

CORPORATION OF THE TOWN OF TECUMSEH

2024 Bridge and Culvert Needs Study Structures with Spans > 3.0 m





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Manager Engineering Services

Town of Tecumseh – 2024 Bridge and Culvert Needs Study Structures with Spans > 3.0 m

Dillon is pleased to submit a PDF copy of the Final 2024 Bridge and Culvert Needs Study Report for Structures with Spans > 3.0 metres (m) to the Town of Tecumseh.

Should you have any questions or concerns, please contact us for discussion.

Sincerely,

DILLON CONSULTING LIMITED

Monica Sokolski Project Manager

Aloken

MAS:rrk Enclosure

Our file: 24-8266

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Executive Summary

A Bridge and Culvert Needs Study was carried out in 2024 by Dillon Consulting Limited (Dillon) for 16 bridge and culvert structures with spans greater than 3.0 metres (m), including two pedestrian bridges, located in the Town of Tecumseh (the Town). This report summarizes the findings of the study and identifies the required improvements to structures which are currently deficient or are likely to become deficient within a ten year period from the time of this report.

Three of the 16 structures investigated were identified to have deficiencies where rehabilitation of the structures is recommended. The structures are listed below and this information is also summarized in Appendices B and C.

- Rehabilitation within one to five years
 - Structure 2001 Colchester Townline Drain at Eighth Concession Road
- Replacement within six to ten years
 - Pedestrian Bridge No.1 Lakewood Park Pedestrian Bridge
- Rehabilitation within six to ten years
 - Structure 1016 Collins Drain at Outer Drive.

Structure 2001 was generally in fair condition with very severe spalling of grout, loss of stone and voids observed above the CSP inlet and outlet. The deterioration at the headwalls has progressed since the last inspection and a minor rehabilitation to address these concerns is recommended within one to two years.

The coating system on Pedestrian Bridge No. 1's floor system was observed to have failed and has advanced significantly since the last inspection. The progression of the coating failure confirmed that the previously noted severe corrosion and section loss of the floor system was coating failure. Light corrosion was observed throughout with areas of medium corrosion observed on the stringers. While the corrosion of the floor beams, stringers, and wind bracing has progressed since the last inspection it is not a significant issue at the moment. A steel condition survey in order to quantify the extent of the deterioration and confirm presence of section loss is not considered required at this time but could be considered in the future dependant on the findings from future inspections. Annual inspections are recommended until the structure is replaced. During the 2022 needs study, consultation with the bridge fabricator determined the cost to replace the structure is similar to that of a rehabilitation and therefore a replacement is recommended within six to ten years.

Rehabilitation of structure 1016 may be required in six to ten years in order to address the potential lack of waterproofing on the top of deck and the leaking wide crack observed on the culvert soffit.



No additional investigations are warranted for the 16 structures investigated. However, a steel condition survey and/or detailed coating condition survey may be considered in the future for Pedestrian Bridge No. 1 and should be confirmed during the next inspection.

As part of a previous assignment, Dillon completed a detailed roadside safety review for the bridges and culverts located in the Town of Tecumseh. The outstanding previously recommended roadside safety improvements are summarized below and this information is also summarized in Appendix B.

- Structure 1005 Pike Creek at Baseline Road
 - Extend the steel beam guide rail at the eastbound approach to relocate the steel beam energy attenuating terminal away from utility poles.

The total estimated capital needs allocation over the ten year study period (to 2034) is \$595,000. This cost estimate excludes H.S.T. and routine maintenance items and includes allowances for construction contingencies and engineering. The Town should consider the needs of the road network when determining priorities for the structures.

By combining road and structure works, there may be opportunities for additional cost savings and a reduction in public traffic disruptions. These estimated costs are in 2024 Canadian dollars without allowance for inflation and are based on visual observations during the study. The recommendations may not necessarily include every improvement possible for each structure. The final estimated costs for structure rehabilitation or replacement will vary on the results of detailed investigations, and/or changes to the proposed scope of work during detailed design.

In this study, the Bridge Condition Index (BCI) was calculated for each structure and compared to the BCI of the previous studies (2003 to 2022). This comparison is provided in Appendix D. The average BCI value calculated for 2024 is 76.6 which is slightly lower than the BCI value of 77.7 that was calculated for the 2022 study. The decrease in BCI can be attributed to the standard decline in structure condition over time.



