Name:		_	Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Qua	ntity:			
Environment:				•	П		
Protection System:			Limited In	ispection	<u> </u>	T	D 0
Protection System:							Perform. Deficiencies
	** *		a 1				
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	Units // each / / % / all /	Exc.	Good	Fai	r	Poor*	Deficiencies
m²∐/m[Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \square / m \square}$ Comments:		Exc.	Good	Fai	r	Poor*	Deficiencies
m²⊔/m[Comments:]/ each						Deficiencies
m²∐/m[]/ each□/ %□/ all□ □ Rehab	□Replac	ce	Mainte	enance	Needs:	
m²⊔/m[Comments:]/ each		ce		enance		□2 year
m²⊔/m[Comments:]/ each□/ %□/ all□ □ Rehab	□Replac	ce	Mainte	enance	Needs:	



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:			
Circuit and National	10 (F. 1.45)		
Structure Number	48 (Formerly 45)		
Hwy/Road Name	Holden Road		
Structure Location	1.35 km South from South T	l'albot Rd.	
Structure Type	Non-Rigid Frame Open Foo	ting Culvert	
Latitude	42° 12' 31.5354"		Longitude -82° 58' 54.5154"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	2.40	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1965		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection	Ja	nuary 22, 2016							
Inspector	Н	ossam Bakr (Di	llon Consulting I	Ltd)					
Others in Party		`							
Access Equipment Used	C	amera. Measurii	ng Tape, Measur	ing Wheel, and	l Hammer				
Weather		unny, Probabilit							
Temperature		-6 (-2/-8) Celsius							
remperature	-0	(-2/-6) Ceisius							
Overall Structure Not	tes:								
D 1 1W 1	a F	7							
Recommended Work on S		None	☐Minor Rehab	. ⊔Ма	jor Rehab.	Replace			
Timing of Recommended	Work	□1 to 5 years □6 to 10 years							
headwall. Th safety; Addin			re end extensions we	re added to the ori nce there is no sho	ginal structure. Reg ulder on Holden Ro	einforcement on western arding the roadside ad. Culvert should be			
Date of Next Inspection									
Element Data:									
Element Crount	C:		Lanath	Length:					
Element Group: Element Name:	Signs Signs		Width:						
Location:	Signs		Height:						
Material:			Count:	2					
Element Type:	Hazard Marker Signs		Total Quar						
Environment:	<u> </u>		Limited In						
Protection System:						Perform.			
Condition Data:	Units	Exc.	Good	Fair	Poor*	Deficiencies			
m² □/m Comments: - Existing Sign	□/ each □/ % □/ a	<u>ll□ 2</u>							
Comments: - Existing Sign	in Excellent Condition								
Recommended Work:	□Rehab			Maintenance					
	□1-5 yea	ars 🛮 🗆 6-1	0 years	□Urgent	□1 year	☐2 year			

Element Group:	Culverts		Length:	ength:		I	
Element Name:	Soffit - Inside Boxes		Width:		2.40 m		
Location:			Height:		2.10 m	ı	
Material:	Cast-in-place concrete		Count:				
Element Type:	Cust in place concrete		Total Quar	ntitv:	52.80 \$	Sa.m	
Environment:			Limited In:		П	Sq	
Protection System:				Perform.			
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	\square / each \square / $\%$ \square / all \square	LAC.					Bettereneres
			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:			_	Maint		Na.da.	
Recommended work:	Rehab	Replac				Needs:	По
	□1-5 years	☑ 6-10 ye	ears	Urge	nt	☐1 year	2 year
Element Group:	Culverts		Length:		3.30 m	l	
Element Name:	Inlet Components		Width:		0.30 m	Į.	
Location:	East Side		Height:		2.60 m	ļ	
Material:	Cast-in-place concrete		Count:		2		
Element Type:	Wingwall Total (Total Quar	ntity:	17.20 \$	Sq.m	
Environment:		Limited In	spection				
Protection System:							Perform.
G 111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$			4.3	8.6	j	4.3	
١,	, <u>,</u>			0.0	<u> </u>	5	
Comments: - Concrete spall	s at the North Side ali-Aggregate Reaction						
- Moderate Aik	an-Aggregate Reaction						
Recommended Work:	Rehab	☑ Replac	e	Maintenance Needs:			
	□1-5 years	2 6-10 y€			Urgent 1 year		☐2 year
	шт 5 усыв	шо то ус	, di G	Шолдо	110	штусш	<u> </u>
Elamant Commi			T				
Element Group:	Culverts		Length:		2.40 m		
Element Name:	Outlet Components		Width:		0.30 m		
Location:	East Side		Height:		0.50 m	<u> </u>	
Material:	Cast-in-place concrete		Count:				
Element Type:	Headwall		Total Quar	•	1.20 Sc	q.m	
Environment:			Limited In	spection	Ш		
Protection System:					1		Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² ✓/m	\square / each \square / % \square / all \square			0.3		0.9	
Comments: - Concrete Spal	ls, and exposed reinforcemen	nt					
- Severe Alkali-	Aggregate Reaction over the	culvert inlet					
Recommended Work:	Rehab		е	Mainte	enance	Needs:	
	1-5 years	2 6-10 ye		Urge		1 year	2 year
	LI-5 years	E10-10 ye	/u10	اع دا دا	110	பா year	□ 2 ycai

Element Group:	Culverts		Length:	Length:		<u>I</u>		
Element Name:	Outlet Components		Width:	Width: 0		0.30 m		
Location:	West Side		Height:	Height: 2.60 m		<u>I</u>		
Material:	Cast-in-place concrete		Count:	Count: 2				
Element Type:			Total Quar	Total Quantity: 12.0 Sq.m				
Environment:			Limited In	spection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		4.0	5.0		3.0		
Comments: - Concrete spalls at the North Side mostly at the top portion Moderate Alkali-Aggregate Reaction								
D 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				1 36 1 1		X 1		
Recommended Work:	Rehab	☑ Replace				Needs:		
	□1-5 years	☑ 6-10 y	ears	□Urge	nt	☐1 year	☐2 year	
	_			•				
Element Group:	Culverts		Length:		2.40 m	ı		
Element Name:	Outlet Components		Width:		0.30 m	1		
Location:	West Side		Height:		0.50 m	l .		
Material:	Cast-in-place concrete		Count:					
Element Type:		Total Quar	ntity:	1.20 S	q.m			
Environment:		Limited In	spection					
Protection System:		Perfor					Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	\square / each \square / % \square / all \square			0.3	0	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:	☐ Rehab	☑ Replace	ce	Mainte	enance	Needs:		
	□1-5 years	2 6-10 y	ears	ars Urgent		☐1 year	☐2 year	
							-	
Element Group:	Decks		Length:		6.0 m			
Element Name:	Wearing Surface		Width:		2.40 m	<u> </u>		
Location:			Height:					
Material:	Cast-in-place concrete		Count:					
Element Type:			Total Quar	_	14.40	Sq.m		
Environment:			Limited In	spection	Ш			
Protection System:		т т		1			Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	□/ each □ / % □/ all □		12.0	2.4	0			
Comments: - Moderate Flus - Light Progress	shing in the Asphalt surface. sive edge cracks							
Recommended Work:	Rehab	☑ Replace	ce	Mainte	enance	Needs:		
	☐1-5 years	☑ 6-10 y	•••••	Urge	nt	☐1 year	2 year	

Element Group:	Approaches		Length:	ngth:			
Element Name:	Wearing Surface		Width:	Vidth:			
Location:	North - South		Height:	Height:			
Material:			Count:	ount: 2			
Element Type:			Total Quar	ntity:	72.0 S	q.m	
Environment:			Limited In	spection			
Protection System:							Perform.
G tid D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		55.0	12.0	0	10.0	
Comments: - Moderate Flushing in the Asphalt surface Medium Progressive edge cracks							
Recommended Work:	Rehab	✓ Replace	ce	Mainte	enance	Needs:	
	□1-5 years	2 6-10 y		Urge	nt	□1 year	☐2 year
				1 5			
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:		2		
Element Type:			Total Quar				
Environment:		Limited In	•	П			
Protection System:			Zimico in	вресноп			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square	Enc.		1 41	•	1 001	20110101010
m² L/m L/ each L/ % L/ all L/ 2 Comments: In Good Condition							
Recommended Work:	Rehab	Replac	ce	Maintenance Needs:			
	☐1-5 years	 ☐6-10 y				□1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		8		
Element Type:			Total Quar	ntity:	8		
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Date	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each		8				
Comments: In Good Condit				1			
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	1-5 years	 ☐6-10 y		Urge		□1 year	☐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 Talbo	ot Road
Structure Type	Corrugated Steel Pipe (East) and Po	olyethylene (West)
Latitude	42° 12' 45.3954"	Longitude [-82° 56' 52.5114"
Owner(s)	Town of Tecumseh	Heritage □Not Cons. □ Cons./not App. □ List/not Designation: □Desig./not List □Desig. & List
Span Length	0.45 / 1.20 (m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	7.0 (m)	Posted Speed No. of Lanes 2
Overall Str. Width	16.6 (m)	AADT % Trucks
Total Deck Area	8.4 (sq.1	m) Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	9.6 (m)	Detour Length Around Bridge 8.80 (km)
Fill on Structure	1.25 (m)	Direction of Structure N
Skew Angle	0° (Deg	grees) No. of Spans
Historical Data:		
Year Built	1985	Year of Last Major Rehab.
Last OSIM Inspection		Last Evaluation
Last Enhanced OSIM		
	•	Current Load Limit N/A (tonnes)
Enhanced Access Eq (ladder, boat, lift, etc		Load Limit By-Law #
Last Underwater Insp	pection	By-Law Expiry Date
Last Condition Surve	у	
Rehab History:		

Field Inspection Information:										
Dece	December 16, 2015									
Hoss	Hossam Bakr (Dillon Consulting Ltd)									
	-									
Mea	Measuring Tape, Measuring Wheel, and Hammer									
Temperature (11/3) Celsius										
es:										
Structure N	one	☐Minor Rehab	. 🗆	Major Re	hab.	Replace				
Work 🔲 1	to 5 years	☐6 to 10 years								
different sections an continue west with a is lightly corroded. I				a inspection was conducted in September. The video recording revealed that culvert 49 has two sections and pipe types; east from 8th Concession Road a C.S.P of 1.2m diameter is used, then west with a polyethylene pipe of 0.45m diameter. The bottom of the C.S.P below the spring line corroded. However, the polyethylene pipe was found in good condition. Note: Culvert 49 is ing with Culvert No. 43.						
Signs		Length:								
Signs		Width:	Width:							
		Height:								
			1							
Stop Sign				_						
		Limited In	spection L			Т				
	_	T	<u> </u>			Perform.				
		Good	Fair	F	oor*	Deficiencies				
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual										
Rehab	☐Rehab ☐Replac			Maintenance Needs:						
□1-5 years □6-10 years					□1 year	□2 year				
	Bigns Signs Signs Signs Signs Stop Sign Units Units Rehab	December 16, 201 Hossam Bakr (Dil Measuring Tape, I Mostly Cloudy, A (11/3) Celsius Extructure Work I to 5 years A camera inspection with different sections and position intersecting with Culvers Signs Signs Signs Stop Sign Units Exc. each / % / all 1 Installation of Object Marker signs and Object Rehab Rep	December 16, 2015 Hossam Bakr (Dillon Consulting I Measuring Tape, Measuring Whee Mostly Cloudy, Afternoon Showe (11/3) Celsius Bructure None Minor Rehab A camera inspection was conducted in Ser different sections and pipe types; east from continue west with a polyethylene pipe of is lightly corroded. However, the polyethy intersecting with Culvert No. 43. Signs	December 16, 2015 Hossam Bakr (Dillon Consulting Ltd) Measuring Tape, Measuring Wheel, and Ham Mostly Cloudy, Afternoon Shower (11/3) Celsius	December 16, 2015 Hossam Bakr (Dillon Consulting Ltd) Measuring Tape, Measuring Wheel, and Hammer Mostly Cloudy, Afternoon Shower (11/3) Celsius Bructure None Minor Rehab. A camera inspection was conducted in September. The video recording different sections and pipe types; east from 8th Concession Road a Continue west with a polyethylene pipe of 0.45m diameter. The botto is lightly corroded. However, the polyethylene pipe was found in good intersecting with Culvert No. 43. Signs Length: Count: Height: Count: I timited Inspection Units Exc. Good Fair Fastallation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual Care and Ca	December 16, 2015 Hossam Bakr (Dillon Consulting Ltd) Measuring Tape, Measuring Wheel, and Hammer Mostly Cloudy, Afternoon Shower (11/3) Celsius Bructure None Minor Rehab. Major Rehab. Major Rehab. Mork I to 5 years 6 to 10 years A camera inspection was conducted in September. The video recording revealed different sections and pipe types; east from 8th Concession Road a C.S.P of 1.2n continue west with a polyethylene pipe of 0.45m diameter. The bottom of the C. is lightly corroded. However, the polyethylene pipe was found in good condition intersecting with Culvert No. 43. Signs Length: Signs Width: Height: Count: I Count: I Limited Inspection Units Exc. Good Fair Poor* J' each 7 % All 1				

Element Group:		Culverts		Length:		4.3 / 12.3 m			
Element Name:		Barrels		Width:		1.2 / 0.45 m (Dia.)			
Location:		East - West	est Heigh						
Material:	Corrugated Steel Count:		Count:						
Element Type:	Element Type: Multi-Plate CSP Total Qua		Total Quar	ntity:	tity: 33.6 Sq.m				
Environment: Lir			Limited In	Limited Inspection					
Protection System:				1	1			Perform.	
-		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	m ² /m	□/ each □/ % □/ all □		25.6	4.0		4.0		
C	L		101 11 0					6.1 . 1 . 1 . 1	
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 bar							of the steel culvert barrel		
Recommended Work: Rehab Replace			Maintenance Needs:						
Recommended	WOIK.		☐6-10 ye		,			П2	
		□1-5 years	⊔0-10 у€	ears		III	☐1 year	☐2 year	
		T							
Element Group:		Culverts		Length:					
Element Name:		Inlet Components		Width:					
Location:		East Side		Height:					
Material:				Count:					
Element Type:				Total Quar	Total Quantity:				
Environment:				Limited Inspection					
Protection System	m:							Perform.	
Condition Data: ${m^2 \square / m}$		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
		□/ each □/ % □/ all □							
Comments: The Inlet is located East, Culvert No. 49 Intersect with Culvert No.43 at the South Side of South Talbot Road									
Comments: The finet is located East, Curvert No. 49 Intersect with Curvert No.45 at the South Side of South Talloot Road									
Recommended	Work:	Rehab	Replac	e	Mainte	enance	Needs:		
		□1-5 years	 ☐6-10 ye		□Urgent □1 ye			☐2 year	
		шт э усыга				110	<u></u>	<u></u>	
Element Crount		F 9 St		Lanath					
Element Group:		Embankments & Streams		Length:					
Element Name:		Streams and Waterways		Width:					
Location:		East - West		Height:		_			
Material:				Count:		1			
Element Type:				Total Quar	•	1			
Environment:				Limited In	spection		T		
Protection System	<u>m:</u>				T	1		Perform.	
Condition Data:		Units	Exc.	Good	od Fai		Poor*	Deficiencies	
Condition Butu.	$m^2\square/m$	□/ each □/ % □/ all ☑		1					
Comments: light	t plant grow	th at the West elevation, recor	mmended to be sh	aved					
Recommended Work:		Rehab	Replac	e.	Mainte	enance	Needs:		
Recommended	11 OIK.	1-5 years	☐ 6-10 ye		Urge		1 year	2 year	
		□1-3 years	□ 0-10 ye	Lai S	Drain ma				
					Drain ma	шиепапс	e.		

Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments	Width:					
Location:			Height:				
Material:			Count:		4		
Element Type:			Total Quar	ntity:	4		
Environment:			Limited In	spection			
Protection System:							Perform.
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □ / % □ / all □		4				
Comments: In Good Condit	·	l.		II.		l	
Comments. In Good Conditi	ion						
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	□1-5 years	□6-10 ye	ears	□Urge	nt	□1 year	☐2 year
		 					 -
Element Group:	Embankments & Streams		Length:				
Element Name:	Slope Protection		Width:				
Location:	Stope I fotection		Height:				
Material:	Masonry		Count:		2		
Element Type:	Hand Laid Rip-rap		Total Quar	ntity:			
Environment:	Tranu Laid Rip-rap		Limited In	•			
Protection System:			Limited in	spection			Perform.
Trotection bystem.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \square / m}$	\square / each \square / % \square / all \square	EAC.		Tai	1	1 001	Deficiences
L.,	·		2				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
Tree of the first	□1-5 years	□6-10 ye				□1 year	☐2 year
		<u> </u>	2013			шт усаг	<u></u>
Element Group:	Decks		Length:		7.0 m		
Element Name:	Wearing Surface		Width:		0.45 / 1	1.2 m	
Location:	On top of the barrel		Height:				
Material:	Asphalt		Count:				
Element Type:			Total Quar	ntity:	8.4 Sq.	.m	
Environment:			Limited In	-	П		
Protection System:				-F			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	<u> </u>	Enc.					
m² □/m □/ each □/ % □/ all □ Comments: The existing asphalt surface is in Fair to Poor condition with need to				4.2		4.2	
Comments: The existing as	phalt surface is in Fair to Poc	or condition with ne	ed to be fully rep	placed. Not	e: This c	culvert is intersecting	g with culvert No. 43
Recommended Work:	Rehab	Replace	e	Mainte	enance	Needs:	
	☑ 1-5 years	☐ 6-10 ye		Urge		1 year	2 year
	E 1 5 years			Asphalt r		பர்கள்	<u> </u>
				2 sopnan 1	epuns.		
Ī							



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 Talk	oot Road					
Structure Type	Corrugated Steel Pipe						
Latitude	42° 12' 33.9474"		Longitude -82° 56' 53.4834"				
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List				
Span Length	0.60	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐				
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: ☐ Transit ☐ Truck ☐ School ☐ Bicycle				
Roadway Width	6.7	(m)	Detour Length Around Bridge (km)				
Fill on Structure	1.1	(m)	Direction of Structure				
Skew Angle	0°	(Degrees)	No. of Spans				
Historical Data:							
Year Built	Unknown		Year of Last Major Rehab.				
Last OSIM Inspection	1		Last Evaluation				
Last Enhanced OSIM I	nspection		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	у						
Rehab History:							

Field Inspection Infor	mation:										
Date of Inspection	January 26, 2016										
Inspector	Hossam Bakr (Dillon Consulting Ltd)										
Others in Party		Troubant Danie (Dinon Consuming Die)									
Access Equipment Used		Camera Massuring Topa Massuring Wheel and Hammer									
		Camera, Measuring Tape, Measuring Wheel, and Hammer									
Weather		Cloudy, Probability of rain 47%									
Temperature	3	3 (6 / -3) Celsius									
Overall Structure Not	es:										
	_			_							
Recommended Work on S				☐Minor Rel			⊔Maj	or Rehab.	Replace		
Timing of Recommended	Work	□1 to	5 years	☐6 to 10 ye	ars						
section with medium transvers					erved with light corrosion at the bottom half, Wearing surface over the culvert verse crack, and moderate flushing. Also, medium progressive edge cracking ert section and along both approaches. Light plant growth was observed at the						
Date of Next Inspection											
	<u> </u>										
Element Data:											
Element Group:	Signs			Length:							
Element Name:	Signs			Width:							
Location:				Height:							
Material:				Count:			0				
Element Type:				Total Q	uan	tity:	0				
Environment:				Limited	Ins	spection					
Protection System:									Perform.		
Condition Data:	Units ☐/ each ☑/ % ☐/ :	- 11 🖂	Exc.	Good		Fai	r	Poor*	Deficiencies		
			sions and Object	Markings to n	neet 1	the Ontario	Traffic	Manual			
Comments: - Upgrade and installation of Object Marker signs and Object Markings to meet the Ontario Traffic Manual											
Recommended Work:	☐ Rehab ☐ Replace				Maintenance Needs:						
□1-5 years □6-10 years				years		☐Urgent ☐1 year ☐2 ye			□2 year		

Element Group:		Culverts		Length:			19.0 m		
Element Name:		Barrels V		Width:					
Location:		Heig		Height:					
Material:		Corrugated Steel		Count:					
Element Type:		Multi-Plate CSP		Total Qua	ntity:	35.8 Sc	ı.m		
Environment:				Limited In	spection				
Protection System:								Perform.	
C IV. D		Units	Exc.	Good	Fai	Fair Poor*		Deficiencies	
Condition Data:	² ☑/m[□/ each□/ %□/ all□		17.9	17.	9			
Comments: Light corrosion at the bottom half of the culvert barrel									
Recommended W	ork:	Rehab	Replac	ce	Mainte	enance	Needs:		
	•••••	1-5 years	 □6-10 y		□Urge	nt	□1 year	☐2 year	
	□1-3 years □0-10 years								
Element Group:		Decks		Length:		0.6			
Element Name:				Width:		0.6 m			
Location:		Wearing Surface		Height:		6.7 m			
Material:		A114		Count:					
Element Type:		Asphalt			ntity	1000			
Environment:					Total Quantity: 4.0 Sq.m Limited Inspection □				
Protection System:				Limited in	ispection	<u> </u>		DC	
Trotection System.		Units	E	Card	E-:		D*	Perform. Deficiencies	
Condition Data:			Exc.	Good	Fai		Poor*	Deficiencies	
$m^2 \square / m \square / each \square / \% \square / all \square$				2.5	1.5	,			
Comments: - Medium transverse crack over the culvert section, and medium progressive edge									
Recommended W	ork:	Rehab	□Replac	ce			Needs:		
		□1-5 years	□6-10 у	ears	□Urge	nt	□1 year	☐2 year	
Element Group:		Approaches		Length:		6.0 m			
Element Name:		Wearing Surface		Width:		6.7 m			
Location:		North / South Sides		Height:		0.7 III			
Material:		Asphalt		Count:		2			
Element Type:		Торпин		Total Qua	ntity.	80.4 Sq.m			
Environment:				Limited In		П	80.4 Sq.m		
Protection System:				Limited II	ispection	<u> </u>	1	Perform.	
Trotection System.		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	2 /2 /200 [LAC.		1 41	1	1 001	Deficiences	
m² □/m □/ each □/ % □/ all □ 80.4 Comments: - Medium progressive edge cracks along both approaches - Medium flushing asphalt surface.									
Recommended Work: Rehab Replace		re.	Mainte	tenance Needs:					
1000111111011ucu W	OIK.	☐ 1-5 years	☐ 6-10 y		Urge	La contraction de la contracti		2 year	
		□1-3 years	ш 0-10 y	Cal 3	L Oige	111	□ 1 year	⊔ ∠ yeai	

Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	East - West		Height:						
Material:			Count:		2				
Element Type:			Total Qua	ntity:					
Environment:			Limited In	spection					
Protection System:							Perform.		
G III D	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all ⊡		2						
Comments: Moderate plant		<u> </u>			1	<u> </u>			
				1					
Recommended Work:	Rehab	☐ Rehab ☐ Replace			enance l	Needs:			
	□1-5 years	□6-10 y	ears	□Urgeı	nt	☐1 year	☐2 year		
				Drain mai	intenance	e.			
Element Group:	Embankments & Streams		Length:						
Element Name:	Embankments		Width:						
Location:			Height:						
Material:		Coun							
Element Type:			Total Qua	ntity:	8				
Environment:	Limited Inspection								
Protection System:				•			Perform.		
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □ / % □ / all □		4	4					
Comments: Insufficient erosion protection.									
Comments: insuricient eros	sion protection.								
Recommended Work:	Rehab	□Repla	ce	Mainte	enance l	Needs:			
	□1-5 years	□6-10 y	ears ears	Urgei	nt	☐1 year	☐2 year		
				Improve erosion protection					
				1	•				
Element Group:			Length:						
Element Name:			Width:						
Location:			Height:						
Material:			Count:						
Element Type:			Total Qua	ntity:					
Environment:			Limited In	spection					
Protection System:							Perform.		
Condition Date	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □								
'					I				
Comments:									
Comments:									
Recommended Work:	☐ Rehab	Repla	ce	Mainte	enance l	Needs:			
		-				L	2 year		
	☐ Rehab ☐1-5 years	□ Repla □ 6-10 y		Mainte Urgei		Needs:	2 year		
		-				L	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:										
G			7							
Structure Number	51 (Formerly 42)									
Hwy/Road Name	Concession Road 8									
Structure Location	2.50 km South from South T									
Structure Type	Non-Rigid Frame Open Foo	Non-Rigid Frame Open Footing Culvert								
Latitude	42° 11' 25.836"		Longitude -82° 56' 58.596"							
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List							
Span Length	2.50	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐							
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: ☐ Transit ☐ Truck ☐ School ☐ 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							
Historical Data:										
Year Built	1965		Year of Last Major Rehab.							
Last OSIM Inspection	n		Last Evaluation							
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)							
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #							
Last Underwater Insp	pection		By-Law Expiry Date							
Last Condition Surve	у									
Rehab History:										

Field Inspection Infor	mation:								
Date of Inspection	J	anuar	ry 26, 2016						
Inspector	Н	Hossa	m Bakr (Dill	on Consulting	g Ltd)				
Others in Party			<u> </u>		<u> </u>				
Access Equipment Used	C	Camei	ra. Measurin	g Tape, Measi	aring Wh	eel. and	Hammer		
Weather				y of rain 47%		,			
Temperature				<i>y</i> 01 14111 1770					
Temperature 3 (6 / -3) Celsius									
Overall Structure Not	tes:								
Recommended Work on S	Structure [Noi	ne	☐Minor Reha	ıh	✓ Mai	or Rehab.	Replace	
Timing of Recommended				6 to 10 year		— Iviaj	or Rendo.	Пкершее	
Overall Comments						•a	1 1 11		
Overall Comments				ne culvert and alo		_	sed and corroded re	einforcement. Slippery	
Date of Next Inspection									
Element Data:									
Element Group:	Signs			Length:					
Element Name:	Signs			Width:					
Location:				Height:					
Material:				Count:		2			
Element Type: Environment:	Hazard Marker Signs			Total Qu		2			
Protection System:				Limited 1	nspectioi	1 🔲		D. C	
Protection System.	Units		E	Good	Г	air	Poor*	Perform. Deficiencies	
Condition Data: ${m^2 \square / m}$	☐/ each ☐/ % ☐/ a	all 🗆	Exc.	Good	F:	all	POOL	Deficiencies	
Comments: - Existing Sign								I	
Recommended Work:	Rehal		□Repl			tenance			
	□1-5 ye	ears	□6-10	years	□Urg	gent	□1 year	☐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 Qua	ntity:	66.25 \$	Sq.m				
Environment:			Limited In	spection						
Protection System:							Perform.			
C IV. D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		59.25	3.5	i	3.5				
Comments: Concrete spalls at the Soffit with exposed and corroded reinforcement. two (2) bird nests.										
Recommended Work:		Replac	ce	Mainte	enance	Needs:				
				Urge	nt	□1 year	☐2 year			
	-					-				
Element Group:	Culverts		Length:		1.0					
Element Name:	Inlet Components	Width:		1.8 m						
Location:	East Side	Height:		0.3 m 2.8 m						
Material:		Count:								
Element Type:	Cast-in-place concrete Wingwall	Total Quar	2 ntity: 10.0 Sq.m							
Environment:	Willgwall	Wingwall				4.III				
Protection System:	Limited Inspection Dorforms									
Trocction System.	Units	E	Card	F.:		D*	Perform. Deficiencies			
Condition Data:		Exc.	Good	Fai		Poor*	Deficiencies			
m²Ľ/m	□ each / % / all	8.0	2.0)						
	Comments: One Medium crack at bottom of the Northern Wingwall									
Recommended Work:	Rehab	Replac			enance Needs:					
	□1-5 years	□6-10 y	ears	☐Urge	nt	□1 year	☐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 Qua	ntitv:	1.5 Sq.	m				
Environment:			Limited In		П					
Protection System:							Perform.			
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies			
Condition Data:	\square each \square / % \square / all \square		1.5		_					
Comments: In Good Cond			1.3		<u> </u>					
Recommended Work:	Rehab	Replac	re	Mainte	enance	Needs:				
1.000mmondod Work.	1-5 years	☐ 6-10 y		Urge		1 year	2 year			
	Li 1-3 years	ш 0-10 <u>у</u>	curs	l orge	110	பா year	□ 2 ycai			

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 Qua	Total Quantity: 15.4 Sq.m					
Environment:			Limited Ir	nspection					
Protection System:				Perform					
Condition Dates	Units	Exc.	Good	Fair		Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		15.4						
Comments: In Good Condit	*	l l		I					
Comments.									
Recommended Work:	☐ Rehab	ce	Mainte	enance	Needs:				
	□1-5 years	□ 6-10 у	ears	□Urge	nt	□1 year	☐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 Qua	ntity:	1.5 Sq.1	m			
Environment:			Limited Ir	spection					
Protection System:							Perform.		
C IV. D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □ / % □ / all □		1.5						
Comments: In Good Condition									
Comments, in coor condit	ion								
Recommended Work:	☐ Rehab	□Replac	ee	Mainte	enance	Needs:			
	□1-5 years	□6-10 у	ears	□Urge	gent 1 year		☐2 year		
	_			<u> </u>					
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 Qua	-	16.75 S	q.m			
Environment:			Limited Ir	rspection		ı			
Protection System:		ı		1	-		Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
m ² /m	□/ each □/ % □/ all □		8.375	8.37	75				
Comments: A slippery asph	alt surface								
				1		T			
Recommended Work:		Replac			enance	Needs:			
	□ 1-5 years	□ 6-10 y	ears	Urge	nt	☐1 year	2 year		

Element Group:	Approaches	Approaches			6.0 m						
Element Name:	Wearing Surface		Width:		6.7 m						
Location:	North - South		Height:								
Material:			Count:		2						
Element Type:			Total Quar	ntity:	80.4 Sc	a.m					
Environment:			Limited In		П	1					
Protection System:				эрссион			Perform.				
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies				
Condition Data:	\square / each \square / % \square / all \square	LAC.				1 001	Bettereneres				
			40.2	40.2	2						
Comments: - Slippery Surfa											
- Medium Prog	ressive edge cracks on both s	ides at the South ap	pproach								
D 1 - 1 W1-				Malada		NI 1					
Recommended Work:	☑ Rehab	Replac		-		Needs:					
	□ 1-5 years	□6-10 ye	ears	□Urge	nt	☐1 year	2 year				
				•							
Element Group:	Embankments & Streams		Length:								
Element Name:	Streams and Waterways		Width:								
Location:	East - West		Height:								
Material:		Count:									
Element Type:			Total Quar	ntity:	1						
Environment:			Limited In	•							
Protection System:			•	1	_		Perform.				
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies				
Condition Data: $\frac{1}{m^2 \prod / m}$	\square / each \square / % \square / all \square	2.101			•	1 001					
Comments: Excessive grow	th of plants at the road West	side									
Recommended Work:	✓ Rehab	Replac	Δ	Maintenance Needs:							
Recommended Work.	☑1-5 years	☐6-10 ye		· 		1 year	☐2 year				
	■1-5 years	ш0-10 ус		Lorge	11t		□2 yeai				
	T										
Element Group:	Embankments & Streams		Length:								
Element Name:	Embankments		Width:								
Location:			Height:								
Material:			Count:		4						
Element Type:			Total Quar		4						
Environment:			Limited In	spection							
Protection System:							Perform.				
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies				
Collation Data. $m^2 \square / m$	□/ each		4								
Comments: In Good Condit		<u>'</u>									
Comments. In Good Conditi	ion										
Daggaran J. 1 W. 1				M		Manda.					
Recommended Work:	Rehab	Replac				Needs:					
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	2 year				
				1							



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:										
Circuit and National	52 (F. 1. 50)									
Structure Number	52 (Formerly 78)									
Hwy/Road Name	Snake Lane Road									
Structure Location		.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 Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List							
Span Length	0.60	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐							
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: ☐ Transit ☐ Truck ☐ School ☐ 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							
Historical Data:										
Year Built	1980		Year of Last Major Rehab.							
Last OSIM Inspection	n		Last Evaluation							
Last Enhanced OSIM			Current Load Limit N/A (tonnes)							
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #							
Last Underwater Insp	ection		By-Law Expiry Date							
Last Condition Surve	у									
Rehab History:										

Field Inspection Infor	mation:									
Date of Inspection	De	ecember 23, 201	5							
Inspector	Но	ossam Bakr (Dil	lon Consulting I	Ltd)						
Others in Party										
Access Equipment Used	Ca	mera. Measurin	g Tape, Measur	ing Wheel.	and Hammer					
Weather		oudy, Probabilit			<u> </u>					
		•	•							
Temperature	Temperature 7 (16 / 10) Celsius									
Overall Structure Not	tes:									
	_	None								
Recommended Work on S	☐Minor Rehab	. Ц	Major Rehab.	Replace						
Timing of Recommended	Work	1 to 5 years	☐6 to 10 years							
Overall Comments Typical corrosion at the barrel bolted connections, bended edge at the East elevation. Wearing was observed with patched potholes. Settlement was also observed at the wearing surface over section. Excessive plant growth is blocking the stream along both sides of the road.						earing surface over the culvert				
Date of Next Inspection										
	<u> </u>									
Element Data:										
Element Course	g.		I amadla							
Element Group: Element Name:	Signs Signs		Length: Width:							
Location:	Signs		Height:							
Material:			Count:	0						
Element Type:			Total Quar							
Environment:			Limited In:]					
Protection System:						Perform.				
Condition Data: $m^2 \square / m$	Units ☐/ each ☑/ % ☐/ al	Exc.	Good	Fair	Poor*	Deficiencies				
Comments: - Upgrade and i			t Markings to meet	the Ontario Ti	raffic Manual					
Comments. Francisco										
Recommended Work:	Rehab	□Rep	lace	Maintena	ance Needs:					
	□1-5 yea	rs 🔲 6-10) years	□Urgent	□1 ye	ear 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 Qua	Total Quantity: 25.0 Sq.n					
Environment:			Limited In	Limited Inspection					
Protection System:			•	•			Perform.		
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		18.75	6.2	-				
<u> </u>	·			0.2					
Comments: Typical corrosion	on at the boit connections.be	nded edge at the Ea	ist elevation.						
Recommended Work:	Rehab	ee	Mainte	enance	Needs:				
	□1-5 years	□Replac □6-10 y		Urge		☐1 year	☐2 year		
	шт э усыз	<u> </u>	Curs	Потве	110	шт усш			
F1 C	1		T 41		ı				
Element Group:	Decks		Length:		0.60 m				
Element Name:	Wearing Surface		Width:		7.50m				
Location:			Height:						
Material:	Asphalt		Count:						
Element Type:			Total Qua	•	4.50 Sq	.m			
Environment:	Limited Inspection								
Protection System:		T T					Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
m ² /m	□/ each □ / % □ / all □		2.0	0.5	5	2.0			
Comments: Repaired pothole. Settlement at the surface is noticed over the culvert section.									
Commences: of a set of									
Recommended Work:	Rehab	□Replac	Maintenance Needs:			Needs:			
	□1-5 years	□6-10 у	ears	□Urge	nt	□1 year	☐2 year		
				Asphalt repairs.					
			Asphalt repairs.						
Element Group:	Approaches		Length:		6.0 m				
Element Name:	Wearing Surface		Width:		7.5 m				
Location:	North - South		Height:		7.5 111				
Material:	Asphalt		Count:		2				
Element Type:	Tippiait		Total Qua	ntity.	90.0 Sq	m			
Environment:			Limited In	•		.111			
Protection System:			Elimited III	ispection			Perform.		
Trotection bystem.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	·			1 41	.1	1001	Deficiencies		
			90.0						
Comments: Slippery Surfac	e								
Recommended Work:	☐ Rehab	☐ Replac	e	Mainte	enance l	ce Needs:			
	☐1-5 years	□6-10 y	ears	Urge	nt	☐1 year	2 year		
				1					

Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	East - West		Height:						
Material:			Count:		2				
Element Type:			Total Qua	ntity:					
Environment:			Limited Ir	nspection					
Protection System:							Perform.		
G III D	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all ☑		2						
Comments: - Excessive plan	•	l l	es of the road, wi	ith recommer	ndation to	be shaved			
				•					
Recommended Work:	Rehab	ce	Mainte	nance N	Needs:				
	□1-5 years	□6-10 у	ears	Urger	nt	□1 year	☐2 year		
				Drain mai	intenance				
Element Group:	Embankments & Streams		Length:						
Element Name:	Embankments	Width:							
Location:			Height:						
Material:			Count:		8				
Element Type:			Total Qua		8				
Environment:	Limited Inspection								
Protection System:			1	1			Perform.		
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square			8					
Comments: In Fair Condition									
Comments: in Fair Condition	on								
Recommended Work:	Rehab	□Replac	ce	Mainte	nance N	Veeds:			
	□1-5 years	□6-10 y		Urger	nt	□1 year	☐2 year		
		-				-			
Element Group:			Length:						
Element Name:			Width:						
Location:			Height:						
Material:			Count:						
Element Type:			Total Qua	ntity:					
Environment:			Limited Ir						
Protection System:			<u>.</u>	•			Perform.		
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
Condition Data: $\frac{1}{m^2 \Pi/m}$	/ each/ %/ all								
'		l L							
Comments:									
Recommended Work:	□ Rehab	□Replac	ce ce	Mainte	nance N	Needs:			
		☐ Rehab ☐ Replace							
						□1 vear	□ 2 vear		
	1-5 years	☐ 6-10 y		Urger		☐1 year	2 year		
						☐1 year	☐ 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:										
Ctmatuma NIl-	52 (Farmer) - 77)									
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 Foo	Non-Rigid Frame Open Footing Culvert								
Latitude	42° 12' 4.2114"		Longitude -82° 56' 33.54"							
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List							
Span Length	1.5	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑							
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: ☐ Transit ☐ Truck ☐ School ☐ 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							
Historical Data:										
Year Built	1960		Year of Last Major Rehab.							
Last OSIM Inspection	n		Last Evaluation							
Last Enhanced OSIM			Current Load Limit N/A (tonnes)							
Enhanced Access Eq (ladder, boat, lift, etc			Load Limit By-Law #							
Last Underwater Insp	pection		By-Law Expiry Date							
Last Condition Surve	гу									
Rehab History:										

Field Inspection Infor	mation:									
Date of Inspection		Decem	nber 23, 20	15						
Inspector		Hossai	m Bakr (Di	llon	Consulting I	Ltd)				
Others in Party			<u>-</u>							
Access Equipment Used		Camer	a, Measurii	ng T	ape, Measuri	ng Whe	el, and	Hammer		
Weather		Cloud	y, Probabili	ty of	f rain 54%					
Temperature		7 (16 /	10) Celsiu	S						
Overall Structure Notes:										
Recommended Work on S	Structure	□Nor	ne		Minor Rehab.		□Maj	or Rehab.	Replace	
Timing of Recommended	Work	☑ 1 to	5 years	□ 6	to 10 years					
Overall Comments Several wide cracks at the headwalls. Large concrete spalling at the culvert soffit and end treatments exposed and corroded reinforcement. Slippery wearing surface over the culvert section and along bo approaches.										
Date of Next Inspection										
Element Data:										
Element Group:	Signs				Length:					
Element Name:	Signs				Width:					
Location:					Height:					
Material:					Count:		2			
Element Type: Environment:	Hazard Marker Sig	n			Total Quan		$\frac{2}{\Box}$			
Protection System:					Limited Ins	spection	Ц		Perform.	
	Units	<u> </u>	Exc.		Good	Fa	ir	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each ☑ / % □	/ all□	2							
Comments: - Existing Signs	s in Excellent Conditi	ion								
Recommended Work:	□Reh		□Rep					Needs:		
	□1-5	years	<u>□</u> 6-1	0 yea	ars	□Urge	ent	□1 year	☐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 Quar	ntity:	51.0 Sc	Į.m		
Environment:			Limited In	-				
Protection System:			•	Perform.				
G 111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square			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.							scour below the	
Recommended Work:	Rehab	✓ Replac	e	Maintenance Nee				
	■1-5 years			Urge	nt	□1 year	☐2 year	
	-							
	T		T		ı			
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 Quar	•	Sq.m			
Environment:	Limited Inspection							
Protection System:				1	1	Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m \square / each \square / \% \square / a$			14.15	2.6)	2.6		
Comments: Concrete spalls	at the culvert edges.							
Recommended Work:	Rehab	☑ Replac	e	Mainte	enance	Needs:		
	☑1-5 years	□6-10 ye	ears	□Urgent □1 ye			☐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:		0.0 111			
Element Type:	Headwall					0.9 Sq.m		
Environment:	Trough un		Limited In		П			
Protection System:				Бресноп			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square		0.3	0.3		0.3		
Comments: Wide vertical co			0.3	0.3		0.3		
Recommended Work:	k: Rehab Replace		e	Mainte		Needs:		
Tabolimonada († olk.	☑ 1-5 years	☐ 6-10 ye		Urge		1 year	2 year	
	□ 1-3 years	ப 0-10 yd	-ш 0	L OIEC	111	பர year	□ 2 ycai	

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 Quar	Total Quantity: 20.15 Sq.m				
Environment:			Limited In	spection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		13.15	3.0)	4.0		
Comments: In Fair to Poor		1						
Comments, in run to room	Condition. Concrete spans at	the curvert cages	with exposed the	ingiii corro	aca rem	roreement.		
Recommended Work:	Rehab	☑ Replace	ce	Maintenance Needs:				
	☑ 1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐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:		0.0 111			
Element Type:	Headwall		Total Quar	ntity:	m			
Environment:	Headwall			Total Quantity: 0.9 Sq.m Limited Inspection				
Protection System:			Limited in	ispection	Ш		Perform.	
Trotection bystem.	Units	Exc.	Good	Fai		Poor*	Deficiencies	
Condition Data:							Deficiences	
m²Ľ/m	$m^2 \square / m \square / each \square / \% \square / all \square$		0.3	0.3	3	0.3		
Comments: Wide verticle crack at the headwall corner.								
Recommended Work:	Rehab	✓ Replace	20	Mainte	enance	Needs:		
Recommended work.	☐ Kenab	□6-10 y					П2 тгаат	
	∠ 11-3 years	<u> </u>	ears	☐Urgent ☐1 year		☐1 year	☐2 year	
Element Group:	Decks		Length:		1.5 m			
Element Name:	Wearing Surface		Width:		6.7 m			
Location:	wearing Surface		Height:		0.7 111			
Material:	Cast-in-place concrete		Count:	- U				
Element Type:	Cast-III-place colletete		Total Quar	ntity:	10.0 Se	a m		
Environment:			Limited In			4.111		
Protection System:			Limited in	ispection	<u> </u>		Perform.	
Trotection bystem.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:		Exc.		Tal	.1	1001	Deficiences	
m ² /m			80.4					
Comments: Slippery Surface	e							
Recommended Work:	☐ Rehab	Don'lo	20	Moint	ananaa	Needs		
Recommended WOLK:		☑ Repla			tenance Needs:		П 2	
	☑ 1-5 years	□6-10 y	ears	Urge	111	☐1 year	2 year	

Element Group:	Approaches		Length:	Length:		6.0 m		
Element Name:	Wearing Surface		Width:	Width:				
Location:	North - South		Height:	Height:				
Material:			Count:	Count:				
Element Type:			Total Quar	ntity:	80.4 Sc	q.m		
Environment:			Limited In	spection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		80.4					
Comments: Slippery Surface								
Recommended Work:	Rehab	✓ Repla	ce	Mainte	enance			
	<u></u>	 ☐6-10 y		□Urge	nt	□1 year	☐2 year	
	1		T					
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East - West		Height:					
Material:			Count:		1			
Element Type:			Total Quar					
Environment:			Limited In	spection				
Protection System:				T	1		Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$ m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square $			1					
Comments: In Good Conditions								
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 у	ears	rs Urgent		☐1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:			Height:					
Material:			Count:					
Element Type:			Total Quar	ntitv:	4			
Environment:			Limited In					
Protection System:				p			Perform.	
, and the second	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \Pi/m!}$	□/ each ☑ / % □/ all □	2.101	4	1		1 001		
Comments: In Good Condit	· · · · · · · · · · · · · · · · · · ·		<u> </u>					
Recommended Work:	Rehab	Repla	ce	Mainte	enance	Needs:		
	1-5 years	□6-10 y		Urge		□1 year	☐2 year	
	<u></u>					<u></u>	<u></u>	