Background, Purpose, and Methodology

Background and Purpose 1.1

1.0

Dillon Consulting Limited (Dillon) was retained by the Corporation of the Town of Tecumseh (the Town) in March 2024, to conduct a needs study for the Town's current inventory of 16 bridge and culvert structures greater than 3 metres (m) in span. The general scope of work for this study is as follows:

- Review of previous 'Town of Tecumseh 2022 Bridge and Culvert Needs Study' report, recent updates to structures, existing reports, and drawings readily available, including past capital spending information provided by the Town since the 2022 report.
- Perform a visual site inspection of the accessible portions of the Town's 16 bridge and culvert structures with spans greater than 3.0 m.
- Where accessible, take approximate site measurements and update previous records of structural defects, deficiencies, and maintenance needs.
- Update the overall and detailed maps of the Town showing the location and ID of each structure.
- Update the Ontario Structure Inspection Manual (OSIM) inspection reports of the previous 2022 Bridge and Culvert Needs Study, prepared by Dillon.
- Complete the Bridge Condition Index (BCI) for each structure with a graphical comparison with the previous studies (2003 to 2022).
- Prioritization of structures requiring capital works based on current BCI values and site observation and any future planning of the Town.
- Prepare a preliminary opinion of probable cost of construction for improving and maintaining the structure inventory over a ten-year period (2024 to 20324) from the time of this report.

Methodology

1.2

1.2.1

Structure Inspection

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

- Visually inspect or hammer sound accessible concrete elements from ground level and/or from the water level, where use of hip waders is deemed safe and practical.
- Visually inspect the condition of the structural steel elements, where applicable.
- Compile a digital photo inventory of the observed condition for each structure.
- Record general defects for each element inspected, under the following general classifications:
 - Material defects, such as concrete delamination, spalling, cracking, scaling, etc., as applicable.
 - Performance deficiencies, such as observed settlements or load carrying capabilities.
 - Maintenance needs, such as minor concrete repairs, cleaning deck drains, removing debris, asphalt repairs, embankment repairs, installing signage, etc.



Note: Repair Costs for these items have not been included. It is assumed that these items are included in the Town's routine maintenance budget.

Definition of Bridge and Culvert 1.2.2

The definition of bridges and culverts, for the purpose of this study, has been taken from the CSA S6-19 Canadian Highway Bridge Design Code (CHBDC), and is summarized below:

- Bridge A structure which provides a roadway or a walkway for the passage of vehicles, pedestrians, or cyclists across an obstruction, gap or facility, and is greater than 3 m in span.
- Culvert A structure that forms an opening through soil. Only structures with spans in excess of 3 m were considered part of this study.

Structure Inventory and Classification 1.2.3

The 16 structures located in the Town, and included in this study, were classified as a Bridge or Culvert according to CSA S6-19, as stated above. The structures were inventoried and appraised according to the Ontario Structure Inspection Manual (OSIM), recent field investigations and discussions with the Town. Each structure was allocated an identification number by the Town for inventory purposes.

General information relating to each of the structures included in this study is summarized in Table 1. An aerial map, showing the approximate structure locations is included in Appendix A.

Table 1: Inventory of Bridges and Culverts

| Structure ID | Structure Location | Structure Type | Year of Construction | Year of Last Major Rehab |
|-----------------|--|---|-----------------------------|--------------------------------|
| 1002 | Pike Creek at Twelfth Concession Road | Concrete Rigid Frame (Bridge) | 1961 | 2016 |
| 1003 | Pike Creek at Twelfth Concession Road | Concrete Slab on Steel Girder (Bridge) | 1965 | 2013 |
| 1004 | Sullivan Drain at Twelfth Concession Road | Concrete Non-Rigid Frame (Bridge) | 1965 | 2019 |
| 1005 | Pike Creek at Baseline Road | Concrete Slab on Steel Girder (Bridge) | 1955 | 2014 |
| 1006 | Sullivan Creek at Baseline Road | Concrete Rigid Frame (Culvert) | 2015 | |
| 1009 | Pike Creek at Malden Road | Concrete Rigid Frame (Culvert) | 2007 | |
| 1010 | West Townline Drain at Malden Road | Corrugated Steel Pipe Arch (Culvert) | 1995 | |
| 1011 | Malden Road Drain at South Talbot Road | Concrete Rigid Frame (Culvert) | 2007 | |



| Structure ID | Structure Location | Structure Type | Year of Construction | Year of Last Major Rehab |
|-----------------|---|---|-----------------------------|--------------------------------|
| 1013 | Merrick Drain at Eighth Concession Road | Concrete Non-Rigid Frame (Bridge) | 1965 | 2020 |
| 1014 | Colchester Townline Drain at Sixth Concession Road | Concrete Non-Rigid Frame (Culvert) | 1955 | 2019 |
| 1015 | Merrick Creek Drain at Sixth Concession Road | Concrete Rigid Frame (Culvert) | 2007 | |
| 1016 | Collins Drain at Outer Drive | Concrete Rigid/Non-Rigid Frame (Culvert) | 1975 | 2005 |
| 1021 | Pike Creek at Twelfth Concession Road | Corrugated Steel Pipe Arch (Culvert) | 1965 | |
| 2001 | Colchester Townline Drain at Eighth Concession Road | Corrugated Steel Pipe Arch (Culvert) | 2012 | |
| 1 | Lakewood Park over Lakewood Park Channel | Bowstring Pratt Truss (Bridge) | 2016 | |
| 2 | Malden Road Over Pike Creek | Pratt Truss (Bridge) | 2015 | |

Visual Site Inspection 1.2.4

Visual inspection of the 16 bridge and culvert structures was performed in accordance with the OSIM to update the inspection forms for the Town, as part of their strategy to maintain a safe bridge inventory. Measurements collected during the 2022 study were verified and updated, where applicable. The field inspections included a review for material defects and performance deficiencies, as per the OSIM. Structure maintenance needs 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.

Comments on the condition of each element, recommended rehabilitation work, timing for recommended work and photo logs were recorded and included on the inspection forms (see Appendix C). A list of elements, common to most structure types included in this study is summarized in Table 2.



Table 2: OSIM Element List

| Element Group | Element Name | Units |
|------------------|---------------------------------|--------------------------|
| | Wearing Surface | Sq.m. |
| | Deck Top | Sq.m. |
| Deale | 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. |
| Cidamalla /Comba | Sidewalks and Medians | Sq.m. |
| Sidewalks/Curbs | Curbs | Sq.m. |
| | Barrier/Parapet Walls | Sq.m. |
| Barriers | Railing Systems | m. |
| Darrier 3 | Posts | Each |
| | Hand Railings | m. |
| | Girders | Sq.m. |
| | Floor Beams | Sq.m. |
| Beams/MLE's | Stringers | Each |
| | Inside Boxes (sides and bottom) | Sq.m. |
| | Diaphragms | Each (Sq. m. if concrete |
| | Structural Steel | Sq.m. |
| Coatings | Railing Systems/Hand Railings | Sq.m. |
| | Abutment Walls | Sq.m. |
| | Ballast Walls | Sq.m. |
| Abutments | Wingwalls | Sq.m. |
| | Bearings | Each |
| | Shafts/Columns/Pile Bents | Sq.m. |
| Piers | Caps | Sq.m. |
| | Bearings | Each |
| D | 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 |



| Element Group | Element Name | Units |
|-------------------------|-----------------------|-------|
| | Streams and Waterways | All |
| Embankments and Streams | Embankments | Each |
| Sucans | 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 soffits, deck tops (below a wearing surface) and interior portions of main longitudinal elements (i.e., inside structure with high water level). The elements which received a limited inspection are noted on the OSIM inspection forms. Where inspection of a particular element was limited, the quantity and condition of that element, as observed during the 2022 inspection, was visually verified and carried forward.

Deck Top 1.2.4.1

The deck top surface of most bridges was rated based on the condition of the asphalt wearing surface directly above, in accordance with OSIM. The presence of bottom-up defects (defects which start on the underside of the asphalt and propagate upwards) suggests the possibility of a defect in the deck top. Many of the Town's roads are low class bituminous (tar and chip) surfaces, which may not accurately reflect the condition of the deck top as the new road surface might obscure any defects. The condition of structures on these roads was therefore rated based on both the age of the structure and the presence of any bottom-up asphalt defects observed in the road surface and visual observation (or previous visual observations if the asphalt surface was recently replaced).