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 T	Calbot Road						
Structure Type	Non-Rigid Frame Open Foo	ting Culvert						
Latitude	42° 11' 34.836"		Longitude -82° 56' 16.836"					
Owner(s)	Town of Tecum	seh	Heritage Designation: Not Cons. Cons./not App. List/not Desig Desig./not List Desig. & List					
Span Length	2.0	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐					
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: ☐ Transit ☐ Truck ☐ School ☐ 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					
Historical Data:								
Year Built	1965		Year of Last Major Rehab.					
Last OSIM Inspection	1		Last Evaluation					
Last Enhanced OSIM I	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	y							
Rehab History:								

Field Inspection Inform	mation:									
Date of Inspection		December 23, 2015								
Inspector		Hossam Bakr (Dillon Consulting Ltd)								
Others in Party										
Access Equipment Used		Camer	a, Measurin	ng Tape,	Measur	ing Whe	el, and	Hammer		
Weather		Cloud	y, Probabili	ty of rair	54%					
Temperature		7 (16/1	10) Celsius							
Overall Structure Note	es:									
Recommended Work on S	tructure	□Nor	ne	□Mino	Rehab	•	□Maj	or Rehab.	Replace	
Timing of Recommended	Work	☑ 1 to	5 years	□6 to 1	0 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				igth:					
Element Name:	Signs				Width:					
Location:					ght:					
Material:					ınt:		2			
Element Type: Environment:	Hazard Marker Sig	ns				l Quantity: 2 ted Inspection				
Protection System:				LII	mea m	spection	<u> </u>		Perform.	
	Units	<u> </u>	Exc.	Go	od	Fa	ir	Poor*	Deficiencies	
Condition Data: $m^2 \square / m \square$	□/ each 🗹 / % 🔲	/ all□	2							
Comments: - Existing Sign in Excellent Condition										
Recommended Work:	□Reh	ab	□Rep		e Mainte			ntenance Needs:		
	□1-5	years	□6-10) years		□Urge	ent	□1 year	☐2 year	
						1				

Element Group:	Culverts	Culverts				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 Qua			68.0 Sc	q.m			
Environment:		Limited In							
Protection System:				Perform.					
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2 \square / 1}$	$n \square / each \square / \% \square / all \square$			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	Rehab	✓ Replace	ee	Mainte	enance	Needs:			
	□ 1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year		
		-				-			
Element Group:	Culverts		Length:		2.5				
Element Name:	Inlet Components		Width:		2.5 m				
Location:	•		Height:		0.3 m				
	East Side		<u> </u>		3.0 m				
Material:	Cast-in-place concrete		Count:	atituu	2				
Element Type: Environment:	wingwall	Wingwall			Total Quantity: 15.0 Sq.m Limited Inspection □				
Protection System:			Limited in	spection	Ш	Ī			
Protection System.	TT '4	Б		г.		D #	Perform.		
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
$ m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square $									
Comments: In Good Condition. Extensions added to the original structure.									
Recommended Work		□Replac				Needs:	П.		
	□1-5 years	□6-10 y	ears	Urgent		☐1 year	☐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:		0.0 111				
Element Type:	Headwall					1.2 Sq.m			
Environment:	Ticadwan		Limited In		1.2 Sq.III				
Protection System:			Limited in	spection			Perform.		
Trocection System.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data:	$\frac{\Box}{\Box}$ each \Box / % \Box / all \Box			1 41	1	1 001	Deficiencies		
	dition. Extension added to the		1.2						
Recommended Work	Rehab	Replac	-α	Mainta	nance	Needs:			
Recommended WOIK							П 2 тгоот		
	□1-5 years	□ 6-10 y	zai S	∟ ∪rge	111	☐1 year	2 year		

Element Group:	Culverts		Length:	Length:				
Element Name:	Outlet Components		Width:	Width:				
Location:	West Side		Height:	Height: 3				
Material:	Cast-in-place concrete		Count:	Count: 2				
Element Type:	Wingwall			Total Quantity: 15.0 Sq.m		ı.m		
Environment:			Limited In		П	1		
Protection System:			2	эрссион			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	\square / each \square / % \square / all \square	LAC.		+			Beneferences	
			12.0	1.5)	1.5		
Comments: In Good Condit	ion. minor spalls at the edges							
Recommended Work:	Rehab	□D omlos		Maint		Needs:		
Recommended Work.		Replac					По	
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	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							
Element Type:	Headwall	Total Quar	ntity:	1.2 Sq.	m			
Environment:		Limite						
Protection System:							Perform.	
Units Exc		Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □		1.0	0.2)			
Comments: In Good Condition								
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:		
	□1-5 years	□6-10 y		Urge		□1 year	☐2 year	
	шт з усыв		curs		110	шт усы	<u>□2 year</u>	
Element Group:	Decks		Length:		2.0 m			
Element Name:	Wearing Surface		Width:		7.2 m			
Location:	Wearing Surrece		Height:		7.2 m			
Material:	Asphalt		Count:					
Element Type:	rispitate		Total Quar	ntity:	14.4 Sc	ı m		
Environment:			Limited In	•	П	11		
Protection System:			Limited in	spection	<u> </u>		Perform.	
Trotection bystem.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:		Exc.	Good	1			Deficiences	
m ² /m				7.2	2	7.2		
Comments: Two (2) potholo	es over the culvert, and settler	ment along the stru	cture width					
D				34.		NT 1		
Recommended Work:	Rehab	Replac				Needs:		
	☐1-5 years	□6-10 y	ears	Urge		☐1 year	2 year	
				Asphalt 1	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 Quar	Total Quantity:		q.m	
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Date:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		43.2	43.	2		
Comments: Slippery surface along both approaches							
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:	
	□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year
El C	F 1 1		T				
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width: Height:				
Location:	East - West				_		
Material:		Count: Total Quar	1				
Element Type: Environment:	1				1		
	Limited Inspection Defense						
Protection System:		-	G 1	Г .		To als	Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	□/ each □/ % □/ all ☑		1				
Comments: Excessive plant growth blocking the water flow at both culvert ends							
Recommended Work:	Rehab	□Repla	ce	Mainte	enance		
	□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year
				Drain ma	intenanc	re	
Elamant Comm	E11		I am atla.				
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width: Height:				
Location:					4		
Material:	1		Count: Total Quar	ntitu	4		
Element Type: Environment:							
Protection System:	-		Limited In	spection	<u> </u>		D (
Flotection System.		Б	C 1	Г.		D #	Perform.
Condition Data:	Units	Exc.	Good	Fai		Poor*	Deficiencies
	□/ each ☑ / % □/ all □			4			
Comments: Excessively covered with plants and randomly distributed rip rap							
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:	
	□1-5 years	□6-10 y		Urge	nt	□1 year	☐2 year
				Drain ma		-	



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:							
Campatona Normalian	55 (F. 1.74)						
Structure Number	55 (Formerly 74)						
Hwy/Road Name	Concession Road 9						
Structure Location	0.88 km South From South	Γalbot Road					
Structure Type	Corrugated Steel Pipe						
Latitude	42° 12' 3.0234"		Longitude -82° 55' 55.4874"				
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List				
Span Length	0.80	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐				
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: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	2000		Year of Last Major Rehab.				
Last OSIM Inspection	1		Last Evaluation				
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)				
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Insp	ection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:							
Date of Inspection	D	ecember 23, 20)15					
Inspector	Н	ossam Bakr (D	illon Consultii	ng Ltd)				
Others in Party		`						
Access Equipment Used	C	amera, Measur	ing Tape. Mea	suring Whe	el. and	Hammer		
Weather		loudy, Probabi						
Temperature		(16/10) Celsius						
Tomperavare		(10/10) Ceisia						
Overall Structure Not	es:							
Recommended Work on S	Structure	None	☐Minor Rel	anh	Пмаі	or Rehab.	Replace	
Timing of Recommended		1 to 5 years			— IVIAJ	of Kenab.	Пкеріасс	
			□6 to 10 yes					
Overall Comments	su	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:	Langth:				
Element Name:	Signs		Width:					
Location:			Height:					
Material:			Count:		0			
Element Type:			Total Q	uantity:	0			
Environment:			Limited	Inspection				
Protection System:							Perform.	
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ a	Exc.	Good	Fa	ir	Poor*	Deficiencies	
Comments: - Upgrade and is			iect Markings to n	neet the Ontari	o Traffic	Manual		
Comments.			,					
Recommended Work:	□Rehab		place	Maint	enance	Needs:		
	□1-5 ye	ars □6-	10 years	ars Urgent 1 year 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 Quar	ntity:	28.4 Sc	ı.m		
Environment:			Limited In	spection	V			
Protection System:		Perform.						
G 1111 D 1	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $\frac{1}{m^2 \square / m}$	\square / each \square / % \square / all \square		18.4	5.6	j	4.4		
Ι,	Comments: Distorted edges at the East elevation inlet, settlement at the asphalt surface causing a distortion in the culvert barrel from below, and light							
	e bottom half of the culvert ba		man surface caus	ing a distor	uon m u	ie curvert barrer 110	in below, and right	
	as limited due to the small cul							
Recommended Work:	Rehab	Rehab Replace			enance	Needs:		
				Urge	nt	□1 year	☐2 year	
	<u> </u>						ш- учи	
Elamont Crount	D 1		Lanath		0.00			
Element Group:	Decks		Length:		0.80 m			
Element Name:	Wearing Surface		Width:		6.70 m			
Location:	T. 1611		Height:					
Material:	Tar and Chip		Count: 5.40 Sq.m					
Element Type:			•	5.40 Sc	Į.m			
Environment:	Limited Inspection							
Protection System:		_					Perform.	
Condition Data: Units		Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m \square / each \square / \% \square / all \square$			4.8	0	0.60			
Comments: - Flushing surface								
- A pothole is	noted over the culvert causing	a bending in the co	ulvert barrel fron	n below				
D 1 1 1 1 1 1	—			1 3 5 1		x 1		
Recommended Work:	Rehab	Replac						
	□1-5 years	□6-10 y	ears	Urgent		□1 year	☐2 year	
				Asphalt r	epairs			
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 Quar	ntity:	80.40 S	Sq.m		
Environment:	Moderate		Limited In	spection				
Protection System:							Perform.	
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² /m	□ / each □ / % □ / all □			80.4	0.			
Comments: - Flushing surf		I			-	I		
Comments: - Flushing surf	ace on both approaches							
D 1 1337 1				37.		N 1		
Recommended Work:	Rehab	Replac				Needs:	— -	
	☐1-5 years	□ 6-10 y	ears	Urge	nt	☐1 year	2 year	

Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways	Streams and Waterways					
Location:	East - West		Height:				
Material:			Count:		2		
Element Type:			Total Quar	ntity:	2		
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
m ² /m	□/ each □ / % □ / all ☑		1				
Comments: In Good Condit	rion						
Recommended Work:	Rehab	Replac		Mainte			
	□1-5 years	□6-10 y	ears	Urge	nt	□1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		5		
Element Type:		Total Quar	ntity:	5			
Environment:	Limited Inspection						
Protection System:							Perform.
Condition Date	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each ☑ / % □ / all □		5				
Comments: In Good Condit	tion	<u> </u>		1		1	
Comments, in door condi-	ion						
Recommended Work:	Rehab	□Replac	e			Needs:	
	□1-5 years	□6-10 y	ears	Urgent		□1 year	☐2 year
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Quar	_	<u> </u>		
Environment:			Limited In	spection			
Protection System:				1			Perform.
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
$m^2 \square / m$							
Comments:							
				1		1	
Recommended Work:	☐ Rehab	Replac		Mainte			
Recommended Work:	☐ Rehab ☐ 1-5 years	□Replac □6-10 y		Mainte		Needs:	2 year
Recommended Work:							☐ 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:			
Charles N. a. L.	5.5 (F. 1. 52)		
Structure Number	56 (Formerly 73)		
Hwy/Road Name	Concession Road 9		
Structure Location	1.75 km South from South 7	Γalbot Road	
Structure Type	Corrugated Steel Pipe		
Latitude	42° 11' 34.2594"		Longitude -82° 55′ 57.936"
Owner(s)	Town of Tecum	iseh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	1.30	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1990		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit N/A (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	ection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	rmation:								
Date of Inspection		Decen	nber 23, 201	15					
Inspector		Hossa	m Bakr (Dil	llon (Consulting I	Ltd)			
Others in Party			`						
Access Equipment Used		Camer	ra. Measurin	ıg Ta	pe, Measuri	ng Whee	el. and	Hammer	
Weather		Cloudy, Probability of rain 54%							
Temperature			10) Celsius	ty 01	14111 5 170				
Temperature		7 (10/	10) Ceisius						
Overall Structure Not	tes:								
Recommended Work on	Ctenatura	□Noi		Пм	linor Rehab.		Пма	or Rehab.	□ D and a se
						•	ШМај	or Kenab.	Replace
Timing of Recommended	l Work	∐l to	5 years	∐ 6 ¹	to 10 years				
Overall Comments			rays with exces e safety; The en	ssive p	lant growth blo the culvert are	ocking the very close	flow at t	was identified with he East side of the dge of pavement s safety in this case.	road. Regarding the
Date of Next Inspection									
TI (D)									
Element Data:									
Element Group:	Signs				Length:				
Element Name:	Signs				Width:				
Location:					Height:				
Material:					Count:		0		
Element Type:					Total Quan		0		
Environment:					Limited Ins	spection			T
Protection System:				1	~ .				Perform.
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐	/ all□	Exc.	+	Good	Fai	ir	Poor*	Deficiencies
Comments: - Upgrade and i			signs and Objec	ct Mar	rkings to meet	the Ontario	o Traffic	Manual	
Recommended Work:	□Reh	nob.	□Rep	Jaca		Moint	ananco	Needs:	
Recommended WOIK:	□ Rei		□Kep □6-10						☐2 year
		, cars		y y ca	- 5	Add Obje			<u></u>

Element Group:	Culverts		Length:		11.30 r	n		
Element Name:	Barrels		Width:		1.30 m	(Dia.)		
Location:			Height:					
Material:	Corrugated Steel		Count:					
Element Type:	Multi-Plate CSP		Total Quar	Total Quantity: 46.2 Sq.m		q.m		
Environment:			Limited In	-		•		
Protection System:			- 11		_		Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² / m	\square / each \square / % \square / all \square		30.0	16.2				
<u> </u>			30.0	10	2			
Comments: Light corrosion	at the bottom half of the culv	ert barrel						
Recommended Work:	Rehab	Replac	Α	Mainte	nance	Needs:		
Recommended work.	☐1-5 years	☐6-10 ye		Urge		1 year	☐2 year	
	□1-3 years	⊔0-10 у	zais	Lorge	11t	□1 yeai	⊔2 yeai	
	T		T					
Element Group:	Culverts		Length:		6.0 m			
Element Name:	Inlet Components		Width: Height:		0.60 m	Į.		
Location:	East Side	East Side			2.80 m	l		
Material:	Masonry	Count:						
Element Type:	Wire Mesh MSE Wall	Total Quar	ntity:	16.80 \$	Sq.m			
Environment:	Limited Inspection							
Protection System:	<u> </u>						Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	□/ each □ / % □ / all □		16.8					
Comments: In Good Condition								
Comments, in coor conditi								
Recommended Work:	Rehab	Replac	e Maintenan			Needs:		
	☐1-5 years	□6-10 ye	ears	□Urgent		□1 year	☐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:		2.00 111	ı		
Element Type:	Wire Mesh MSE Wall		Total Quar	ntity:	22.70 \$	Pa m		
Environment:	WHE WESH WISE Wall		Limited In	•		5q.111		
Protection System:			Limited in	spection	<u> </u>		Df	
Frotection System.	Linita	Eva	Cood	Foi		Poor*	Perform. Deficiencies	
Condition Data:	Units	Exc.	Good	Fai	r	Poor	Deficiencies	
$ m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square $								
Comments: In Good Condit	ion							
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:		
	1-5 years	☐ 6-10 ye		Urge		☐1 year	2 year	
					-	<u> </u>	<u> </u>	
				<u> </u>				

Element Group:	Decks		Length:		1.30 m		
Element Name:	Wearing Surface		Width:				
Location:			Height:				
Material:	Tar and Chip		Count:	Count:			
Element Type:			Total Qua	ntity:	8.70 Sq	.m	
Environment:		Limited In	spection				
Protection System:				•			Perform.
G 111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □ / % □ / all □			8.7	0		
Comments: - Flushing Surfa				-			
Comments: - Plushing Surfa	ace						
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:	
	1-5 years	 □6-10 y		□Urge	nt	☐1 year	☐2 year
	-	 					
Element Group:	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface		Width:		6.70 m		
Location:	North - South		Height:		0.70 III		
Material:	Tar and Chip		Count:		2		
Element Type:	Tur und emp	rai and Chip			Total Quantity: 80.40 Sq.m		
Environment:		Lim				4	
Protection System:			Elimica II	вресной			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	\square / each \square / % \square / all \square		Good	80.4	-	1 001	Beneficiences
<u> </u>				80.4	FU		
Comments: - Flushing Surfa	ace						
Recommended Work:	Rehab	Replac	re	Mainte	enance	Needs:	
	□1-5 years	□ 6-10 у				□1 year	☐2 year
	шт э усаго					 1 year	<u> Ш</u> 2 усы
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:		3		
Element Type:			Total Qua	ntity:	3		
Environment:			Limited In		П		
Protection System:				<u> </u>	_		Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	□/ each □/ % □/ all ☑			1	-	1 001	
<u> </u>			1	1	<u> </u>		
Comments: - Excessive plan	nt growth is blocking the stre	eam on the East side	e of Concession	Road 9, wit	h recomn	nendation to be sha	ved
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:	
1.000mmenaea work.	1-5 years	☐ Kepiac		Urge		1 year	2 year
	□1-5 years	⊔ 0-10 у	cars	Drain ma			☐ 2 year
				Drain ma	шиспапс	-	
•				1			

Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		8		
Element Type:			Total Qua	Total Quantity: 8			
Environment:			Limited In				
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \prod / m}$	\square / each \square / % \square / all \square	2.101	8		-	1 001	
Comments: In Good Condit	tion						
Recommended Work:	Rehab	Repla		Mointe	200000	Needs:	
Recommended work:						Па	
	☐1-5 years	□6-10 y	/ears	Urge	nt	□1 year	2 year
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:		Total					
Environment:		Limited Inspection					
Protection System:			•	•			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \prod / m}$	□/ each □/ % □/ all □						
<u> </u>							
Comments:							
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:	
Trecommended Work.	1-5 years	□6-10 y		Urgent		1 year	☐2 year
	□1-3 years	ر 0-10	Cars		11 t	шт усаг	□2 ycai
			<u> </u>				
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Qua				
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² m/m	□/ each□/ %□/ all□						
Comments:		•		•			
Comments.							
Daggaran J. 1 W. 1				Material		Nanda.	
Recommended Work:	Rehab	Repla				Needs:	
	□1-5 years	□6-10 y	/ears	Urge	nt	□1 year	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)

57 (Formarly 41)		
	entry Dood 9	
	inty Road 8	
42° 10' 54.3354"		Longitude -82° 56' 0.528"
		Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □Desig./not List □Desig. & List
2.60	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
25.90	(m)	Posted Speed No. of Lanes 2
25.90	(m)	AADT % Trucks
67.340	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
12.20	(m)	Detour Length Around Bridge 8.3 (km)
1.10	(m)	Direction of Structure
0°	(Degrees)	No. of Spans
1995		Year of Last Major Rehab.
1		Last Evaluation
Inspection		Current Load Limit (tonnes)
		Load Limit By-Law #
ection		By-Law Expiry Date
у		
	Corrugated Steel Pipe	Concession Road 9

Field Inspection Infor	mation:									
Date of Inspection	Ι	December 23, 2015								
Inspector	I	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			0) Celsius							
	L									
Overall Structure Not	togs									
Overali Structure Not	ies:									
Recommended Work on S	Structure [□Non	ie l	□Min	nor Rehab.		□Maj	or Rehab.	Replace	
Timing of Recommended	l Work	□1 to	5 years	□6 to	10 years					
_				dition 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				ength:					
Element Name: Location:	Signs				Width:					
Material:					Height: Count:					
Element Type:	Stop Sign				Count: 1 Total Quantity: 1					
Environment:	Stop Sign				Limited Inspection					
Protection System:				ı		1	_		Perform.	
Condition Data:	Units ☐/ each ☑/ % ☐/	011 🗆	Exc.	(Good	Fai	ir	Poor*	Deficiencies	
Comments: - Existing Sign										
	installation of Object M		igns and Objec	t Marki	ings to meet t	the Ontario	Traffic	Manual		
Recommended Work:	Reha		□Repl					Needs:		
	□1-5 ye	ears	□6-10	years		□Urge	nt	□1 year	☐2 year	