Approach Slabs 1.2.4.2

Approach slabs were assumed to be present on some structures which typically require them according to the CHBDC. An approach slab length of 6.0 m at each abutment was assumed, as the actual length could not be visually confirmed in the field.

Condition of Elements and Defects 1.2.5

The bridge and culvert 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. Any structure is 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 for the recommended work, are noted for each element in the inspection forms (see Appendix C). Timing for the recommended work was recorded as < 1 Year, 1 to 5 Years, 6 to 10 Years or None, with the following outlining the scope of each timing window.

| < 1 Year | A structure need that is required with some degree of urgency but can still be addressed within one 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 roadway until repair or replacement can be undertaken. |
|---------------|--|
| 1 to 5 Years | A structure need that should be addressed within a period of one to five 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 to 10 Years | 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 are warranted based on the need for more detailed information and recommendations were based on engineering judgement for each site. These specialized investigations or surveys should normally be completed within a two year timeframe.

For structures that have suggested additional investigations, the recommended rehabilitation measures and costs should be re-assessed upon the result of the investigations.

Material Condition Survey 1.2.8

A number of material condition survey types may be warranted based on the results of the visual inspection. One or more of the following surveys are typically recommended in OSIM, when deemed necessary:

- A detailed deck condition survey is recommended for bridges showing significant asphalt defects (such as severe alligator or map cracking), or significant soffit deterioration. These defects suggest that the deck top may also have deficiencies that are not visible, due to the asphalt wearing surface.
- 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 bridges 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.
- A steel condition survey is recommended for bridges that have a significant amount of coating and steel in poor condition. The investigations could include steel thickness investigations, deterioration mapping or other non-destructive testing.

It may also be recommended in some cases that the asphalt wearing surface and bridge 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 bridge and culvert improvements from the Ministry of Transportation Ontario (MTO) Highway Costing System (HiCo) were used to establish probable costs of construction for each structure. A summary of these unit costs is provided in Table 3. In addition to the MTO HiCo unit costs, the following information was also used as reference:

- Ministry of Transportation Ontario 2021 Parametric Estimating Guide.
- 2022 Bridge and Culvert Needs Study for the Town.
- Recent tendered bridge and culvert rehabilitation and replacement projects with similar construction scope.

An allowance for engineering and contingency has also been included. The contingency value was assumed to be approximately 30% of the estimated probable cost of construction for major rehabilitation and replacement projects.

Table 3: Bridge and Culvert Benchmark Probable Costs of Construction

| Category | Description | Units | Unit Cost |
|----------------------------------|--|----------------|-----------|
| | Removal of asphalt pavement from concrete surfaces | m² | \$45.00 |
| Asphalt Paving and Waterproofing | Concrete deck waterproofing | m ² | \$150.00 |
| waterprooning | Asphalt pavement | tonne | \$465.00 |
| | Routing and sealing cracks in asphalt pavement | m | \$50.00 |
| Concrete Repairs | Crack Injection | m | \$450.00 |



| Category | Description | Units | Unit Cos | |
|--|--|----------------|------------|--|
| (See Notes) | Concrete patch repairs – Type A | m ² | \$1,900.0 | |
| | Concrete patch repairs – Type B | m ² | \$5,200.0 | |
| | Concrete patch repairs – Type C | m ² | \$4,000.0 | |
| | CSP Pipe Culvert – Low fill | m ² | \$8,500.0 | |
| Full Replacement (See Notes) | CSP Pipe Culvert – High fill | m ² | \$13,500.0 | |
| (See Notes) | Precast Concrete Box Culvert | m ² | \$14,500.0 | |
| Deck Drains | Removal and replacement of deck drains | each | \$4,500.0 | |
| | Full depth concrete removal | | | |
| Expansion Joint | Reinforcing steel bar | m | \$9,000.0 | |
| | Deck joint assemblies, installation | | | |
| | Earth excavation – grading | | | |
| +/-3m High Gabion Basket Retaining Wall | Gabions | m² | \$6,100.0 | |
| g | Granular Fill | | | |
| | Concrete removal – full depth | | | |
| | Reinforcing steel (black) bar | | | |
| New Barrier on Bridge Deck | Concrete in structure | m | \$9,500.0 | |
| | Concrete in parapet wall | | | |
| | Parapet wall railing | | | |
| | Earth excavation – grading | | | |
| Erosion Protection | Geotextile | m ² | \$370.0 | |
| | Rip rap, hand laid | | | |
| Clean and Coat | Coating existing structural steel | | | |
| Structural Steel | Environmental protection during coating operations | m ² | \$800.0 | |
| Jacking and Bearing | Jacking of superstructure | 1.0 | ¢7E 000 (| |
| Replacement | Bearings | LS | \$75,000.0 | |



| Category | Description | Units | Unit Cost |
|----------------|--|-------|-------------|
| | Roadside Review (Not Including Design) | L.S | \$6,500.00 |
| | Hydrology Study and Hydraulic Analysis | L.S. | \$13,000.00 |
| Investigations | Structural Condition Assessment & Renewal Options Report | L.S. | \$35,000.00 |
| | Monitoring of Deformations, and Settlements | L.S. | \$9,000.00 |
| | Half-Cell Survey | L.S. | \$15,000.00 |

Notes:

- Unit rates have been taken from the averages of recently closed tenders Contract Administered by Dillon, and 2024 HiCo costs in the region including for inflation where appropriate.
- · When completing the cost estimates, a number of assumptions were made (e.g., asphalt thickness, concrete repair depths, etc.) in order to simplify quantity calculations. Detailed measurements, including destructive testing where necessary, should be completed during detailed design to estimate probable construction costs.
- · Unit prices vary according to the amount and extent of work performed on a structure at one time. It is anticipated that unit prices will be higher for small quantity work items.
- · Unit Prices for full replacement of culverts include costs associated with mobilization, demobilization, bonds, insurance, and roadside safety.
- · Unit Prices for specific items do not allow for costs associated with mobilization, demobilization, bonds, insurance, roadside safety, or other costs related to performing and executing capital work.
- Patch repair unit costs include removals, abrasive blast cleaning, and concrete repair. 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, culvert tunnel floor slabs, and the top and inside faces of concrete barrier walls and parapet walls.
 - o 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, outside face of concrete barrier walls and parapet walls.
 - o 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, vertical walls of culverts and tunnels.
- · Asphalt replacement or repair costs have only been included where structural rehabilitation is recommended. For all other cases, it has been assumed that deteriorated asphalt will be repaired or replaced under the Town's road maintenance program.
- Hydrology and Hydraulic analysis costs are associated with culvert / rigid frame structures Costs associated with larger bridge structures may be higher.
- Unit prices do not include HST.

Bridge Condition Index (BCI) Comparison and Bridge Spending 1.2.10

The BCI was developed by the MTO as a means of consolidating inspection information, and overall structure condition, into a single value. The BCI is calculated using asset management principals and is based upon the remaining economic worth of the structure. The value takes into consideration that the structure composed of a number of distinct elements that begin at a certain condition from the point of construction or rehabilitation, and that deteriorate over time.



The index is a planning tool that can be used to assist the Town in scheduling improvements. The BCI is the ratio of the current approximate value of a structure, to its estimated replacement cost, and should not be used to rate or indicate the safety of a structure, or individual element.

The BCI is organized into ranges of 0 to 100, where 100 would represent a newly constructed structure, free of any repair needs. A BCI rating of 70 to 100 would be considered in 'good' condition, a rating of 60 to 70 would be considered in 'fair' condition, and a structure with a BCI rating less than 60 is considered in 'poor' condition. It is recommended that the Town strive to maintain an aggregate BCI rating of a minimum of 70 for their infrastructure portfolio.

The current (2024) BCI was calculated for each of the 16 structures included in this study. An average BCI of 76.6 was calculated – a decrease in overall condition from the BCI value of 77.7 that was calculated for the 2022 study. The current BCI indicates the Town is maintaining their infrastructure portfolio in good condition and spending on bridge repairs has increased the BCI average from 66.0 in 2003, to 76.6 in 2024. The decrease in BCI can be attributed to the standard decline in structure condition over time. Current BCI values for each structure were compared to the BCI values from the previous seven Needs Study Reports. A summary of the BCI comparisons and the towns spending on bridge infrastructure can be found in Appendix D and Appendix E.