Element Group:		Culverts	Length:	25.90 m					
Element Name:		Barrels			2.60 m				
Location:									
Material:		Corrugated Steel	Count:						
Element Type:		Multi-Plate CSP	Total Qua	tal Quantity: 550.0 Sq.m					
Environment:			Limited In	nspection					
Protection System	n:							Perform.	
Condition Date		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:	m²☑/m l	\square / each \square / % \square / all \square 550							
Comments: In Ex						ı.			
					_				
Recommended	Work:	Rehab	Replac	e	Mainte	enance	Needs:		
		□1-5 years	□6-10 у	ears	□Urge	nt	□1 year	☐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 Qua	antity: 22.70 Sq.m					
Environment:				nited Inspection					
Protection System	n:			1				Perform.	
		Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:		\square / each \square / % \square / all \square	22.70		1 41		1 001		
			22.70						
Comments: In Ex	cellent Co	ndition							
Recommended	Work:	Rehab	Replac	ee	Mainte	enance	Needs:		
	,, 01111	\Box 1-5 years	□6-10 y		Urgent		□1 year	☐2 year	
		шт э усын		our o			<u> </u>	<u></u>	
Element Group:		Culverts		Length:		0.40			
				Width:		8.40 m			
Element Name: Location:		Outlet Components		Height:		0.60 m			
Material:		West Side		Count:		2.70 m			
Element Type:		Precast concrete				22.70.6	•		
		Concrete Blocks		Total Qua		22.70 Sq.m			
Environment:				Limited I	nspection	Ц		D C	
Protection System	111.	TT '.	Б		Т.	1	D *	Perform.	
Condition Data:	200	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
		\square / each \square / % \square / all \square	22.70						
Comments: In Ex	cellent Co	ndition							
Dagammandad			e Maintenance Needs:						
Recommended Work: Rehab Replace		Rehab	Replac	e	Mainte	enance	Needs:		
Recommended	Work:							2 vear	
Recommended	Work:	Rehab	□Replac □6-10 y		Mainte		Needs: 1 year	2 year	
Recommended	Work:							2 year	

Element Group:	Decks	Length:		2.60 m					
Element Name:	Wearing Surface		Width:	Width:		12.20 m			
Location:		Height:							
Material:	Asphalt	Count:	Count:						
Element Type:		Total Qua	Total Quantity: 31.70 Sq.m						
Environment:			Limited In	spection					
Protection System:			-	•			Perform.		
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
$m^2 \square / m$	□/ each □ / % □ / all □		31.72						
Comments: In Good Condit	ion								
Recommended Work:	Rehab	Replac	ce	Mainte	nance	Needs:			
	□1-5 years	□6-10 y		Urge		□1 year	☐2 year		
	□1 5 years	<u> По то у</u>	cars	Потес		<u> Птусат</u>	<u>□</u> 2 усш		
Element Group:	Approaches		Length:		6.0 m				
Element Name:	Wearing Surface		Width:		12.20 m	1			
Location:	North - South		Height:						
Material:	Asphalt	Count:							
Element Type:		Total Qua	Total Quantity: 146.40 Sq.m						
Environment:		Limited In	spection						
Protection System:				•			Perform.		
G tid D	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
Condition Data: $m^2 \square / m$	\square / each \square / % \square / all \square		36.6	73.2	2	36.6			
Comments: - South Approac	ch: Map Cracking ch: Severe Flushing			1	<u>'</u>				
Recommended Work:	Rehab	Replac	ce	Mainte	nance	Needs:			
	□1-5 years	□6-10 y		Urge	nt	☐1 year	☐2 year		
				Asphalt re					
					1				
T1 G	T								
Element Group:	Embankments & Streams		Length:						
Element Name:	Streams and Waterways		Width:						
Location:	East - West		Height:						
Material:			Count:		1				
Element Type:		Total Qua		1					
Environment:			Limited In	nspection					
Protection System:		T		-			Perform.		
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies		
$m^2 \square / m$	□/ each □ / % □/ all ☑		1						
Comments: In Good Condit	ion								
Recommended Work:	Rehab	Replac	ce	Mainte	nance	Needs:			
	1-5 years	☐ 6-10 y		Urge	nt	☐ 1 year	2 year		
	<u> </u>			8-					

Element Group:		Embankments & Streams		Length:	Length:					
Element Name:		Embankments		Width:	Vidth:					
Location:			Height:							
Material:			Count:		4					
Element Type:			Total Qua	ntity:	4					
Environment:			Limited Ir	spection						
Protection System:								Perform.		
G III D		Units	Exc.	Good	Fai	r	Poor*	Deficiencies		
Condition Data: ${m^2}$	□/m []/ each [☑ / % [☐ / all [☐		4						
Comments: In Good		L								
Comments, in coor	Conun									
Recommended W	ork:	Rehab	□Repla	ce	Mainte	enance	Needs:			
		□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year		
		•	<u> </u>							
Element Group:		Embankments & Streams		Length:						
Element Name:		Slope Protection		Width:						
Location:		Stope I fotection		Height:						
Material:		Masonry	Count:		4					
Element Type:		Hand laid Riprap	Total Qua	ntity:	4					
Environment:		Tranu iaiu Kiprap	Limited Ir		П					
Protection System:				Limited ii	ispection			Perform.		
Trotection System.		Units	Exc.	Good	Fai		Poor*	Deficiencies		
Condition Data:		☐/ each ☐/ % ☐/ all ☐	Exc.		Tal	1	1001	Deficiences		
				4						
Comments: In Good	Condit	on								
Recommended W	ork:	Rehab	Repla	re	Mainte	nance	Needs:			
Recommended W	OIK.		☐6-10 y				□1 year	☐2 year		
		□1-5 years	шо-10 у	rears	□Urge	11t	шт уеаг	□ 2 year		
				1						
Element Group:				Length:						
Element Name:					Width:					
Location:				Height:						
Material:				Count:						
Element Type:				Total Qua	-					
			Inspection							
Environment:				Limited If	ispection					
Environment: Protection System:				Limited Ir	ispection			Perform.		
Protection System:		Units	Exc.	Good	Fai		Poor*	Perform. Deficiencies		
Protection System:	□/m[Units ☐/ each ☐/ % ☐/ all ☐	Exc.	•	1		Poor*			
Protection System: Condition Data: m ²	□/m [Exc.	•	1		Poor*			
Protection System:	□/m[Exc.	•	1		Poor*			
Protection System: Condition Data: ${m^2}$ Comments:]/ each		Good	Fai	r				
Protection System: Condition Data: m ²]/ each □ / % □ / all □ □ Rehab	□Repla	Good	Fai Mainte	r	Needs:	Deficiencies		
Protection System: Condition Data: ${m^2}$ Comments:]/ each		Good	Fai	r				
Protection System: Condition Data: m ² Comments:]/ each □ / % □ / all □ □ Rehab	□Repla	Good	Fai Mainte	r	Needs:	Deficiencies		



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 L	Orain/J.C. Smith Drain)						
Structure Type	Corrugated Steel Pipe								
Latitude	42° 12' 08" N		Longitude 82° 54' 55.60" W						
Owner(s)	Town of Tecum	.seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List						
Span Length	0.4	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐						
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: ☐ Transit ☐ Truck ☐ School ☐ 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						
Historical Data:									
Year Built	Unknown		Year of Last Major Rehab.						
Last OSIM Inspection	n		Last Evaluation						
Last Enhanced OSIM			Current Load Limit 5.0 (tonnes)						
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #						
Last Underwater Insp	ection		By-Law Expiry Date						
Last Condition Surve	у								
Rehab History:									

Field Inspection Infor	mation:									
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								
Temperature		24 00	15145							
Overall Structure Not	tes:									
				_						
Recommended Work on S		□No		ΠN	Minor Rehab.		∐Maj	or Rehab.	Replace	
Timing of Recommended	Work	☑ 1 to	5 years	□ 6	to 10 years					
Overall Comments The inspection of the culvert was limited of heavy plant growth.				rt was limited d	ue to the h	igh water	r level. The east e	nd was covered under the		
					ed by the Town	n): placed with new 750mm smooth wall concrete pipe.				
Date of Next Inspection										
	<u> </u>									
Element Data:										
Element Group:	Signs				Length:					
Element Name:	Signs				Width:					
Location:					Height:					
Material:					Count:		0			
Element Type:	N/A				Total Quantity: 0					
Environment:					Limited Ins	Inspection				
Protection System:									Perform.	
Condition Data:	Units	11 🗖	Exc.		Good	Fai	r	Poor*	Deficiencies	
m² ⊔/m Comments: - Upgrade and is	□/ each ☑/ % □/		sions and Ohio	ot Ma	ulrimas to most t	tha Ontania	Traffia	Manual		
Comments: - Opgrade and i	installation of Object N	viarker	signs and Objec	ct Ma	irkings to meet	ine Ontario) Trainc	Manuai		
Recommended Work:	□Reha	ıb	□Rep					Needs:		
	□1-5 y	ears	□6-10) yea	ars	□Urge	nt	□1 year	☐2 year	

Element Group:	Culverts		Length:		13.5 m			
Element Name:	Barrels Widt		Width:		0.4 m (Dia.)			
Location:			Height:					
Material:	Clay Pipe (East) - Big O (W	est)	Count:					
Element Type:			Total Quan	itity:	8.0 Sq.1	n		
Environment:			Limited Ins	spection	V			
Protection System:							Perform.	
C Potes	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square							
Comments: Limited inspect		r at east end, and u	n-able to find at t	the west en	d under t	he heavy vegetation	on.	
Recommended Work:	Rehab	Replace	e	Mainte	enance	Needs:		
	☐1-5 years	 □6-10 ye		Urge	nt	□1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East - West		Height:					
Material:	East - west	Count:			2			
Element Type:			Total Quan					
Environment:		_	Limited Inspection					
Protection System:			Lillited ins	spection			Danfann	
Troccuon bystem.	Units	Exc.	Good	Fai		Poor*	Perform. Deficiencies	
Condition Data:	☐/ each ☐/ % ☐/ all ☑	Exc.	1	Fan	Г	0	Deficiencies	
Comments: Culvert is conne along the easter	ecting Mcpherson Drain (East n drain with need to be cleare	ed as part of the rou	itine maintenance	ern drain is e.		condition. Heavy v	regetation observed	
Recommended Work:	Rehab	Replace		Mainte				
	□1-5 years	□6-10 ye	ears	Urge	☐Urgent ☐1 year ☐			
				Drain Mai	intenance	2		
Element Group:								
	Embankments & Streams		Length:					
Element Name:	Embankments & Streams Embankments		Length: Width:					
-								
Element Name:			Width:		6			
Element Name: Location:			Width: Height:	ıtity:	6			
Element Name: Location: Material:			Width: Height: Count: Total Quan					
Element Name: Location: Material: Element Type:			Width: Height: Count:		6		Perform.	
Element Name: Location: Material: Element Type: Environment: Protection System:		Exc.	Width: Height: Count: Total Quan Limited Ins		6	Poor*	Perform. Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System:	Embankments Units	Exc.	Width: Height: Count: Total Quan Limited Ins	spection Fai	6			
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment	Embankments Units depleted by the second of the second	0	Width: Height: Count: Total Quan Limited Ins	spection Fai	6	0	Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment	Units ☐/ each ☐/ % ☐/ all ☐ nts appear to be in good cond	0	Width: Height: Count: Total Quan Limited Ins Good 6 vered with heavy	spection Fai	on the ea	0 ast side of the road.	Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment cleaned as part of the cl	Units	0 lition. They are cov	Width: Height: Count: Total Quan Limited Ins Good 6 vered with heavy	Fai 0 vegetation	r on the ear	0 ast side of the road.	Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment cleaned as part of the cl	Units	0 lition. They are cov	Width: Height: Count: Total Quan Limited Ins Good 6 vered with heavy	Fai 0 vegetation	r on the earnance	0 ast side of the road. Needs: 1 year	Deficiencies , which can be removed/	

Element Group:	Decks		Length:	ngth:				
Element Name:	Wearing Surface		Width:	-				
Location:			Height:					
Material:	Asphalt		Count:					
Element Type:			Total Quar	ntity:	2.6 Sq.m			
Environment:			Limited In					
Protection System:							Perform.	
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies	
Condition Data: ${m^2 \mathbb{F}/m}$	\square / each \square / % \square / all \square	0.0	2.2		0.0 0.4			
			4.4	0.0		0.7	<u> </u>	
Comments: The road edges	are loose and in poor condition	on.						
Recommended Work:	Recommended Work: Rehab Replace			Mainte	nance Ne	eede.		
Recommended work.	✓ 1-5 years	□6-10 ye		Urger		1 year	☐2 year	
	□ 11-3 years	∐0-10 ус	ars	LOISCI	ΠL	Ш1 усаг	⊔∠ yeai	
	Т							
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 Quar	•	78.0 Sq.m				
Environment:		Limited In	spection					
Protection System:							Perform.	
Condition Datas	Units	Exc.	Good	Fair	r	Poor*	Deficiencies	
Condition Data: m ² /m	\square / each \square / % \square / all \square	0.0	66.0	0.0		12.0		
Comments: The road edges	are loose and in poor condition	on		-1	<u> </u>			
Comments, the road eages	are roose and in poor condition	л.						
Recommended Work:	Rehab	Replac	e	Mainte	nance Ne	eeds:		
	□ 1-5 years	□6-10 ye		□Urgent □1 yea		□1 year	☐2 year	
Element Group:			Length:					
Element Name:			Width:					
Location:			Height:					
Material:		-	Count:					
Element Type:			Total Quar	ntity:				
Environment:		-	`	nspection				
Protection System:	1			or -			Perform.	
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$		EAC.		1 1		1 001	201010	
* '							L	
Comments:								
Dagaman dad Warls								
	Dahah	□ Damlaa		Mainta	nonce Me	vode.		
Recommended Work:	Rehab	Replac			nance Ne		По	
Recommended work:	☐ Rehab ☐1-5 years	□ Replace □ 6-10 ye		Mainte Urger		eeds:	2 year	
Recommended Work:							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)

50								
	Rd. 8 (MCFHeison 1	Drain/J.C. Smith Drain)						
		Y 1						
		Longitude 82° 54' 56.59" W						
Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List						
0.2	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐						
6.5	(m)	Posted Speed 80 No. of Lanes 2						
13.5	(m)	AADT % Trucks						
1.300	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle						
6.5	(m)	Detour Length Around Bridge 8.4 (km)						
1.2	(m)	Direction of Structure N						
0°	(Degrees)	No. of Spans						
Unknown	<u> </u>	Year of Last Major Rehab.						
		Last Evaluation						
		Current Load Limit 5.0 (tonnes)						
ipment)		Load Limit By-Law #						
ection		By-Law Expiry Date						
у								
	Corrugated Steel Pipe 42° 11' 55" N Town of Tecum 0.2 6.5 13.5 1.300 6.5 1.2 0° Unknown inspection inspection inpment conspection	10th Concession Road 1.95 km north from County Rd. 8 (McPherson Exercises 1.95 km north from County Rd. 8 (McPherso						

Field Inspection Infor	mation:							
Date of Inspection	Sept	ember 8, 2016						
Inspector			on Consulting I	 Ltd)				
Others in Party		•	on Consulting l	•				
Access Equipment Used		Camera, Measuring Tape, Measuring Wheel, and Hammer						
Weather	Clou		5 Tape, Weasur	ing wheel, an	d Hammer			
Temperature		Celsius						
Temperature	24 0	Leisius						
Overall Structure Not	tes:							
Recommended Work on S	Stematura	one [☐Minor Rehab	Пм	ajor Rehab.	□ Doubon		
			_	. ⊔M	ajor Kenab.	Replace		
Timing of Recommended			6 to 10 years					
Overall Comments		-			ring the field inspect e exists at the west e	tion, it was noted by the and.		
			ovided by the Town					
			'Not Needed" with		l abandon.			
Date of Next Inspection								
Element Data:								
Element Data.								
Element Group:	Signs		Length:					
Element Name:	Signs		Width:					
Location:			Height:					
Material:			Count:	0				
Element Type:	N/A		Total Quar					
Environment: Protection System:			Limited In	spection		D. C		
Protection System.	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies		
Condition Data: ${m^2 \square / m}$			Good	rair	Poor	Deficiencies		
Comments: - Upgrade and i		L.	Markings to meet	the Ontario Traff	ic Manual			
Recommended Work:	Rehab	□Repla		Maintenand				
	□1-5 years	□6-10	years	□Urgent	□1 year	☐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 Quar	ntity:	8.5 Sq.:	m		
Environment:			Limited In	spection	$ \mathbf{V} $			
Protection System:							Perform.	
Canditian Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: $m^2 \square / m$	\square / each \square / % \square / all \square	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:	Rehab	□Replac	ce	Mainte	enance	Needs:		
	□1-5 years	□1-5 years □6-10 years		□Urge	nt	☐1 year	☐2 year	
				Brick up	ends and	abandon as per dra	ninage report	
F1 C			T		1			
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East - West		Height:					
Material:	Count:			4.4	2			
Element Type:	Total Qua			·				
Environment:			Limited In	spection				
Protection System:	TT 1:			Б.		TD at	Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m$	□/ each□/ % □/ all 🗹	0	0	2		0		
	growth was observed on the			ed as part of	the rout	ine maintenance.	west side is covered.	
Recommended Work:	✓ Rehab	□Replac	ce	Mainte	enance			
	□ 1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year	
				Drain Ma	intenance	e		
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments Embankments		Width:					
Location:	Linoankinents		Height:					
Material:			Count:		3			
Element Type:			Total Quar	ntity:	3			
Environment:			Limited In:	•				
Protection System:			Zimica in	эресноп			Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$		0	3	0	•	0		
Comments: The embankmen maintenance.					which ca		ned as part of the routine	
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:		
	1-5 years	 ☐ 6-10 y		Urge	nt	☐1 year	2 year	
	-			Drain Ma				

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 Quar	ntity:	1.3 Sq.m	n	
Environment:			Limited In	spection			
Protection System:							Perform.
C 222 B	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square	0.0	1.1	0.0)	0.2	
				*	1		
Comments: The road edges	are loose and in poor condition	on.					
Recommended Work:	Rehab	Replac	ים	T Mainte	enance N	Needs.	
Recommended 11 ork.	☐1-5 years	☐6-10 ye		Urgei		1 year	☐2 year
	□1-3 years	Ш0-10 у	ears	LOIEC	11t	∐1 ycai	□ ∠ ycai
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 Quar	Total Quantity: 78.0 Sq.m				
Environment:	Limited 1			spection			
Protection System:							Perform.
~ *** 5	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □	0.0	66.0	0.0	,	12.0	
Comments: The road edges							
Comments: The road edges	are loose and in poor conduct	on.					
Recommended Work:	Rehab	Replac	ce	Mainte	enance N	Needs:	
	1-5 years	□6-10 ye				□1 year	2 year
	што јеше		cars		110	ш1 , си.	
Element Group:			Length:				
Element Name:	†		Width:				
Location:	 		Height:				
Material:	 		Count:				
Element Type:	+		Total Quar	ntits			
Environment:	+		Limited In	•			
Protection System:	+		Lillinea m	spection	Ш	<u> </u>	B 6
Protection System.	TT *,		- C - 1	T		- P v	Perform.
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
$m^2 \square / m$							l
Comments:							
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance N	Needs:	
	☐1-5 years	☐ 6-10 ye	ears	☐ Urgeı	nt	☐1 year	☐ 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	60								
Hwy/Road Name	10th Concession Road								
Structure Location	1.8 km north from County R	td. 8 (McPherson D	Orain/J.C. Smith Drain)						
Structure Type	Corrugated Steel Pipe								
Latitude	42° 11' 50.42" N		Longitude 82° 54' 57.02" W						
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List						
Span Length	0.45	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐						
Total Deck Length	6.5	(m)	Posted Speed 80 No. of Lanes 2						
Overall Str. Width	13.5	(m)	AADT % Trucks						
Total Deck Area	2.925	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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						
Historical Data:									
Year Built	Unknown		Year of Last Major Rehab.						
Last OSIM Inspection			Last Evaluation						
Last Enhanced OSIM 1			Current Load Limit 5.0 (tonnes)						
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #						
Last Underwater Insp	pection		By-Law Expiry Date						
Last Condition Surve	у								
Rehab History:									

Field Inspection Infor	rmation:							
Date of Inspection	S	eptember 8, 20)16					
Inspector	Н	lossam Bakr (E	Dillon (Consulting I	Ltd)			
Others in Party	D	an Baughan (E	Dillon (Consulting I	Ltd)			
Access Equipment Used	C	amera, Measur	ring Ta	ape, Measuri	ing Whee	el, and	Hammer	
Weather	C	Cloudy						
Temperature		4 Celsius						
Overall Structure Not	han.							
Overali Structure Noi	ies:							
Recommended Work on S	Structure	None	\square_{N}	Iinor Rehab		□мај	or Rehab.	Replace
Timing of Recommended	l Work	21 to 5 years	□ 6	to 10 years				
Overall Comments	Т	he culvert is found	l in fair t	to poor condition	on. A full le	ength spl	lit was observed at	the spring line
In Drainage Report (provided by the Town):								
	T	he culvert is recom	nmendec	d to be fully rep	laced with	new 600	Omm smooth wall o	concrete pipe.
Date of Next Inspection								
Element Data:								
Element Data.								
Element Group:	Signs			Length:				
Element Name:	Signs			Width:				
Location:				Height:				
Material:				Count:		0		
Element Type:	N/A			Total Quan		0		
Environment:				Limited Ins	spection			
Protection System:		·			•	1		Perform.
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ a	Exc.		Good	Fai	r	Poor*	Deficiencies
Comments: - Upgrade and i	installation of Object M	arker signs and Ob	oject Ma	rkings to meet	the Ontario	Traffic	Manual	
Recommended Work:	Rehab	n □R _ℓ	eplace		Mainte	enance	Needs:	
2200mininada (f. ofk.	□1-5 ye		10 yea		Urge		1 year	☐2 year
			······································					
					l			

Element Group:	Culverts		Length:		13.5 m		
Element Name:	Barrels		Width:		0.45 m	(Dia.)	
Location:			Height:				
Material:	Corrugated Steel		Count:				
Element Type:			Total Quan	ntity:	19.0 Sq	.m	
Environment:			Limited Ins	spection			
Protection System:							Perform.
C - 1'd' - Data	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $m^2 \square / m$	□/ each□/ %□/ all□	0.0	0.0	4.73	5	14.25	
Comments: Existing pipe is in fair to poor condition with damaged and corroded regions							
Recommended Work:	Rehab	☑ Replace	2	Maintenance Needs:		Needs:	
	□ 1-5 years	□6-10 ye	ars	Urge	nt	□1 year	☐2 year

Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:	Last West		Count:		2		
Element Type:	1		Total Quan				
Environment:		Limited Ins		П			
Protection System:			Lilling L.	эрссион			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all ☑	0	2	0	1	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.							
repaired as part	of the routine maintenance.			T			
	of the routine maintenance.	Replace	2	Mainte			
repaired as part	of the routine maintenance.		2	Mainte		Needs:	□2 year
repaired as part	of the routine maintenance.	Replace	2		nt	□1 year	
repaired as part	of the routine maintenance.	Replace	2	□Urge	nt	□1 year	
repaired as part Recommended Work:	of the routine maintenance. ☐ Rehab ☐ 1-5 years	Replace	e ars	□Urge	nt	□1 year	
repaired as part Recommended Work: Element Group:	of the routine maintenance. ☐ Rehab ☐ 1-5 years Embankments & Streams	Replace	e ars Length:	□Urge	nt	□1 year	
repaired as part Recommended Work: Element Group: Element Name:	of the routine maintenance. ☐ Rehab ☐ 1-5 years Embankments & Streams	Replace	ars Length: Width:	□Urge	nt	□1 year	
Recommended Work: Element Group: Element Name: Location:	of the routine maintenance. ☐ Rehab ☐ 1-5 years Embankments & Streams	Replace	Length: Width: Height:	□Urge Drain Ma	nt	□1 year	
Recommended Work: Element Group: Element Name: Location: Material:	of the routine maintenance. ☐ Rehab ☐ 1-5 years Embankments & Streams	Replace	Length: Width: Height: Count:	□Urge Drain Ma	nt intenance	□1 year	
repaired as part Recommended Work: Element Group: Element Name: Location: Material: Element Type:	of the routine maintenance. ☐ Rehab ☐ 1-5 years Embankments & Streams	Replace	Length: Width: Height: Count: Total Quar	□Urge Drain Ma	nt intenance	□1 year	
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	of the routine maintenance. ☐ Rehab ☐ 1-5 years Embankments & Streams	Replace	Length: Width: Height: Count: Total Quar	□Urge Drain Ma	nt intenance	□1 year	□2 year
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	Embankments & Streams Embankments Units	□Replace	Length: Width: Height: Count: Total Quar Limited Ins	Drain Ma	nt intenance	□1 year	☐2 year Perform.
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	Embankments & Streams Embankments Units	□Replace □6-10 ye Exc. 0	Length: Width: Height: Count: Total Quan Limited Ins	Drain Ma ntity: spection Fai	nt intenance	Poor*	Perform. Deficiencies
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment	Embankments & Streams Embankments Units	□Replace □6-10 ye Exc. 0	Length: Width: Height: Count: Total Quar Limited Ins	Drain Ma ntity: spection Fai	nt intenance	Poor* 0 removed/cleaned as	Perform. Deficiencies
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankmen maintenance.	Embankments & Streams Embankments Units / each / % / all / all nts appear to be in good conditions.	Exc. 0 itions. They are cov	Length: Width: Height: Count: Total Quan Limited Ins	Drain Ma ntity: spection Fai 0 ation which	ont intenance	Poor* 0 removed/cleaned as	Perform. Deficiencies
Recommended Work: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankmen maintenance.	Rehab	Exc. 0 itions. They are cov	Length: Width: Height: Count: Total Quan Limited Ins	Drain Ma ntity: spection Fai 0 ation which	fintenance 6 6 7 can be a	Poor* 0 removed/cleaned as Needs: 1 year	Perform. Deficiencies

Element Group:	Decks		Length:		0.45 m		
Element Name:	Wearing Surface		Width:		6.5 m		
Location:			Height:				
Material:	Tar and Chip		Count:	<u> </u>			
Element Type:			Total Quar	ntity:	2.9 Sq.n	n	
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Data:	Units	Exc.	Good	Fai	r 🔟	Poor*	Deficiencies
m ² m/m	□/ each □ / % □ / all □	0.0	2.45	0.0)	0.45	
Comments: The road edges	are loose and in poor condition	ons.					
	<u>*</u>						
				·			
Recommended Work:	Rehab	☑ Replac			enance l		
	□1-5 years	☐1-5 years ☑ 6-10 years		□Urge	nt	☐1 year	☐2 year
Element Group:	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface	Width:		6.5 m			
Location:	North - South						
Material:	Tar and Chip	Count:		2			
Element Type:		Total Quar	Total Quantity: 78.0 Sq.m				
Environment:		Limited					
Protection System:							Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □	0.0	66.0	0.0)	12.0	
Comments: The road edges	, <u>.</u>	L		<u>. I</u>			
Comments. The road cogs.	are roose and in poor condition	JIIS.					
Recommended Work:	Rehab	☑ Replac	e	Maintenance Needs:			
	□1-5 years	☑ 6-10 ye	ears	☐Urgent ☐1 year		□1 year	☐2 year
Element Group:			Length:				
Element Name:			Width:				
Location:	<u> </u>		Height:		<u> </u>		
Material:			Count:		<u> </u>		
Element Type:	<u> </u>		Total Quar				
Environment:			Limited In	spection		1	
Protection System:	<u> </u>			1			Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$				T			
Comments:							
Recommended Work:	Rehab	Replac			enance l	Needs:	
	☐1-5 years	☐ 6-10 ye	ears	Urge	nt	☐1 year	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

	gated Steel Pipe (W							
42° 11' 44" N	42° 11' 44" N Longitude 82° 54' 57.92" W							
Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List						
0.45 / 0.6	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐						
6.5	(m)	Posted Speed 80 No. of Lanes 2						
13.5	(m)	AADT % Trucks						
1.#QO	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle						
6.5] (m)	Detour Length Around Bridge 8.4 (km)						
1.2	(m)	Direction of Structure N						
0°	(Degrees)	No. of Spans						
Unknown		Year of Last Major Rehab.						
1		Last Evaluation						
nspection		Current Load Limit 5.0 (tonnes)						
ipment		Load Limit By-Law #						
ection		By-Law Expiry Date						
y								
1 ii	Concrete Pipe (East) - Corru 42° 11' 44" N Town of Tecum 0.45 / 0.6 6.5 13.5 1.#QO 6.5 1.2 0° Unknown ipment ection	10th Concession Road						

Field Inspection Infor	rmation:							
Date of Inspection	Sept	ember 8, 2016						
Inspector			on Consulting 1	Ltd)				
Others in Party		Dan Baughan (Dillon Consulting Ltd)						
Access Equipment Used		Camera, Measuring Tape, Measuring Wheel, and Hammer						
Weather	Clou		5 Tape, Weasur	ing wheel, un				
Temperature	-	24 Celsius						
Temperature	24 C	eisius						
Overall Structure Not	tes:							
Recommended Work on S	Structure N	ono [☐Minor Rehab	. Пм.	ajor Rehab.	Replace		
			_	. LIVI	ajoi Kenab.	Пкеріасе		
Timing of Recommended			☐6 to 10 years					
Overall Comments		rain pipe is in poo on the other (West		ogged at one end	(East), and connecte	ed to a steel corrugated		
	In Dr	ainage Report (pro	ovided by the Towr	n):				
					nds and abandoned			
Date of Next Inspection								
Element Data:								
Element Data.								
Element Group:	Signs		Length:					
Element Name:	Signs		Width:					
Location:			Height:					
Material:			Count:	0				
Element Type:	N/A		Total Quar	•				
Environment: Protection System:			Limited In	spection		D. C		
Protection System.	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies		
Condition Data: ${m^2 \square / m}$			Good	rair	POOL	Deficiencies		
Comments: - Upgrade and i	-		Markings to meet	the Ontario Traff	ic Manual			
Recommended Work:	Rehab	Repl		Maintenanc				
	□1-5 years	□6-10	years	□Urgent	□1 year	☐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 Quan	ntity:	19.0 Sq	ı.m	
Environment:			Limited Ins	spection			
Protection System:			-		Perform.		
	Units	Exc.	Good	Fair Poor*		Poor*	Deficiencies
Condition Data:	\square / each \square / % \square / all \square	0.0	0.0	0.0		19.0	
1,						j	
Comments: Limited inspect		condition, where	accessible. It is c	logged at o	ne end (East), and connecte	ed to a steel corrugated
pipe on the other	er (West). It is not needed.						
Recommended Work:	Rehab	Replac	0	Mainte	nonco	Noods:	
Recommended work.							П2
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐2 year
As per drainage report, the culve	ert is to be blocked at ends and	d abandoned.					
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:		2		
Element Type:		Total Quan	Total Quantity: 2				
Environment:		Limited Ins	Limited Inspection				
Protection System:							Perform.
	Units Exc.		Good	Fair	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$		0	0	1	•	1	
L,				_	l l	-	
Comments: Culvert is conn					-		e east side. A corrugated
steel pipe exists	s on the west side. The Eastern	i drain needs to be	cleared of the ex	cessive pla	nt growt	in.	
Recommended Work:	Rehab	Replac	0	Mainte	nance	Needs:	
Recommended work:				Maintenance Needs:			Па
***************************************	□1-5 years	□6-10 ye	ears	☐Urgent ☐1 year			☐2 year
				Drain Mai	intenance	e	
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:	East road edge		Height:				
Material:			Count:		3		
Element Type:			Total Quan	ntity:	3		
Environment:			Limited Ins	spection			
Protection System:			•	•			Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$		0	3	0		0	
· · · · · · · · · · · · · · · · · · ·	· · ·						
Comments: The embankme	nts appear to be in good cond	ition. They are cov	ered with heavy	vegetation	which ca	an be removed/clea	aned as part of the routine
maintenance.							
Recommended Work:	☐ Rehab	☐ Replac	e	Mainte	enance	Needs:	
	□1-5 years	□6-10 ye	ears	Urge	nt	☐ 1 year	2 year
	□1-5 years	☐ 6-10 ye	ears	Urgei Drain Mai			2 year

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 Quar	ntity:	3.0 Sq.m	n	
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Data	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square	0.0	2.55	0.0		0.45	
Comments: The road edges		On .		.1			
Comments, the road eages	are 100se and in poor condition	л.					
Recommended Work:	Rehab	Replac	e	Maintenance Needs:			
	□1-5 years	 ☐6-10 ye		Urge	nt	□1 year	☐2 year
Element Group:	Approaches		Length:		6.0 m		
Element Name:	Wearing Surface	Width:		6.5 m			
Location:		Height:		0.5 111			
Material:	Tar and Chip				2		
Element Type:	Tar and Cmp	Count: Total Quar					
Environment:	+	Limited In:		/8.0 sq.	m		
Protection System:	+		Limiteu m	Spection	<u> </u>		D : ::Ca
Fronction System.	Units	Huita Ena C		Foi		D *	Perform. Deficiencies
Condition Data:		Exc.	Good	Fair		Poor*	Deficiencies
	□/ each □/ % □/ all □	0.0	66.0	0.0		12.0	1
Comments: The road edges	are loose and in poor condition	on.					
Recommended Work:	Rehab	Проріо		Mainte	nonce l	Maade:	
Recommended work.		□Replac		Maintenance Needs:			По ноот
	□1-5 years	□6-10 ye	ears	☐ Urgent ☐ 1 year		⊔т уеаг	☐2 year
Element Group:	Γ		Length:				
Element Name:	+		Width:				
Location:	<u> </u>		Height:				
Material:			Count:				
Element Type:	+		Total Quar	ntitar			
Environment:			Limited In:				
Protection System:	+		Lilling	spection	Ц		Danfama
Flowchon System.	Units	Exc.	Good	Fair		Poor*	Perform. Deficiencies
Condition Data:		EXC.	Good	Ган	r	P001 ·	Deficiencies
$m^2 \square / m$							L
Comments:							
D d Wowle.	□ Dahah			T Mainte	N	т л.,	
Recommended Work:	Rehab	Replac			enance N		
	1-5 years	☐ 6-10 ye	ears	Urge	nt	☐1 year	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:			
Standard Number			
Structure Number	62		
Hwy/Road Name	10th Concession Road		
Structure Location	0.75 km north from County	Rd. 8 (McPherson	n 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 Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	0.6	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	Unknown		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			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 Infor	mation:									
Date of Inspection	September 8, 2016									
Inspector		Hossam Bakr (Dillon Consulting Ltd)								
Others in Party		Dan Baughan (Dillon Consulting Ltd)								
Access Equipment Used					and Hammer					
Weather		Clauder								
		Cloudy								
Temperature	24	Celsius								
Overall Structure Not	tes:									
Recommended Work on S	Structure	NT	□M:		Maina Dahah	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □				
			☐Minor Rehab	. L	Major Rehab.	Replace				
Timing of Recommended	Work	1 to 5 years	☐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:										
	1									
Element Group:	Signs		Length:			_				
Element Name:	Signs		Width:							
Location: Material:			Height:	0						
Element Type:	NT/A			Count: 0 Total Quantity: 0						
Environment:	N/A			Limited Inspection						
Protection System:			Limited in	spection <u></u>		Perform.				
	Units	Exc.	Good	Fair	Poor*	Deficiencies				
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all		0000	2 441	1 001					
Comments: - Upgrade and is	nstallation of Object Mark	ker signs and Objec	ct Markings to meet	the Ontario Tra	affic Manual	•				
Recommended Work:	Rehab	□Repl		Maintenance Needs:						
	□1-5 year	rs □6-10) years	☐Urgent	□1 yea	r □2 year				
				1						

Element Group:	Culverts		Length:		13.5 m		
Element Name:	Barrels	Width:		0.6 m (Dia.)			
Location:		Height:					
Material:	Corrugated Steel	Count:					
Element Type:			Total Quan	ıtity:	25.45 S	q.m	
Environment:			Limited Ins	spection			
Protection System:							Perform.
C I'd Data.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each□/ %□/ all□	0.0	19.0	6.45	5	0.0	
Comments: Existing pipe is		h corrosion mainly		g line.			
Recommended Work:	Rehab	✓ Replace		Mainte	enance	Needs:	
	□ 1-5 years			Urge	nt	□1 year	☐2 year
Replacement is recommended as							
	·						
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:		2		
Element Type:			Total Quan	ntity:	2		
Environment:			Limited Inspection				
Protection System:				<u> </u>			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	□/ each □/ % □/ all ☑	0	0	2		0	
Comments: Culvert is conne			-		growth w	-	th drains. This can be
repaired as part	of the routine maintenance.						
Recommended Work:	Rehab	□Replace	2	Mainte	enance	Needs:	
	□1-5 years	□6-10 ye	ars	Urge	nt	☐1 year	☐2 year
				Drain Mai			
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:	Linbunkments		Height:				
Material:	<u> </u>		Count:		6		
Element Type:	 		Total Quan	ntity:	6		
Environment:	<u> </u>		Limited Ins	•			
Protection System:			Lilling	spection	<u> </u>		Perform.
Troccuon by stein.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$					1		Deficiencies
		0	6	0		0	
Comments: The embankmen	ats appear to be in good cond	ition. They are cove	ered with heavy	vegetation	which ca	an be removed/clear	ned as part of the routine
Recommended Work:				N. f		Maada	
recommended of one.	☐ Rehab	☐ Replace	9	Mainte	enance	Needs:	
	☐ Rehab ☐1-5 years	☐ Replace		Urge		1 year	2 year
					nt	☐1 year	2 year

Element Group:	Decks	Length:		0.6 m			
Element Name:	Wearing Surface	Width:	Width:				
Location:		Height:	Height:				
Material:	Tar and Chip	Count:					
Element Type:			Total Quai	ntity:	3.9 Sq	.m	
Environment:			Limited In	spection			
Protection System:				•			Perform.
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square	0.0	3.3	0.0)	0.6	
Comments: The road edges	are loose and in poor conditi	ion.					
D 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				1 36 1 1		X 1	
Recommended Work:	Rehab	Replac				Needs:	
	□1-5 years	□6-10 y	ears	☐Urge	nt	☐1 year	☐2 year
				Road Ma	intenanc	e	
			T				
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 In	spection			
Protection System:		1		1			Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	□/ each □ / % □ / all □	0.0	66.0	0.0)	12.0	
Comments: The road edges	are loose and in poor conditi	ion.					
Recommended Work:	Rehab	Replac	ee	Mainte	enance	Needs:	
	□1-5 years	 □6-10 y		Urge	nt	□1 year	☐2 year
				Road Ma			
				Troug Ivia			
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Quantity:				
Environment:				imited Inspection			
Protection System:				<u> </u>			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \Pi/m}$	□/ each □/ % □/ all □		3000	1 44		1 001	
Comments:							
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance	Needs:	
	☐1-5 years	☐ 6-10 y		Urge		1 year	2 year
			-410		-11	பாரள	



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:			
Circuit and National Action	(2.75 1.26)		
Structure Number	63 (Formerly 36)		
Hwy/Road Name	Concession Road 10		
Structure Location	At the Intersection with Cou	inty Road 8	
Structure Type	Corrugated Steel Pipe Arch		
Latitude	42° 10' 52.356"		Longitude -82° 55' 1.416"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	2.80	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	9.0	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	27.5	(m)	AADT % Trucks
Total Deck Area	25.200	sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1990		Year of Last Major Rehab.
Last OSIM Inspection	1		Last Evaluation
Last Enhanced OSIM	Inspection		Current Load Limit (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Inspection			By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection	January 26, 2016								
Inspector			m Bakr (Dill	lon C	Consulting I	Ltd)			
Others in Party		Zum (Zumon Gonzumung Zuu)							
Access Equipment Used	d Camera, Measuring Tape, Measuring Wheel, and Hammer								
Weather									
Temperature		Cloudy, Probability of rain 47% 3 (6 / -3) Celsius							
Temperature 3 (07-3) Cersius									
Overall Structure Not	tes:								
Recommended Work on S	Structure	□No	no	Пм	inor Rehab		Пмаі	or Rehab.	Replace
Timing of Recommended					to 10 years	•	□ IVIaj	or Kenao.	Пкеріасе
Overall Comments									
Overall Comments	1	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							
	1	that vehicles should be protected from. Guide rail is recommended.							
Date of Next Inspection									
2 440 01 1 (0.10 11.0)									
Element Data:									
Flament Groups	Ciona				Length:				
Element Group: Element Name:	Signs Signs				Width:				
Location:					Height:				
Material:					Count: 1				
Element Type:	Stop Sign			1	Total Quantity: 1				
Environment:					Limited Ins	spection			
Protection System:									Perform.
Condition Data: Units $\frac{\text{Units}}{\text{m}^2 \square / \text{m} \square / \text{each} \square / \% \square /}$			Exc.		Good	Fai	Fair Poor*		Deficiencies
Comments: - Existing Sign	in Excellent Condition	ıs		1					
- Upgrade and i	nstallation of Object N	Marker	signs and Objec	ct Marl	kings to meet	the Ontario	Traffic	Manual	
Recommended Work:	Reha	ıb	□Repl	lace		Maintenance Needs:			
	□1-5 y		□6-10						☐2 year
				······································					

Element Group:	Culverts		Length:		27.5 m		
Element Name:	Barrels	Width:		2.8 m			
Location:		Height:	Height:				
Material:	Corrugated Steel	Count:	Count:				
Element Type:	Multi-Plate CSP	Total Quar	ntity:	241.90	Sq.m		
Environment:			Limited In	spection			
Protection System:							Perform.
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		241.90				
Comments: In Good Condition							
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	□1-5 years	□6-10 y	ears	□Urge	nt	□1 year	☐2 year
							-
El . C	G 1		T .1		ı		
Element Group:	Culverts		Length:		8.40 m		
Element Name:	Inlet Components		Width:		0.60 m		
Location:	East Side		Height:		2.70 m	l .	
Material:	Precast concrete		Count:				
Element Type:	Concrete Blocks		Total Quantity: 22.70 Sq.m Limited Inspection □				
Environment:			Limited In	spection	Ш		
Protection System:				T			Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
m ² /m	\square / each \square / % \square / all \square		22.70				
Comments: In Good Condit							
Recommended Work:	Rehab	□Replac				Needs:	
	□1-5 years	□6-10 у	ears	□Urge	nt	☐1 year	☐2 year
Element Group:	Culverts		Length:		8.40 m	ı	
Element Name:	Outlet Components		Width:		0.60 m		
Location:	West Side		Height:		2.70 m		
Material:	Precast concrete		Count:				
Element Type:	Concrete Blocks		Total Quar	ntity:	22.70 Sq.m		
Environment:			Limited In	-			
Protection System:				- F			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² /m	\square / each \square / % \square / all \square		22.70				
Comments: In Good Condit		I	22.70				
Recommended Work:			ce	Mainte	enance	Needs:	
	☐1-5 years	□6-10 y		Urge		☐1 year	2 year
		<u> </u>			-		— – J • • •

Element Group:	Decks		Length:		2.8 m			
Element Name:	Wearing Surface		Width:					
Location:			Height:					
Material:	Asphalt		Count:					
Element Type:			Total Qua	ntity:	25.2 Sq	.m		
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Date	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square]/ each □ / % □/ all □						
Comments: In Good Condit		l l				l.		
Comments, in coor condit								
Recommended Work:	☐ Rehab	□Repla	ce	Mainte	enance !	Needs:		
	□1-5 years	□6-10 y	ears	Urge	nt	□1 year	☐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 Qua	ntity:	80.4 Sq	.m			
Environment:		Limited In						
Protection System:					_		Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² [7]/m	\square / each \square / % \square / all \square		65.4	10.0		5.0		
Comments: North Approach	1 - Slippery Surface 1 - Map Cracking							
South Approact	1 - Map Cracking							
Recommended Work:	Rehab	Repla	ce	Mainte	enance i	Needs:		
	□1-5 years	□6-10 y		Urgent		□1 year	☐2 year	
	_			Asphalt repairs				
				Asphan repairs				
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East - West		Height:					
Material:			Count:		1			
Element Type:			Total Qua	ntity:	1			
Environment:			Limited In	spection				
Protection System:			•	•			Perform.	
G 1111 B	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	/ each/ %/ all ☑		1					
L.,	-		1					
Comments: In Good Condit	ion							
Recommended Work:	Rehab	Repla	ce	Mainte	enance	Needs:		
	☐1-5 years	☐ 6-10 y		Urge		1 year	2 year	
	Li o jeuis						<u> </u>	
				1				

Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		4		
Element Type:			Total Qua	ntity:	4		
Environment:			Limited Ir				
Protection System:				F			Perform.
	Units	Exc.	Good	Fair	•	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square	Exc.		Tun		1 001	Beneficiences
			4				
Comments: In Good Condit	tion						
D 1 - 1 W1-				M.:		NI 1	
Recommended Work:				Mainte			
	☐1-5 years	□6-10 y	ears	Urgen	1t	☐1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Slope Protection		Width:				
Location:	•		Height:				
Material:			Count:		4		
Element Type:	Hand laid Riprap	Total Qua	ntity:	4			
Environment:	n a a a p ap	Limited Ir		П			
Protection System:				F			Perform.
	Units	Exc.	Good	Fair		Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \Pi/m}$	\square / each \square / % \square / all \square	Exc.	4	Tan		1 001	Beneficiences
			4				
Comments: In Good Condit	ion						
Recommended Work:	Rehab	□D omlo		Mointo	nonoo	Noods:	
Recommended work:		Replac			Maintenance Needs:		По
	□1-5 years	□6-10 у	ears	Urgen	1t	☐1 year	☐2 year
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Qua	ntity:			
Environment:			Limited Ir	nspection			
Protection System:			•	•			Perform.
	Units	Exc.	Good	Fair	•	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$							
'	_, cach/ /0/ an						
Comments:							
				1		T	
Recommended Work:	Rehab	Replac	ce	Mainte	nance		
				I —			— -
	□1-5 years	□6-10 y	ears	Urgen	nt	☐1 year	☐2 year
	□1-5 years	∐6-10 у	ears	∐Urgen	<u>nt</u>	∐1 year	∐2 year
	□1-5 years	∐6-10 у	ears	∐Urgen	1t	∐1 year	∐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:						
Campatona November	C4 (F. 1. 25)					
Structure Number	64 (Formerly 35)					
Hwy/Road Name	Malden Road					
Structure Location	At the Intersection with Cou	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 Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List			
Span Length	2.80	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☑ Local ☐			
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: ☐ Transit ☐ Truck ☐ School ☐ 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			
Historical Data:						
Year Built	2002		Year of Last Major Rehab.			
Last OSIM Inspection	ı		Last Evaluation			
Last Enhanced OSIM	Inspection		Current Load Limit (tonnes)			
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #			
Last Underwater Insp	ection		By-Law Expiry Date			
Last Condition Surve	у					
Rehab History:						

Field Inspection Infor	mation:						
Date of Inspection	Ja	nuary 26, 2016					
Inspector	Н	ossam Bakr (Di	illon Consulting	Ltd)			
Others in Party		•					
Access Equipment Used	C	Camera, Measuring Tape, Measuring Wheel, and Hammer					
Weather		Cloudy, Probability of rain 47%					
Temperature		3 (6 / -3) Celsius					
remperature	3	(0 / -3) Ceisius					
Overall Structure Not	tes:						
	T_	_				_	
Recommended Work on S	Structure	None	☐Minor Rehab). L]	Major Rehab.	Replace	
Timing of Recommended	Work	1 to 5 years	☐6 to 10 years				
Overall Comments The structure is in good condition. Wearing surface at the north approach has major deficirecommended to be fully replaced. Regarding the roadside safety; the concrete headwalls at that vehicles should be protected from. Guide rail is recommended.							
Date of Next Inspection							
Element Data:							
Element Course	g:		I amouth.				
Element Group: Element Name:	Signs Signs		Length: Width:				
Location:	Biglis		Height:				
Material:			Count:	1			
Element Type:	Stop Sign		Total Quar	ntity: 1			
Environment:			Limited In				
Protection System:						Perform.	
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units ☐/ each ☑ / % ☐/ a	Exc.	Good	Fair	Poor*	Deficiencies	
Comments: - Existing Sign			ect Markings to meet	the Ontario Tr	affic Manual		
Recommended Work:	Rehat	Rej	place	Maintena	nce Needs:		
	 □1-5 ye		0 years	Urgent	□1 year	□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 Quar	ntity:	241.90	Sq.m	
Environment:			Limited In	spection			
Protection System:							Perform.
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		241.90				
Comments: In Good Condition							
Recommended Work:	☐ Rehab ☐ Replace		ce	Mainte	enance		
	□1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year
							-
El . C	G 1		T .1				
Element Group:	Culverts		Length:		8.40 m		
Element Name:	Inlet Components		Width:		0.60 m		
Location:	 		Height:		2.70 m		
Material:	Precast concrete		Count:				
Element Type:	Concrete Blocks	Total Quar		22.70 \$	Sq.m		
Environment:		Limited Inspection					
Protection System:				T			Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$ m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square $			22.70				
Comments: In Good Condit							
Recommended Work:	Rehab	□Replac			Maintenance Needs:		
	□1-5 years	□6-10 у	ears	Urge	☐Urgent ☐1 year		☐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:		2.70 111	·	
Element Type:	Concrete Blocks		Total Quar	ntity:	22.70 \$	Sa.m	
Environment:	Concrete Brooms		Limited In	-		, q	
Protection System:				эрссион			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² /m	\square / each \square / % \square / all \square		22.70		_		
Comments: In Good Condit		L	22.70				
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	☐1-5 years	□6-10 y		Urge		☐1 year	2 year
		<u> </u>			-	<u> </u>	— – J • • •

Element Group:	Decks		Length:		2.8 m		
Element Name:	Wearing Surface		Width:		23.0 m		
Location:			Height:	Height:			
Material:	Asphalt		Count:				
Element Type:			Total Quar	ntity:	64.4 Sc	ą.m	
Environment:			Limited In	spection			
Protection System:							Perform.
G III D	Units	Units Exc.		Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		64.40				
Comments: In Good Condit		<u> </u>		1			
Comments. In Good Conditi	ion						
Recommended Work:	Rehab	Replac	e	Mainte	enance	Needs:	
	□1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐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 Quar	ntity:	86.4 Sc	ı.m	
Environment:	Severe	Limited In	•				
Protection System:				- F			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² / m	\square / each \square / % \square / all \square		49.15	20.		17.25	
<u> </u>						17.23	
Comments: North Approach	h - Severe Ravelling on the v - Light Map Cracking	Vest side					
	Light Wap Clacking						
Recommended Work:	Rehab	Replac	e	Maint	enance	Needs:	
	□1-5 years	 □6-10 y		□Urgent		☐1 year	☐2 year
		,		Asphalt repairs			— — 7
				Aspnait repairs			
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:		1		
Element Type:			Total Quar	ntity:	1		
Environment:			Limited In	spection			
Protection System:			_				Perform.
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all ☑		1				
Comments: In Good Condit		<u> </u>	-	1	[
Comments. In Good Condit	lion						
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance	Needs:	
	1-5 years	6-10 y		Urge	nt	☐1 year	2 year
	-						
				1			

Element Group:	Embankments & Streams		Length:							
Element Name:	Embankments		Width:							
Location:			Height:							
Material:			Count:		4					
Element Type:			Total Quar	ntity:	4					
Environment:			Limited In							
Protection System:							Perform.			
	Units	Exc.	Good	Fair		Poor*	Deficiencies			
Condition Data: $\frac{1}{m^2 \prod / m}$	□/ each □/ % □/ all □		4							
<u>.</u>	L		· · · · · · · · · · · · · · · · · · ·							
Comments: In Excellent Co	nditions									
Recommended Work:	Rehab Replace		Δ	Mainte	nance	Needs:				
Recommended work.	☐1-5 years	□6-10 ye		Urger		1 year	☐2 year			
	□1-3 years		-a18	Lorger	11	□1 year	□2 yeai			
	T		1							
Element Group:	Embankments & Streams		Length:							
Element Name:	Slope Protection		Width:							
Location:			Height:							
Material:	Masonry		Count:		4					
Element Type:	Hand laid Riprap		Total Quar	•						
Environment:		Limited								
Protection System:							Perform.			
Canditian Data	Units	Exc.	Good	Fair	•	Poor*	Deficiencies			
Condition Data: $m^2 \square / m$		4								
Comments: In Excellent Co	nditions	l.		II.						
Comments. in Enterior co										
Recommended Work:	Rehab	Replace	e	Mainte	nance	Needs:				
Recommended Work:		□Replace		-		L .	☐2 year			
Recommended Work:	□ Rehab □1-5 years	□Replace		Mainte		Needs: 1 year	☐2 year			
Recommended Work:		-		-		L .	□2 year			
Recommended Work:		-		-		L .	□2 year			
		-	ears	-		L .	□2 year			
Element Group:		-	Length:	-		L .	□2 year			
Element Group: Element Name:		-	Length: Width:	-		L .	□2 year			
Element Group: Element Name: Location:		-	Length: Width: Height:	-		L .	□2 year			
Element Group: Element Name: Location: Material:		-	Length: Width: Height: Count:	□Urger		L .	□2 year			
Element Group: Element Name: Location: Material: Element Type:		-	Length: Width: Height: Count: Total Quar	□Urger	nt	L .	□2 year			
Element Group: Element Name: Location: Material: Element Type: Environment:		-	Length: Width: Height: Count:	□Urger	nt	L .				
Element Group: Element Name: Location: Material: Element Type:	□1-5 years	□6-10 ye	Length: Width: Height: Count: Total Quar	Urger		□1 year	Perform.			
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	□1-5 years Units	-	Length: Width: Height: Count: Total Quar	□Urger		L .				
Element Group: Element Name: Location: Material: Element Type: Environment:	□1-5 years Units	□6-10 ye	Length: Width: Height: Count: Total Quar	Urger		□1 year	Perform.			
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m[□1-5 years Units	□6-10 ye	Length: Width: Height: Count: Total Quar	Urger		□1 year	Perform.			
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	□1-5 years Units	□6-10 ye	Length: Width: Height: Count: Total Quar	Urger		□1 year	Perform.			
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments:	Units J/ each / % / all	□6-10 ye	Length: Width: Height: Count: Total Quar Limited In:	ntity:		Poor*	Perform.			
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m[Units ☐ Rehab	Exc.	Length: Width: Height: Count: Total Quar Limited In: Good	ntity: spection Fair	nance	Poor* Needs:	Perform. Deficiencies			
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments:	Units J/ each / % / all	□6-10 ye	Length: Width: Height: Count: Total Quar Limited In: Good	ntity:	nance	Poor*	Perform.			
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments:	Units ☐ Rehab	Exc.	Length: Width: Height: Count: Total Quar Limited In: Good	ntity: spection Fair	nance	Poor* Needs:	Perform. Deficiencies			



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:							
- N 1							
Structure Number	65 (Formerly 37)						
Hwy/Road Name	Concession Rd. 11						
Structure Location	At the intersection with Sou	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 Tecum	ıseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List				
Span Length	1.85	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐				
Total Deck Length	16.80	(m)	Posted Speed No. of Lanes 2				
Overall Str. Width	16.80	(m)	AADT % Trucks				
Total Deck Area	31.080	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	1995		Year of Last Major Rehab.				
Last OSIM Inspection	n		Last Evaluation				
Last Enhanced OSIM			Current Load Limit (tonnes)				
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Insp	ection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:						
Date of Inspection	De	ecember 16, 20	15				
Inspector	Н	ossam Bakr (Di	illon Consulting	Ltd)			
Others in Party							
Access Equipment Used	M	Measuring Tape, Measuring Wheel, and Hammer					
Weather			Afternoon Showe				
Temperature		(11/3) Celsius					
1							
7							
Overall Structure Not	tes:						
Recommended Work on S	Structure	None	☐Minor Rehab	o. 🔲	Major Rehab.	Replace	
Timing of Recommended	Work	1 to 5 years	☐6 to 10 years				
Overall Comments	W	The culvert barrel edges were deformed at the east elevation, and bolted connections are lightly corrode Wearing surface was observed with severe alligator cracks over the culvert section, and map cracking at longitudinal crack at the north approach.					
Date of Next Inspection							
	<u> </u>						
Element Data:							
Element Group:	Signs		Length:				
Element Name:	Signs		Width:				
Location:			Height:				
Material:			Count:	1			
Element Type:	Stop Sign		Total Quai	•			
Environment:			Limited In	spection _			
Protection System:				1		Perform.	
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ al	Exc. 1 □ 1	Good	Fair	Poor*	Deficiencies	
Comments: - Existing Sign			ect Markings to meet	the Ontario Tr	affic Manual		
Recommended Work:	Rehab	□Rej	L		nce Needs:		
	□1-5 yea	ırs □6-1	0 years	□Urgent	□1 year	☐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 Quar	ntity:	180.60	Sq.m		
Environment:			Limited In			-		
Protection System:			-	•			Perform.	
	Units	Exc.	Good	Fai			Deficiencies	
Condition Data: m ² / m	\square / each \square / % \square / all \square		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:	☐ Rehab ☐ Replace		ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y		Urge		□1 year	☐2 year	
	<u> Птэ усаг</u> в	<u> </u>	Cars	Потро	110	<u> Бі усы</u>	<u></u>	
El C	C 1 .		T41					
Element Group: Element Name:	Culverts		Length:		4.00 m	1		
	Inlet Components		Width:					
Location:	East Side		Height:		1.60 m	1		
Material:	Count:							
Element Type:	Mortar Bags	Total Quar	•		6.40 Sq.m			
Environment:			Limited In	spection	Ш			
Protection System:				1			Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	\square / each \square / % \square / all \square		6.40					
Comments: In Good Condit	ion							
				1				
Recommended Work:	Rehab	Replac		Maintenance Nee				
	□1-5 years	□6-10 у	ears	□Urge	nt	☐1 year	☐2 year	
				1				
Element Group:	Decks		Length:		1.85 m	ı		
Element Name:	Wearing Surface		Width:		8.80 m	ı		
Location:			Height:					
Material:	Asphalt		Count:					
Element Type:			Total Quar	ntity:	16.30	Sq.m		
Environment:			Limited In	•		·		
Protection System:			1				Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² /m	\square / each \square / % \square / all \square	+	8.30	4.0		4.0		
Comments: Severe alligator	,		0.50	1 7.0		1.0		
Comments: Severe anigator	cracks (At the Deck).							
.				1				
Recommended Work:	Rehab	Replac				Needs:		
	☐1-5 years	□6-10 y	ears	Urge	nt	☐1 year	2 year	
				Asphalt re	epairs			

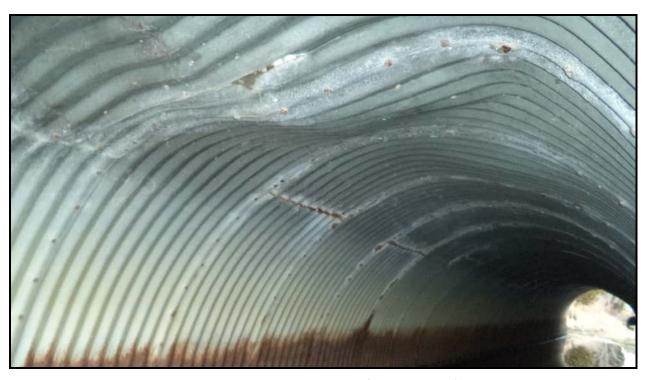
Element Group:	Approaches		Length:		6.0 m			
Element Name:	Wearing Surface		Width:	dth:		8.80 m		
Location:			Height:					
Material:	Asphalt		Count:	2				
Element Type:			Total Quar	ntity:	105.60	Sq.m		
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m ² /m	□/ each □/ % □/ all □		55.60	42.0	C	8.0		
Comments: Map cracking and longitudinal crack at the North approach.								
Recommended Work:	Rehab	Replac	ee	Maintenance Needs:				
	□1-5 years	□6-10 у	ears	Urge	nt	☐1 year	☐2 year	
				Asphalt re	epairs	-	-	
Elamont Crount	F 1 1		Lanath		1			
Element Group: Element Name:	Embankments & Streams		Length: Width:					
Location:	Streams and Waterways		Height:					
Material:	East - West				1			
		Count: Total Quar	ntitu	1				
Element Type: Environment:				П				
Protection System:			Limited In	spection	Ц		D C	
Flotection System.	I I -: t -	F	Card	Es:	_	D*	Perform. Deficiencies	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data. m ² /m / each / % / all 1 Comments: In Good Condition								
Recommended Work:	Rehab	Replac				Needs:		
	□1-5 years	□6-10 у	ears	☐Urgent ☐1 yea		☐1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:			Height:					
Material:			Count:		6			
Element Type:			Total Quar	ntity:	6			
Environment:			Limited In	spection				
Protection System:			•				Perform.	
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	□/ each ☑ / % □/ all □		6					
Comments: In Good Condit	· · · · · · · · · · · · · · · · · · ·			I		I		
Recommended Work:	☐ Rehab	Replac	ee	Mainte	enance	Needs:		
	☐1-5 years	☐ 6-10 y		Urge	nt	☐1 year	2 year	
	<u> </u>			3				



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	66						
Hwy/Road Name	11th Concession Road						
Structure Location	0.75 km south from South T	'albot Road at East	McPherson Drain				
Structure Type		Clay Pipe (East) - Big O (West)					
Latitude 1,700	42° 11' 63.20" N		Longitude 82° 53' 58.35" W				
Owner(s)	Town of Tecum	iseh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List				
Span Length	0.2	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐				
Total Deck Length	6.0] (m)	Posted Speed No. of Lanes 2				
Overall Str. Width	12.6	(m)	AADT % Trucks				
Total Deck Area	1.200	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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				
Historical Data:							
Year Built	Unknown		Year of Last Major Rehab.				
Last OSIM Inspection			Last Evaluation				
Last Enhanced OSIM 1			Current Load Limit 5.0 (tonnes)				
Enhanced Access Equ	·						
(ladder, boat, lift, etc.			Load Limit By-Law #				
Last Underwater Insp	ection		By-Law Expiry Date				
Last Condition Surve	у						
Rehab History:							

Field Inspection Infor	mation:							
Date of Inspection	Sept	ember 8, 2016						
Inspector	Hoss	sam Bakr (Dill	on Consulting I	Ltd)				
Others in Party			on Consulting l					
Access Equipment Used			g Tape, Measur		d Hammer			
Weather	Clou		, <u>r</u> .,					
Temperature		elsius						
Overall Structure Not	tes:							
Recommended Work on S	Structure	one [Minor Rehab	. Пм	ajor Rehab.	Replace		
Timing of Recommended	Work 🔲	to 5 years	6 to 10 years					
Overall Comments		ndition. gaps between	een the segments.	The plants at the we	est inlets needs to be			
		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:								
Diement Butus								
Element Group:	Signs		Length:					
Element Name:	Signs		Width:					
Location:			Height:					
Material:			Count:	0				
Element Type:	N/A			Total Quantity: 0				
Environment:			Limited In	spection		1		
Protection System:	TT '		G 1	г.	D #	Perform.		
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ all ☐	Exc.	Good	Fair	Poor*	Deficiencies		
Comments: - Upgrade and i		L.	Markings to meet	the Ontario Traff	ic Manual	•		
Recommended Work:	Rehab	□Repla	ace	Maintenand	e Needs			
recommended work.	☐1-5 years	<u>+</u>		Urgent	□1 year	☐2 year		
					-			

Element Group:	Culverts		Length:		12.6 m		
Element Name:	Barrels		Width:		0.2 m (l	Dia.)	
Location:			Height:				
Material:	Clay Pipe (East) - Big O (W	'est)	Count:				
Element Type:			Total Quan	ıtity:	8.0 Sq.1	m	
Environment:			Limited Ins	nited Inspection 🗵			
Protection System:							Perform.
C I'd Data.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each□/ %□/ all□	0.0	0.0	0.0)	0.0	
Comments: Limited inspect		segments - Assume	ed to be acceptab	ble as per d	rainage r	eport recommenda	tions.
Recommended Work:	Rehab	□Replace	2	Mainte	enance	Needs:	
	□1-5 years	□6-10 ye	ars	Urge	nt	□1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:	Edst - West	_	Count:		2		_
Element Type:			Total Quan	ntitv:	2		
Environment:			Limited Ins	-	П		
Protection System:			Limite 5 I	эрссион	<u> </u>		Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$		0	0	1	1	1	
Comments: Drain is connec repaired as part	ting East McPherson Drain (Roof the routine maintenance.	East) to Santo Drain	ı (West). Excessi				drains. This can be
Recommended Work:	Rehab	Replace			enance		
	□1-5 years	□6-10 ye	ars	□Urge	nt	□1 year	☐2 year
				Drain Ma		9	
Element Group:	Embankments & Streams		Length:	Drain Ma		e	
Element Group: Element Name:	Embankments & Streams		Length:	Drain Ma		2	
Element Name:	Embankments & Streams Embankments		Width:	Drain Ma		2	
Element Name: Location:			Width: Height:	Drain Ma	intenance	9	
Element Name: Location: Material:			Width: Height: Count:		intenance		
Element Name: Location: Material: Element Type:			Width: Height: Count: Total Quan	ntity:	intenance		
Element Name: Location: Material: Element Type: Environment:			Width: Height: Count:	ntity:	intenance		
Element Name: Location: Material: Element Type: Environment: Protection System:	Embankments	Exc.	Width: Height: Count: Total Quan Limited Ins	ntity:	5 5		Perform.
Element Name: Location: Material: Element Type: Environment: Protection System:	Embankments Units	Exc.	Width: Height: Count: Total Quan Limited Ins	ntity: spection	5 5	Poor*	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment	Embankments Units ✓ each ✓ / % ✓ all ✓	0 good condition. How	Width: Height: Count: Total Quan Limited Ins Good 5 wever, the emba	ntity: spection Fai 0 ankments or	5 5 5 T	Poor*	Perform. Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment	Units ☐/ each ☐/ % ☐/ all ☐ nt at the road east side are in a	0 good condition. How	Width: Height: Count: Total Quan Limited Ins Good 5 wever, the emba ood Condition).	ntity: spection Fai 0 ankments or	5 5 r	Poor* 0 d west side are cov	Perform. Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment vegetation and vegetation.	Units	0 good condition. How cted (Assumed in Go	Width: Height: Count: Total Quan Limited Ins Good 5 wever, the emba ood Condition).	ntity: spection Fai 0 nnkments or	5 5 5 In the road	Poor* 0 d west side are cov	Perform. Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m²□/m Comments: The embankment vegetation and vegetation.	Units Units deach death death death death deach death dea	0 good condition. Howeted (Assumed in Ge	Width: Height: Count: Total Quan Limited Ins Good 5 wever, the emba ood Condition).	ntity: spection Fai 0 nnkments or	sintenance 5 5 T I In the roace enance ent	Poor* 0 d west side are cov Needs: 1 year	Perform. Deficiencies

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 Quar	ntity:	1.2 Sq.m		
Environment:			Limited In				
Protection System:			-1	•			Perform.
C 11/2 Date	Units	Exc.	Good	Fair	Po	or*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square	0.0	1.2	0.0	0	0.0	
Comments: The Tar and Ch		ı					
Comments: The Tar and Ch	ip surface is in good condition	on.					
Recommended Work:	Rehab	Replac	<u>-</u>	Mainte	nance Needs:		
	□ 1-5 years □ 6-10 year			Urgen		1 year	☐2 year
	<u> </u>		/d15		1,	Ji yeui	<u> </u>
E1	Т. ,		T amoth.	T	~		
Element Name:	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 In	spection	Ц		
Protection System:				Т			Perform.
Condition Data:	Units	Exc.	Good	Fair	Po	or*	Deficiencies
m ² /m	□/ each □/ % □/ all □	0.0	72.0	0.0	0	0.0	
Comments: The Tar and Ch	nip surface is in good conditio	n.					
							