Discussion of Findings and Capital Needs

The following sections provide a discussion of unique, significant findings with respect to the overall bridges and culverts within the Town road network, and for specific structures. They are ordered based on the priority of the work required to be undertaken. Further details, recommendations and probable costs of construction can be found in Appendix B.

Specific Structures: Less than One Year (Immediate) Capital Needs

No structures were identified in this study with deficiencies and capital needs that should be addressed immediately (within less than one year) other than routine maintenance and roadside safety items (see Appendix B - Comments).

Specific Structures: One to Five Year Capital Needs 2.2

2.0

2.1

2.3

One structure was identified in this study with deficiencies and capital needs that should be addressed in the one to five year time frame other than routine maintenance (see Appendix B – Comments).

2.2.1 Structure No. 2001 over Colchester Townline Drain at Eighth Concession Road

This structure was constructed in 2012 and is a 3.1 m span corrugated steel pipe arch culvert with precast concrete block headwalls and retaining walls.

The current BCI for this structure is 67.0 and has decreased from the 2022 OSIM inspection BCI of 68.5 due to the deterioration progression of the head walls. Very severe spalling and cracking of grout, and mortar with loss of stone was observed above the CSP inlet and outlet.

A minor rehabilitation shall be completed within one (1) to two (2) years to repair the headwalls and grout the void space between headwalls and CSPS. This will prevent further deterioration of the culvert causing the need for an earlier major rehabilitation or replacement. The proposed scope of rehabilitation includes: removal and replacement of asphalt, excavation to the top of CSP to properly grout the voided areas, and concrete headwall repairs. Additional site works to be completed at this time: clearing of vegetation as required, and installation of object marker signs.

Specific Structures: Six to Ten Year Capital Needs

Two structures were identified in this study with deficiencies and capital needs that should be addressed in the six to ten year time frame other than routine maintenance (see Appendix B – Comments). The structures are presented below.



Pedestrian Bridge No.1 2.3.1

This structure was constructed in 2016 and is a 23.5 m span bowstring pony truss founded on concrete caissons. The shop drawings indicate that the steel used for construction was Grade A500 and coated with a two-coat powder coating system.

The current BCI for this structure is 68.8 and has decreased from the 2022 OSIM Inspection BCI of 72.7. Deterioration consisting of loss of coating and corrosion of the floor system has progressed since the last inspection. Deterioration is worst at the end panels, underside of stringers and at points of contact between steel members (i.e., weld locations).

It is anticipated that the deterioration of the floor beam and stringer members will continue to accelerate due to the failure of the coating system. The truss members (chords, diagonals, and verticals) were observed to be in good condition.





- (a) Typical condition of the floor system with light corrosion and coating failure across all members.
- (b) Typical Coating Failure on Stringer Members

Figure 1: Typical condition of floor system at Pedestrian Bridge No.1

Based on discussions with the manufacturer, rehabilitation consisting of abrasive blast cleaning, replacement of the floor system, and recoating the structure with a three-coat MTO approved paint system may be completed; however, the steel thickness of existing members may be reduced during abrasive blast cleaning. Alternatively, the structure may be replaced. A summary of the proposed structure rehabilitation and replacement costs based on the 2022 quotes from Iron Bridge Fabrication Inc. are summarized in Appendix B. The structure replacement costs account for removal of the existing structure and the delivery, fabrication and erection of a new structure. Based on the reduced service life and cost similarities rehabilitation is not recommended. For the purposes of this report, replacement with a weathering steel truss has been assumed. The costs provided for budgeting purposes were increased from the provided quotes to account for inflation between 2022 and 2024.



Annual inspections are recommended until the structure is replaced. The requirement for a steel condition survey, to confirm section loss and quantify the corrosion deterioration, should be confirmed during future inspections.

Structure No. 1016 over Collins Drain at Outer Drive

2.3.2

This structure was constructed in 1975 and is a 3.1 m span cast-in-place concrete non-rigid frame culvert with open footings. In 2005, the original structure was repaired, the existing footings were jacketed, and cast-in-place concrete rigid frame culvert extensions were constructed on each side of the existing culvert as part of Highway 3 and Highway 401 road improvements. To our knowledge, no waterproofing membrane was placed on the original culvert deck top during the 2005 rehabilitation.

The current BCI for this structure is 72.3. However, this BCI rating could be misleading because it does not evaluate the condition of the new and original sections independently, thus not accurately depicting the condition of the original culvert section in its current state of deterioration.

In the original culvert section, medium to wide cracks with active efflorescence and a severe delamination was observed across the barrel soffit. The barrel walls were noted to have light scaling and footing scour throughout. The scour has not led to undermining of the footings and is not considered to need any repairs. The scour should be monitored as part of the biennial inspection. Two (2) wide cracks were observed in the north wall footing jacket. No deterioration was observed in the new culvert extensions. Excessive vegetation growth was noted in the waterway to the north of the structure and object markers were noted to be missing at two corners of the approaches.





(a) Culvert barrel

(b) Typical soffit deterioration

Figure 2: Typical Condition of Structure 1016



Rehabilitation should be completed with the next repaying cycle or if deterioration accelerates. The proposed scope of rehabilitation includes: installation of new or replacement of waterproofing along the top slab, concrete patch repairs and crack repair to the original culvert structure. Additional site works include: asphalt removal and replacement, excavations, backfilling, steel beam guiderail post repair; routine maintenance on the north embankments and waterway; and add missing signs.

Roadside Safety 2.4

A detailed roadside safety review was conducted in 2015 by Dillon for the bridges and culverts in the Town of Tecumseh entitled "2015 Bridge Roadside Safety Review Report". Potential roadside safety deficiencies were identified and preferred solutions were provided based on the 1993 MTO Roadside Safety Manual.

This report was updated by Dillon in 2019, entitled "Roadside Safety Improvement Cost-Benefit Analysis". The memo includes updated recommendations based on the 2017 MTO Roadside Design Manual, which replaced the 1993 MTO Roadside Safety Manual. A summary of roadside safety improvements for each structure in this study is located in Appendix B. The 2019 report was not updated by Dillon in 2024, but all recommendations made for remaining structures still apply.



Program of Work

Program of Work 3.1

3.0

3.2

A two year program to accommodate investigations, planning, environmental assessments, engineering, property acquisition and utility relocation (if, and when, required) – is recommended as follows, for any major bridge or culvert construction project.

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

Recommended Structure Improvement

Based on the results of the study, it is recommended that the Town allocate an estimated budget of \$595,000 to address the improvement needs of the bridges and culverts during the ten-year study period. Of this total, the Town is expected to incur some spending over the next five years to address the current improvement needs of their structure assets. The recommended structure work for the six to ten year time frame may be advanced for earlier completion if the proposed works are deemed to be beneficial for the life-cycle costs of the structure.

The final estimated costs for a structure will vary based on a detailed assessment, results of various investigations, or changes to the proposed scope of work during detailed design. The needs of the road network should also be taken into consideration by the Town when determining priorities for the structures. Combining road and structure works provides opportunities for additional cost savings, and can reduce disruptions to the public caused by construction. It should be noted that costs for routine maintenance needs have not been included in these cost estimates. Table 4 presents a summary of the Town's bridge and culvert needs, in 2024 Canadian dollars.

Table 4: Bridge and Culvert Construction Needs Summary

| Timing for Recommended Work | Amount (CAD) |
|-----------------------------|--------------|
| 1 to 5 Years | \$100,000 |
| 6 to 10 Years | \$495,000 |
| Total | \$595,000 |

Appendix B provides a detailed summary of the bridge and culvert appraisals, recommended items, timing, and estimated costs. For complete comments, estimated repair quantities, recommended work items and timing, refer to the inspection forms and photos in Appendix C.



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 biennial updating 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 and the provisions of estimated costs for improvements required to address those deficiencies.

The study content can remain in effective for up to ten years provided implementation of the biennial update procedures is followed.



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.