Recommended Work:	Rehab	Replac			nance Needs:		
	□1-5 years	□6-10 ye	ears	□Urgen	nt 🗆]1 year	☐2 year
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Quar				
Environment:			Limited In	spection			
Protection System:					,		Perform.
Condition Data:	Units	Exc.	Good	Fair	Po	or*	Deficiencies
Condition Data: $m^2 \square / m$	□/ each □/ % □/ all □			1			
Comments:							
Comments.							
Recommended Work:	☐ Rehab	Replac	e	Mainte	nance Needs:		
	☐1-5 years	☐ 6-10 ye		Urgen	nt Γ	1 year	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	67		
Hwy/Road Name	11th Concession Road		
Structure Location	1.00 km south from South T	albot Road at East I	McPherson Drain
Structure Type	Corrugated Steel Pipe		
Latitude	42° 11' 28.65" N		Longitude 82° 53' 59" W
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	0.6	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
Total Deck Length	6.0	(m)	Posted Speed No. of Lanes 2
Overall Str. Width	12.6	(m)	AADT % Trucks
Total Deck Area	3.600	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	Unkown		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit 5.0 (tonnes)
Enhanced Access Equ (ladder, boat, lift, etc.			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:								
Date of Inspection	S	Septembe	er 8, 2016						
Inspector				on Consulting	I td)				
Others in Party			•		*				
, , , , , , , , , , , , , , , , , , ,			<u> </u>	on Consulting	<u> </u>		**		
Access Equipment Used			Measuring	g Tape, Measur	ing Whee	el, and	Hammer		
Weather	C	Cloudy							
Temperature	2	4 Celsiu	S						
Overall Structure Not	tes:								
	~.								
Recommended Work on S		None		☐Minor Rehab		⊔Maj	or Rehab.	Replace	
Timing of Recommended	Work	2 1 to 5 ∶	years	☐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 Data.									
Element Group:	Signs			Length:					
Element Name:	Signs			Width:					
Location:				Height:					
Material:				Count:		0			
Element Type:	N/A				Total Quantity: 0				
Environment:				Limited In	spection				
Protection System:				T	1			Perform.	
Condition Data: $\frac{1}{m^2 \Pi/m}$	Units ☐/ each ☑/ % ☐/ a		Exc.	Good	Fai	Fair Poor*		Deficiencies	
Comments: - Upgrade and in			s and Object	Markings to meet	the Ontario	o Traffic	Manual		
Comments.									
Recommended Work:	Rehat	b	□Repl	ace	Mainte	enance	Needs:		
	□1-5 ye		□ 6-10		□Urge	nt	□1 year	☐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 Quar	ntity:	23.75 S	Sq.m	
Environment:			Limited In:	Limited Inspection			
Protection System:			1	•			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	$n \square / \operatorname{each} \square / \% \square / \operatorname{all} \square$	0.0	0.0	17.7		6.0	
	is moderate to severely corrod	ed. The bottom ha	alf is filled with se	ediment. It i	s recom	mended to be repla	aced in the Drainage
Report receive	ed from the Town.						
Recommended Work:	Rehab	Replac	20	Mainte	nanca	Needs	
Recommended work.							П2
	□ 1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:		2		
Element Type:			Total Quar	Quantity: 2			
Environment:			Limited In	spection			
Protection System:			•	•			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / n}$		0	0	1		1	
L.,		-	-				
	necting East McPherson Drain			_	growth v	was observed on th	e west side, and
moderate on t	he east side. This can be repaired	ed as part of the re	outine maintenanc	e.			
Recommended Work:	Rehab	Replac	20	Mainte	nance	Needs:	
Recommended work.	☐ Renab	□ Kepiac					☐2 year
	□1-3 years	<u> </u>	ears	Urge		☐1 year	□ 2 year
				Drain Mai	intenanc	e	
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		6		
Element Type:			Total Quar	ntity:	6		
Environment:			Limited In	spection			
Protection System:							Perform.
G IV. D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / n}$	n □/ each ☑/ % □/ all □	0	6	0		0	
					، جاه نجاری		and as most of the
routine mainte	ents appear to be in good cond	nnons. They are co	overed with neavy	y vegetation	i which (can be removed/cie	eaned as part of the
				1			
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	☐1-5 years	□6-10 y	ears	Urge	nt	☐1 year	2 year
				Drain Mai	intenanc	e	

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 Quar	ntity:	3.6 Sq.m		
Environment:			Limited In	spection			
Protection System:			•				Perform.
G 1111 B	Units	Exc.	Good	Fair		Poor*	Deficiencies
Condition Data: m ² □/m	\square / each \square / % \square / all \square	0.0	3.0	0.0		0.6	
Comments: The road edges					I		
Comments. The road edges	are roose						
Recommended Work:	Rehab	Replac	e	Mainter	nance N	eeds:	
	□1-5 years	 □6-10 y		Urgen	ıt	☐1 year	☐2 year
	— ,			_ 8			
Element Group:	Approaches		Length:	I.	6.0 m		
Element Name:	Wearing Surface		Width:		6.0 m		
Location:	North - South		Height:	,	0.0 111		
Material:	Tar and Chip		Count:	,	2		
Element Type:	Tai and Cinp		Total Quar		72.0 Sq.n	1	
Environment:			Limited In		72.0 Sq.II	1	
Protection System:			Limited in	spection			Perform.
1 Totection Bystein.	Units	Exc.	Good	Fair		Poor*	Deficiencies
Condition Data:	\square / each \square / $\%$ \square / all \square					+	Deficiences
L,		0.0	60.0	0.0		12.0	
Comments: The road edges	are loose						
						aada	
Recommended Work:	□Rehah	□Renlac	·e	Mainter	nance N	eeas.	
Recommended Work:	☐ Rehab	□Replac		Mainter			П2 уезг
Recommended Work:	Rehab	□Replac □6-10 y		Mainter Urgen		1 year	☐2 year
Recommended Work:							☐2 year
Recommended Work:							□2 year
			ears				□2 year
Element Group:			ears Length:				□2 year
Element Group: Element Name:			Length:				□2 year
Element Group: Element Name: Location:			Length: Width: Height:				□2 year
Element Group: Element Name: Location: Material:			Length: Width: Height: Count:	Urgen			□2 year
Element Group: Element Name: Location: Material: Element Type:			Length: Width: Height: Count: Total Quar	☐Urgen	t		□2 year
Element Group: Element Name: Location: Material: Element Type: Environment:			Length: Width: Height: Count:	☐Urgen	t		
Element Group: Element Name: Location: Material: Element Type:	□1-5 years	□6-10 y	Length: Width: Height: Count: Total Quar Limited In	Urgen		□1 year	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	☐1-5 years Units		Length: Width: Height: Count: Total Quar	☐Urgen			
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \square /m \rceil$	☐1-5 years Units	□6-10 y	Length: Width: Height: Count: Total Quar Limited In	Urgen		□1 year	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	☐1-5 years Units	□6-10 y	Length: Width: Height: Count: Total Quar Limited In	Urgen		□1 year	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \square /m \rceil$	☐1-5 years Units	□6-10 y	Length: Width: Height: Count: Total Quar Limited In	Urgen		□1 year	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \square / m \rceil$ Comments:	Units	□6-10 y	Length: Width: Height: Count: Total Quar Limited In	ntity: spection [□1 year Poor*	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \square /m \rceil$	Units Rehab	Exc.	Length: Width: Height: Count: Total Quar Limited In	ntity: spection [Fair	nance N	Poor*	Perform. Deficiencies
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \square / m \rceil$ Comments:	Units	□6-10 y	Length: Width: Height: Count: Total Quar Limited In	ntity: spection [nance N	□1 year Poor*	Perform.
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: $m^2 \square / m \rceil$ Comments:	Units Rehab	Exc.	Length: Width: Height: Count: Total Quar Limited In	ntity: spection [Fair	nance N	Poor*	Perform. Deficiencies



Photograph 1 – Wearing Surface over Culvert (Looking North)



Photograph 2 – Wearing Surface over Culvert (Looking South)



Photograph 3 – East Elevation



Photograph 4 – Culvert Barrel

Kg		
	albot Doad at East	t MaDharaan Drain
	allot Road at Lust	I WICE HEISOII Drain
		Longitude 82° 53' 59.67" W
Town of Tecum	seh	Heritage □ Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
0.45	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☐
6.0	(m)	Posted Speed No. of Lanes 2
12.6	(m)	AADT % Trucks
2.700	(sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
6.0	(m)	Detour Length Around Bridge 6.2 (km)
1.0 (m)		Direction of Structure
0°	(Degrees)	No. of Spans
Unknown		Year of Last Major Rehab.
		Last Evaluation
Inspection		Current Load Limit 5.0 (tonnes)
nipment)		Load Limit By-Law #
ection		By-Law Expiry Date
y		
ו	Corrugated Steel Pipe	11th Concession Road 1.30 km south from South Talbot Road at Eas Corrugated Steel Pipe 42° 11' 17.77" N

Field Inspection Info	rmation:							
Date of Inspection	Se	ptember 8, 2016	5					
Inspector		ossam Bakr (Dil		Ltd)				
Others in Party		an Baughan (Dil						
Access Equipment Used		mera, Measurin			el. and	Hammer		
Weather		oudy	.g -upe, 1110usu					
Temperature		Celsius						
Organia II Characharas Not	1 000							
Overall Structure Not	tes:							
Recommended Work on Structure			☐Minor Rehal	b.	□Maj	or Rehab.	Replace	
Timing of Recommended	l Work	1 to 5 years	☑ 6 to 10 years	8				
Overall Comments Existing pipe is in fair condition with ben moderately corroded. In the drainage repe place with need to be cleaned/flushed . Existing pipe is in fair condition with ben moderately corroded. In the drainage repe place with need to be cleaned/flushed . Existing pipe is in fair condition with ben moderately corroded. In the drainage repe place with need to be cleaned/flushed . Existing pipe is in fair condition with ben moderately corroded. In the drainage repe place with need to be cleaned/flushed . Existing pipe is in fair condition with ben moderately corroded. In the drainage repe place with need to be cleaned/flushed . Existing pipe is in fair condition with ben moderately corroded. In the drainage repe place with need to be cleaned/flushed . Existing pipe is in fair condition with ben moderately corroded. In the drainage reper place with need to be cleaned/flushed . Existing pipe is in fair condition with ben moderately corroded.				ort received	from the	Town; it is recomi	mended to remain in	
Date of Next Inspection								
Element Data:								
Element Group:	Signs		Length:	Length:				
Element Name:	Signs		Width:					
Location:			Height:					
Material:	27/4		Count:	titr	0			
Element Type: Environment:	N/A		Total Qua		0			
Protection System:			Lillited II	ispection			Perform.	
Condition Data:	Units	Exc.	Good	Fai	ir	Poor*	Deficiencies	
	□/ each ☑/ % □/ al							
Comments: - Upgrade and	installation of Object Ma	rker signs and Objec	ct Markings to mee	t the Ontario	o Traffic	Manual		
Recommended Work:	□Rehab	□Rep	lace	Maintenance Needs:				
	□1-5 yea	ırs 🔲 6-10) years	□Urge	nt	□1 year	☐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 Quan	ıtity:	17.80 S	q.m		
Environment:			Limited Ins	spection				
Protection System:							Perform.	
Constitute Dates	Units	Exc.	Good	Fair	r	Poor*	Deficiencies	
Condition Data: $m^2 \square / m$	\square / each \square / % \square / all \square	0	8.8	9.0		0.0		
				noderately corroded t within 6-10 Years				
Recommended Work:	Rehab	☑ Replace	e	Mainte	enance l	Needs:		
	□1-5 years	2 6-10 y€	ears	Urge	nt	□1 year	☐2 year	
Element Group:	Embankments & Streams	Length:						
Element Name:	Streams and Waterways	Width:						
Location:	East - West		Height:					
Material:	East - west		Count:		2			
Element Type:	1	Total Quan	ntity.	2				
Environment:		Limited Ins		П				
Protection System:		Perform.						
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$		0	0	1	-	1	Donoicinent	
Comments: Drain is connec repaired as part	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:	Rehab	Replace						
	□1-5 years	□6-10 ye	ears	rs Urger		□1 year	☐2 year	
				Drain Mai	ntenance	·		
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments		Width:					
Location:	Linounkments		Height:					
Material:			Count:		6			
Element Type:			Total Quan	ntitv:	6			
**								
Environment:			Limited Ins	spection	Ш			
Environment: Protection System:			Limited Ins	spection	Ц		Perform.	
Protection System:	Units	Exc.	•	_		Poor*	Perform. Deficiencies	
Protection System:	Units □/ each □/ % □/ all □	Exc.	Good	Fair		Poor*	Perform. Deficiencies	
Protection System:	□/ each □/ % □/ all □ nts appears to be in good conduction.	0	Good 6	Fai:	r	0	Deficiencies	
Protection System: Condition Data: m²□/m Comments: The embankment	□/ each □/ % □/ all □ nts appears to be in good conduction.	0	Good 6 vered with heavy	Fair 0	r	0 can be removed/cle	Deficiencies	
Protection System: Condition Data: m²□/m Comments: The embankmen routine mainten	□/ each □/ % □/ all □ nts appears to be in good contance.	0 dition. They are co	Good 6 overed with heavy	Fair 0	r which c	0 can be removed/cle	Deficiencies aned as part of the	
Protection System: Condition Data: m²□/m Comments: The embankmen routine mainten	□/ each □/ % □/ all □ nts appears to be in good concance. □ Rehab	0 dition. They are co	Good 6 overed with heavy	Fai: 0 y vegetation Mainte	r which c	0 can be removed/cle Needs: 1 year	Deficiencies	

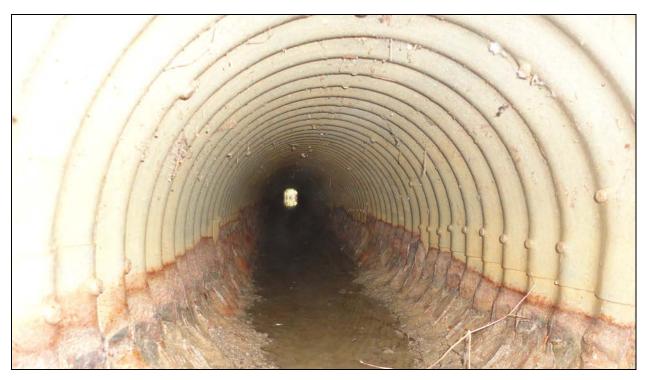
Element Group:	Decks	,	Length:		0.45 m		
Element Name:	Wearing Surface		Width:		6.0 m		
Location:			Height:				
Material:	Tar and Chip		Count:				
Element Type:		-	Total Quar	ntity:	2.7 Sq.m	1	
Environment:			Limited In				
Protection System:				<u> </u>			Perform.
	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: m ² [7]/m	\square / each \square / % \square / all \square	0.0	2.7	0.0		0.0	
	, L		۷.1	0.0		0.0	
Comments: The Tar and Ch	ip surface is in good condition	n.					
Recommended Work:	Rehab	Replac	20	Maintenance Needs:			
Recommended Work.		☐6-10 ye		Urgei		1 year	☐2 year
	□1-5 years	□0-10 y	ears	LOIge	nı	∐1 yeai	⊔∠ yeai
Element Group:	Approaches	Length:		6.0 m			
Element Name:	Wearing Surface	Width:		6.0 m			
Location:	North - South	Height:					
Material:	Tar and Chip			2			
Element Type:			Total Quar	ntity:	72.0 Sq.1	m	
Environment:		Limited I					
Protection System:							Perform.
C 11/2 D /	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each □/ % □/ all □	0.0	72.0	0.0	,	0.0	
<u> </u>	, L	Į					
Comments: The Tar and Ch	ip surface is in good condition	a.					
Recommended Work:	Rehab	Replac	ee	Maintenance		Veeds:	
	1-5 years	□6-10 ye			☐Urgent ☐1 year		2 year
	што допа		Cars		116		<u> </u>
Element Group:			Length:				
Element Name:	+		Width:		 		
Location:			Height:		 		
Material:	+		Count:		<u> </u>		
Element Type:	†		Total Quar	ntity	<u> </u>		
Environment:	+		Limited In				
Protection System:	+		Limited in	Speciion	<u> </u>	1	D : ::C= :::::
Flotection System.	TT:4	T	Cood	Toi		D *	Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	r	Poor*	Deficiencies
$m^2 \square / m$					$-\!\!-\!\!\!\perp$		L
Comments:							
Recommended Work:	☐ Rehab	Replac			enance N	L .	
	☐1-5 years	☐ 6-10 ye	ears	☐ Urgeı	nt	☐ 1 year	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:			
G			7
Structure Number	69 (Formerly 33)		
Hwy/Road Name	Concession Road 11		
Structure Location	At the Intersection with Cou	nty Road 8	
Structure Type	Corrugated Steel Pipe Arch		
Latitude	42° 10' 50.3394"		Longitude -82° 54' 2.088"
Owner(s)	Town of Tecum	seh	Heritage Designation: □ Not Cons. □ Cons./not App. □ List/not Desig □ Desig./not List □ Desig. & List
Span Length	2.40	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1995		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
			(comes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Information:									
Date of Inspection		Ianua	ry 26, 2016						
Inspector			-	llon	Consulting I	(td)			
		110886	iii Daki (Di	11011	Collisating 1				
Others in Party									
Access Equipment Used		Came	ra, Measurii	ng T	ape, Measur	ing Whe	el, and	Hammer	
Weather		Cloud	ly, Probabili	ty o	f rain 47%				
Temperature		3 (6 /	-3) Celsius						
Overall Structure Notes:									
Recommended Work on	Recommended Work on Structure None Minor Rehab						Пмаі	or Rehab.	☑ Replace
						•	□ IVIaj	oi Kenao.	Replace
Timing of Recommended	Work	☐1 to 5 years ☐6 to 10 years							
Overall Comments Culvert barrel was observed with mode the bottom. Wearing surface with wide due to eventual corrosion loss and impression of the comments of the bottom.				e with wide tra	nsverse cra	cks over			
Date of Next Inspection									
Element Data:									
El (C					T .1				
Element Group: Element Name:	Signs Signs			Length: Width:					
Location:	Digiis				Height:				
Material:					Count:		1		
Element Type:	Stop Sign				Total Quar	ntity:	1		
Environment:					Limited In	spection			
Protection System:						1			Perform.
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐	/ all□	Exc.		Good	Fai	ir	Poor*	Deficiencies
Comments: - Existing Sign		on		ect Ma	arkings to meet	the Ontario	o Traffic	Manual	
Recommended Work:	□Reh	ab	□Rep	lace	<u> </u>	Maint	enance	Needs:	
	□1-5	years	□6-10	0 ye	ars	□Urge	ent	□1 year	☐2 year
Li 2 years Lo 10 years Lorgent Li year Li 2 ye									

Element Group:	Culverts		Length:		13.0 m		
Element Name:	Barrels		Width:		2.40 m		
Location:			Height:		1.80 m	I	
Material:	Corrugated Steel		Count:				
Element Type:	Multi-Plate CSP		Total Qua	ntity:	98.0 Sc	q.m	
Environment:			Limited In	spection			
Protection System:							Perform.
Condition Date	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		58.80	29.4	10	9.80	
Comments: Moderate corre	osion around the bolts, and be	nign corrosion at t	he haunches bott	com.		,	
Recommended Work:	Rehab	✓ Replace	ce	Mainte	Needs:		
	□1-5 years	□ 6-10 y		□Urge	nt	□1 year	☐2 year
						,	
Element Group:	Culverts		Length:		0.40		
Element Name:			Width:		8.40 m		
Location:		Inlet Components			0.60 m		
Material:	East Side	Height: Count:		2.30 m	<u>l</u>		
	C.I. (M.) D	Total Qua	uantity: 19.30 Sq.m				
Element Type: Environment:	Culvert Mortar Bags		-		Sq.m		
Protection System:			Limited In	ispection	Ц		
Protection System.	TT '		Г.		D #	Perform.	
Condition Data:		Exc.	Good	Fai	r	Poor*	Deficiencies
Comments: In Excellent Co				126.		N. I	
Recommended Work:	Rehab	Replac		Maintenanc			
	□1-5 years	□6-10 у	ears	Urgent		☐1 year	☐2 year
Element Group:	Culverts		Length:	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 Qua	ntity:	19.30 \$	Sam	
Environment:			Limited In	-	П	- 4	
Protection System:				Бресион			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data:	\square / each \square / % \square / all \square	19.30			_		
Comments: In Excellent Co	,	17.50					
Recommended Work:	Rehab	re.	e Maintenance Needs:				
1.commonded Work.	1-5 years	☐ Replace ☐ 6-10 y		Urge		1 year	2 year
	□1-5 years	ш 0-10 y	Cal 3	L Oige	111	□ 1 year	⊔ ∠ yeai

Element Group:	Decks	Decks		Length:		2.40 m		
Element Name:	Wearing Surface		Width:		7.60 m			
Location:			Height:					
Material:	Asphalt		Count:					
Element Type:			Total Qua	ntity:	18.25 S	q.m		
Environment:			Limited Inspection					
Protection System:				Perf				
C III D	Units	Exc.	Good	Fai	r Poor*		Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square							
Comments: A newer asphale	t layer than approaches with	Wide Transverse C	Cracks over the c	culvert		1		
Recommended Work:		Replac	e	Mainte	enance	Needs:		
	□ 1-5 years	□6-10 y	ears	□Urge	nt	☐1 year	☐2 year	
	1			*	1			
Element Group:	Approaches		Length:		6.0 m			
Element Name:	Wearing Surface		Width:		7.60 m			
Location:	North - South	Height:						
Material:	Asphalt	Count:						
Element Type:		Total Qua		91.20 S	q.m			
Environment:			Limited In	spection				
Protection System:		T		1			Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
$m^2 \square / m$	□/ each □ / % □ / all □	86.0	5.20	0				
Comments: - North Approach: Edge Cracks								
	ch: Longitudinal Crack							
D 1 1 1 1 1 1 1				1 36 1 .		NY 1		
Recommended Work:	☑ Rehab	Replac						
	☑1-5 years	□6-10 y	ears	Urgent		☐1 year	☐2 year	
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East - West		Height:					
Material:	East - West		Count:		1			
Element Type:			Total Qua	ntity:	1			
Environment:			Limited In	•				
Protection System:			Limited II	ispection	<u> </u>		Perform.	
Trotection System.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$				Tai	1	1 001	Deficiencies	
L,	•		1					
Comments: In Good Condit	ion							
Recommended Work:	☐ Rehab	Replac	e.	Mainte	enance	Needs:		
1.000mmenaea work.	1-5 years	☐ 6-10 y		Urge		1 year	2 year	
	□1-5 years	□ 0-10 у	-u10	l orge	111	□ 1 year	☐ 2 year	
				1				
i e								

Element Group:	Embankments & Streams	Embankments & Streams					
Element Name:	Embankments		Width:				
Location:			Height:				
Material:			Count:		4		
Element Type:			Total Qua	intity:	4		
Environment:			Limited In	nspection			
Protection System:							Perform.
G III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	□/ each ☑ / % □/ all □		4				
Comments: In Good Condit	L			1		<u> </u>	
D 1.1W 1				3611		N 1	
Recommended Work:	Rehab	□Repla		Maintenance Needs:			
	☐1-5 years	□6-10 y	ears	□Urge	nt	□1 year	☐2 year
				•			
Element Group:			Length:				
Element Name:							
Location:		Height:					
Material:		Count:					
Element Type:			Total Qua	ıntity:			
Environment:			Limited In	nspection			
Protection System:							Perform.
Condition Date:	Units	Units Exc. Good			r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	dition Data: $m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square$						
Comments:							
Comments.							
Recommended Work:	Rehab	□Repla	ce				
	□1-5 years	□6-10 y	vears	☐Urgent ☐1 year		☐2 year	
Element Group:			Length:				
Element Name:			Width:				
Location:			Height:				
Material:			Count:				
Element Type:			Total Qua	intity.			
Environment:			Limited I	-	\Box		
Protection System:	1		Elimited II	порессион			Perform.
,	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: $\frac{1}{m^2 \square / m}$	\square / each \square / % \square / all \square	LAC.	Good	1 41	1	1001	Bettereneres
•							
Comments:							
Recommended Work:	Rehab	□Repla	ce	Maintenance Needs:			
	□1-5 years	□6-10 չ	ears	□Urge	nt	□1 year	☐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 Sou	th Talbot Rd.	
Structure Type	Non-Rigid Frame Open Foo	ting Culvert	
Latitude	42° 11' 38.6874"		Longitude -82° 53' 8.8074"
Owner(s)	Town of Tecum	seh	Heritage □Not Cons. □ Cons./not App. □ List/not Desig Designation: □ Desig./not List □ Desig. & List
Span Length	2.45	(m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
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: ☐ Transit ☐ Truck ☐ School ☐ 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
Historical Data:			
Year Built	1965		Year of Last Major Rehab.
Last OSIM Inspection	n		Last Evaluation
Last Enhanced OSIM			Current Load Limit N/A (tonnes)
Enhanced Access Equal (ladder, boat, lift, etc.)			Load Limit By-Law #
Last Underwater Insp	pection		By-Law Expiry Date
Last Condition Surve	у		
Rehab History:			

Field Inspection Infor	mation:									
Date of Inspection		Decem	ber 16, 201	.5						
Inspector					Consulting I	Ltd)				
Others in Party			`		<u> </u>					
Access Equipment Used	(Camera	ı, Measurin	ıg Ta	pe, Measur	ing Whe	el, and	Hammer		
Weather					oon Showe					
Temperature			Celsius							
1										
Overall Structure Not	tes:									
Recommended Work on Structure			Iinor Rehab		✓Maj	or Rehab.	Replace			
Timing of Recommended Work ☐1 to 5 years ☐6 to 10 years					to 10 years				-	
Overall Comments Concrete spalling was indicated at the d surface was observed with potholes on l south approach, and patched strip of app				otholes on bot	h road side	es over the	e culvert section, m	_		
Date of Next Inspection										
TI (D)										
Element Data:										
Element Group:	Signs				Length:					
Element Name:	Signs				Width:					
Location:					Height:					
Material:					Count:		1			
Element Type:	Stop Sign				Total Quar		1			
Environment:					Limited In:	spection				
Protection System:	***			1		_	. 1	75	Perform.	
Condition Data: ${m^2 \square / m}$	Units ☐/ each ☑/ % ☐/ a	all 🗆	Exc.		Good	Fa	1r	Poor*	Deficiencies	
Comments: - Existing Sign - Upgrade and i	in Excellent Condition nstallation of Object M		gns and Objec	ct Ma	rkings to meet	the Ontari	o Traffic	Manual		
Recommended Work:	Rehal	b	☐Rep.	lace		Maint	enance	Needs:		
	1-5 ye		1 □6-10		rs	□Urge	ent	□1 year	☐2 year	
				_						

Element Group:	Culverts	Culverts			10.10 m			
Element Name:	Soffit - Inside Boxes		Width:		2.45 m			
Location:			Height:		1.15 m	I		
Material:	Cast-in-place concrete		Count:					
Element Type:			Total Qua	ntity:	48.0 Sc	q.m		
Environment:			Limited In	spection				
Protection System:							Perform.	
C - 1''.' - D - 1	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		37.0	5.5	0	5.50		
Comments: - Concrete Spa - Map Cracking - Leak at the co	g at Soffit (East Inlet Side).	d reinforcement.		1		,		
Recommended Work:	Rehab	□Replac	ce	Mainte	Needs:			
	□ 1-5 years	ears	Urge	nt	☐1 year	☐2 year		
Element Group:	Culverts	Culverts			2 0/2 0	·		
Element Name:	Inlet Components		Length: Width:		2.0/3.0 0.30 m			
Location:			Height:		1.75 m			
Material:						l .		
Element Type:	Cast-in-place concrete Wingwall	Count: Total Qua	ntity	2 25 5.				
Environment:	Willigwall		-	8.75 Sc	ų.III			
Protection System:		Limited Inspection Perform.						
Trotection bystem.	Units	Exc.	Good	Fai		Poor*	Deficiencies	
Condition Data: $\frac{\text{Offits}}{\text{m}^2 \square / \text{m} \square / \text{ each} \square / \% \square / \text{ all} \square}$		EXC.		га	1	POOL:	Deficiencies	
m² 🗹 / m	8.75							
Comments: In Good Condi				1 20.		N 1		
Recommended Work:	Rehab	Replac		Maintenance				
	□1-5 years	□6-10 y	ears	Urgent		☐1 year	☐2 year	
Element Group:	Culverts		Length:					
Element Name:	Outlet Components		Width:		2.45 m 0.30 m			
Location:	East Side		Height:		0.60 m			
Material:	Cast-in-place concrete		Count:					
Element Type:	Headwall		Total Qua	ntitv:	1.45 Sc	a.m		
Environment:			Limited In		П	1		
Protection System:							Perform.	
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: m ² /m	□/ each □/ % □/ all □		1.45		_			
Comments: In Good Condi			1.43					
Recommended Work:	nded Work: Rehab Replace			e Maintenance Needs:				
1.0001111110111000 WOLK.	1-5 years	☐ 6-10 y		Urge		1 year	2 year	
	□1-3 years	— 0-10 у	Cal 3	L Oige	111	□ 1 year	⊔ ∠ yeai	

Element Group:	Culverts		Len	gth:		3.0 m		
Element Name:	Outlet Components V		Wid	Width:		0.30 m		
Location:	West Side I		Heig	Height:		1.75 m		
Material:	Cast-in-place concrete		Cou	Count:		2		
Element Type:	Wingwall		Tota	Total Quantity: 10.50 Sq.m			q.m	
Environment:			Lim	ited In	spection			
Protection System:								Perform.
Condition Data:	Units	Exc.	Goo	od	Fai	r	Poor*	Deficiencies
m ² /m	condition Data: $m^2 \square / m \square / \operatorname{each} \square / \% \square / \operatorname{all} \square$ 8.4				2.1			
Comments: - Alkali-Aggregate Reaction at the top of the wingwalls - Minor concrete Spalls at the wingwalls vertical edges.								
Recommended Work:	Rehab	□Repla	ce		Mainte	enance	Needs:	
	□1-5 years	□6-10 <u>y</u>	years		□Urge	nt	☐1 year	☐2 year
Element Group:	Culverts		Len	oth:		2.45 m		
Element Name:	Outlet Components		Wid			0.30 m		
Location:	West Side		Heig			0.60 m		
Material:	Cast-in-place concrete		Cou			0.00		
Element Type:	Headwall			ıl Quar	ntitv:	1.45 Sc	ı.m	
Environment:					Limited Inspection			
Protection System:			L		<u> </u>	_		Perform.
	Units	Exc.	Goo	od	Fai	r	Poor*	Deficiencies
Condition Data: m ² m ²	\square / each \square / % \square / all \square		1.4					
Comments: In Good Condit Recommended Work:	Comments: In Good Conditions							
Recommended work:	Rehab	□Repla					Needs:	Па
	□1-5 years	□6-10 <u>y</u>	years		□Urge	nt	□1 year	2 year
Element Group:	Decks		Len			2.45 m		
Element Name:	Wearing Surface		Wid			7.60 m		
Location:			Heig					
Material:	Asphalt		Cou					
Element Type:				ıl Quar	•	18.60 S	q.m	
Environment:			Lim	ited In	spection		T	
Protection System:		1			1	1		Perform.
Condition Data:	Units	Exc.	Goo	od	Fai	r	Poor*	Deficiencies
m ² /m			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:	Rehab	Repla	ce		Mainte	enance	Needs:	
	□ 1-5 years	☐ 6-10 <u>y</u>			Urge	nt	☐1 year	2 year

Element Group:	Approaches		Length:	Length:				
Element Name:	Wearing Surface V		Width:	Width:		7.60 m		
Location:	North - South		Height:	Height:				
Material:			Count:		2			
Element Type:			Total Quar	ntity:	91.20 \$	Sq.m		
Environment:			Limited In	spection				
Protection System:							Perform.	
Condition Date:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		73.2	12.	0	6.0		
Comments: - Moderate Flushing at South Approach								
Recommended Work:		□Repla	ce	Mainte	enance	Needs:		
	□ 1-5 years	□6-10 y	ears	Urge	nt	☐1 year	☐2 year	
	•	-						
TI G					1			
Element Group:	Embankments & Streams		Length:					
Element Name:	Streams and Waterways		Width:					
Location:	East - West		Height:					
Material:			Count:		1			
Element Type:			Total Quar		1			
Environment:			Limited In	spection				
Protection System:				T			Perform.	
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
m² ⊔/m [□/ each □/ % □/ all ☑		1					
Comments: Growing plants	on the East Side, with recom	mendation to be s	shaved.					
Recommended Work:	Rehab	□Repla	ce	Mainte	enance	Needs:		
	□1-5 years	□6-10 y	vears	☐Urgent ☐1 year			☐2 year	
		-					-	
Element Group:	Embankments & Streams		Length:					
Element Name:	Embankments & Streams		Width:					
Location:	Lindarkinents		Height:					
Material:			Count:		6			
Element Type:			Total Quar	ntity:	6			
Environment:			Limited In	•				
Protection System:	-		Limited III	ispection	<u> </u>		Perform.	
Trotection bystein.	Units	Exc.	Good	Fai	r	Poor*	Deficiencies	
Condition Data:		Exc.		1 al	1	1001	Deficiences	
Comments: In Good Conditions 6								
Recommended Work:	Rehab	Repla	re	Mainte	enance	Needs:		
Recommended WOIK.	☐ Renab	□ Kepia		Urge		□1 year	☐2 year	
	□1-3 years	⊔0-10 У	Cals	потge	111	□1 year	⊔∠ 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 □Not Cons. □ Cons./not App. □ List/not Desig Designation: □Desig./not List □Desig. & List
Span Length	1.1 (m)	Road Class: Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Total Deck Length	9.7 (m)	Posted Speed No. of Lanes 2
Overall Str. Width	19.0 (m)	AADT % Trucks
Total Deck Area	10.67 (sq.m)	Special Routes: ☐ Transit ☐ Truck ☐ School ☐ Bicycle
Roadway Width	9.7 (m)	Detour Length Around Bridge N/A (km)
Fill on Structure	1.1 (m)	Direction of Structure NW
Skew Angle	0° (Degrees)	No. of Spans
Historical Data:		
Year Built	1985	Year of Last Major Rehab.
Last OSIM Inspection		Last Evaluation
Last Enhanced OSIM		Current Load Limit N/A (tonnes)
		Current Load Limit (tollies)
Enhanced Access Equal (ladder, boat, lift, etc.)		Load Limit By-Law #
Last Underwater Insp	pection	By-Law Expiry Date
Last Condition Surve	ey	
Rehab History:		

Field Inspection Infor	mation:							
Date of Inspection	Feb	ruary 1, 2016						
Inspector		•	llon Consulting l	Ltd)				
Others in Party		Bouil Buki (Bli	non consuming i					
-		3.6	T M	. 3371 1	1 77			
Access Equipment Used			ng Tape, Measur	ing Wheel,	and Hammer			
Weather	Clo	udy, Probabili	ty of rain 1%					
Temperature	1 (6	6/-1) Celsius						
Overall Structure Not	es:							
Recommended Work on S	Structure	None	✓ Minor Rehab		Major Rehab.	Replace		
			_	. ⊔	Major Kenab.	Пкеріасе		
Timing of Recommended		to 5 years	✓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: Material:			Height: Count:	1				
Element Type:	Ston Sign			atity: 1				
Environment:								
Protection System:			Emited in	вресноп _	•	Perform.		
Condition Data:	Units	Exc.	Good	Fair	Poor*	Deficiencies		
$m^2 \square / m$	□/ each ☑/ % □/ all	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:	Rehab	□Rep			nce Needs:			
	□1-5 years	s □6-10) years	□Urgent	□1 year	☐2 year		

Element Group:	Culverts		Length:		19.0 m		
Element Name:	Barrels V		Width:		1.1 m (Dia.)		
Location:	I		Height:				
Material:	Corrugated Steel		Count:				
Element Type:			†		65.7 Sq	.m	
Environment:			Limited In	spection			
Protection System:			•				Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² / m	\square / each \square / % \square / all \square		65.7		_		
<u> </u>	·		03.7		1		
Comments: In Good Condit	ions						
Recommended Work:	Rehab	Replac	e	Mainte	enance l	Needs:	
	☐1-5 years	□6-10 ye		Urge		☐1 year	☐2 year
***************************************	□1 5 years		241 3	Lorge	111	<u> Птусат</u>	
F1 C	1		T .1		T		
Element Group:	Embankments & Streams		Length:				
Element Name:	Embankments		Width:				
Location:	East Side		Height:				
Material:			Count:		4		
Element Type:	N/A		Total Qua	-	4		
Environment:			Limited In	spection		T	
Protection System:		ı					Perform.
Condition Data:	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
$m^2 \square / m$	□/ each □ / % □ / all □		4				
Comments: In Good Condit	ions						
Commones.							
Recommended Work:	Rehab	□Replac	e	Mainte	enance :	Needs:	
	□1-5 years	□6-10 ye	ears	Urge	nt	□1 year	☐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 Qua	ntity:	2		
Environment:	Tiana Laia Ripiap		Limited In	•			
Protection System:			Limited III	ispection			Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	·		Good	1 41	.1	1 001	Deficiencies
Comments: In Good Condit	ions						
Recommended Work:	☐ Rehab	Replac	e	Mainte	enance l	Needs:	
	□1-5 years	□6-10 ye	ears	Urge	nt	☐1 year	☐ 2 year
		☐ 6-10 ye	ears	Urge	nt	☐1 year	2 year
		□6-10 yo	ears	Urge	nt	☐1 year	2 year

Element Group:	Decks		Length:		1.1 m		
Element Name:	Wearing Surface V		Width:				
Location:			Height:				
Material:	Asphalt		Count:				
Element Type:			Total Qua	ntity:	10.7 Sq	ı.m	
Environment:			Limited Ir	spection			
Protection System:							Perform.
Condition Dates	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \square / m}$	\square / each \square / % \square / all \square		10.7				
Comments: In Good Conditions							
Comments, in coor condit	ions						
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	□1-5 years	□ 6-10 у	ears	□Urge	nt	☐1 year	☐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 Qua	ntity:	116.4 S	g.m	
Environment:	Bengin		Limited Inspection		•		
Protection System:					_		Perform.
	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: m ² [7]/m	\square / each \square / % \square / all \square		110.0	6.4			
<u> </u>				0	r		
Comments: Generally, in G	ood Conditions with a replac	ed strip at the Sout	thern approach				
Recommended Work:	Rehab	Replac	ce	Mainte	enance	Needs:	
	□1-5 years	 □6-10 y		Urge	nt	□1 year	☐2 year
	<u> </u>						
Element Group:	Embankments & Streams		Length:				
Element Name:	Streams and Waterways		Width:				
Location:	East - West		Height:				
Material:			Count:		1		
Element Type:			Total Qua	ntity:	1		
Environment:			Limited Ir	spection			
Protection System:							Perform.
C III D	Units	Exc.	Good	Fai	r	Poor*	Deficiencies
Condition Data: ${m^2 \Pi/m}$	□/ each □/ % □/ all ☑		1				
Comments: Excessive plant			la with recomm	andation to 1	no chove	1	
Comments. Excessive plant	s growin along the water sur	eam at the west sid	ie, with recommi	endation to t	be shaved	1	
Recommended Work:		Replac	ce	Mainte	enance	Needs:	
	<u> </u>	☐ 6-10 y		Urge	nt	☐1 year	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		

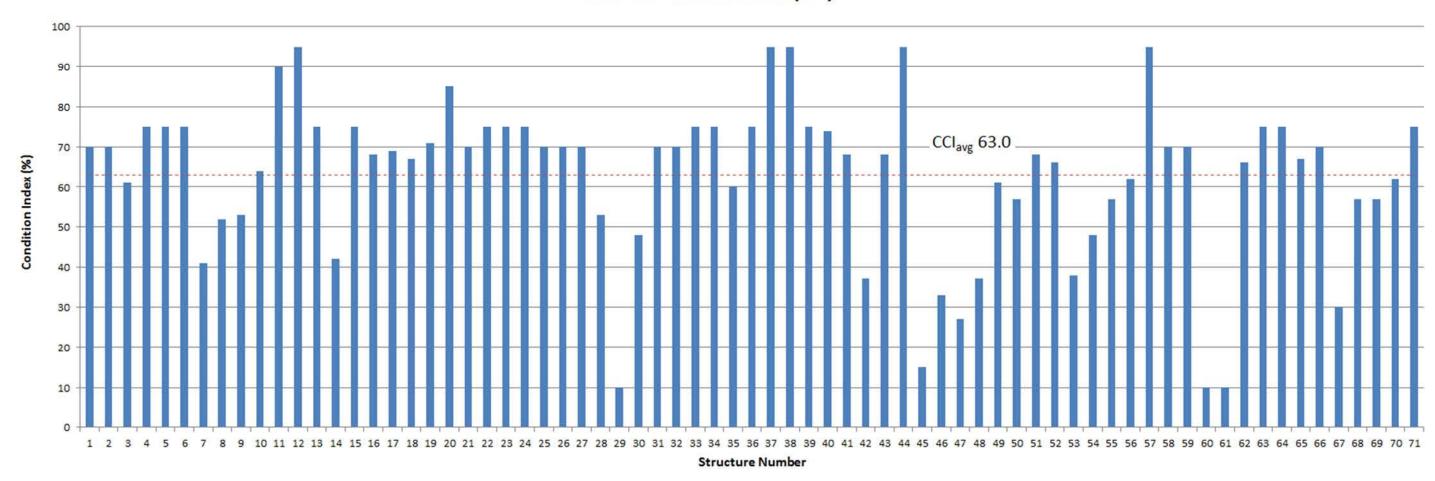
Table D-2: Culvert Condition Index (CCI)

Structure	Condi ti on	Structure	Condi ti on	Structure	Condi ti on
ID	Index (%)	ID	Index (%)	ID	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)





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.

Flavio Forest (2015), S Talbot at Walker Culvert Failure, (15-2367), Dillon Consulting Limited.

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.