DILLON CONSULTING LIMITED

Report Prepared By:

Report Reviewed By:



Brad Schmidt, P.Eng. Structural Engineer

Monica Sokolski Project Manager

Doller

References

5.0

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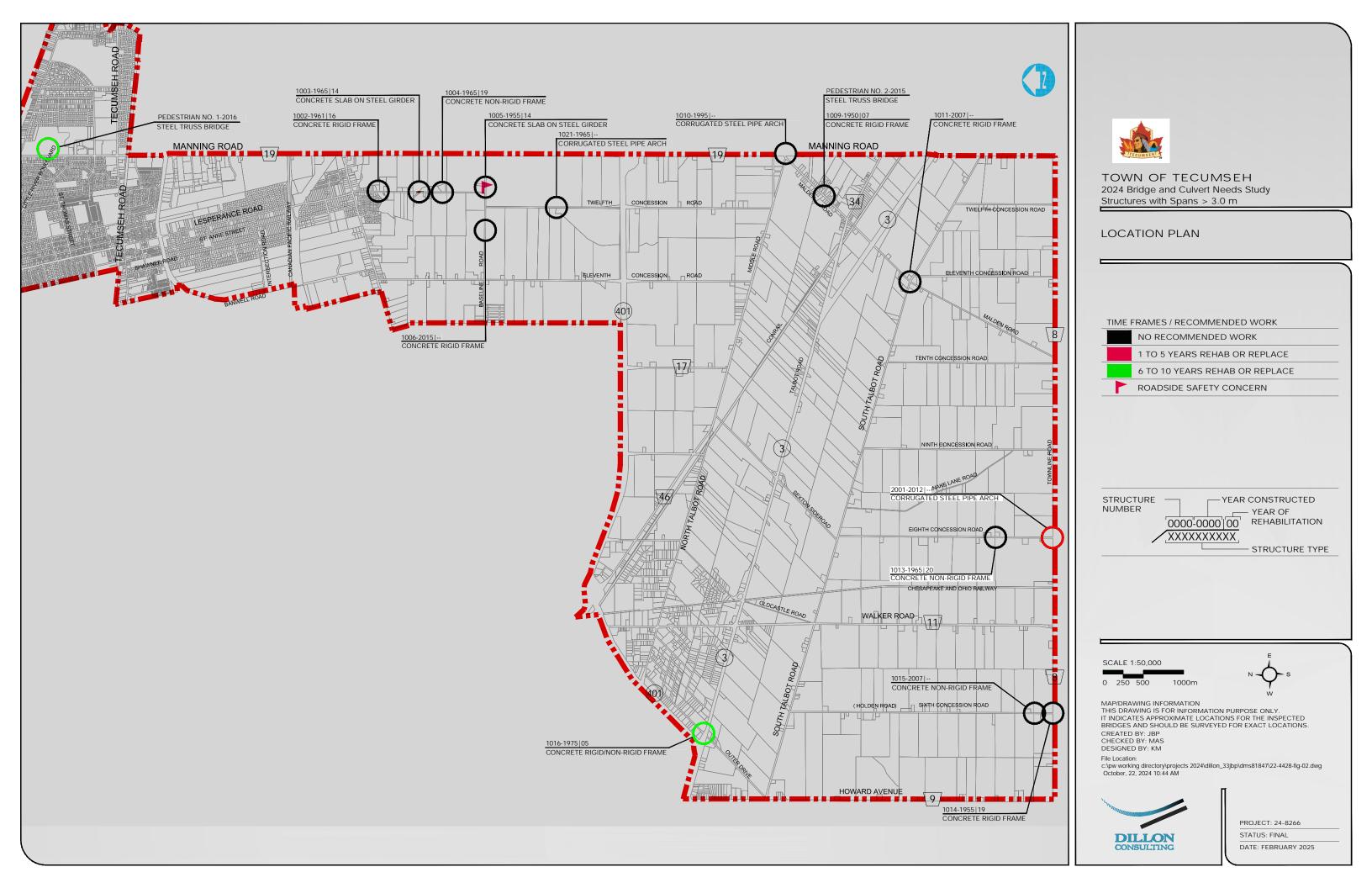
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Appendix A

Location Plan



Appendix B

Summary of Construction Needs and Probable Costs



Summary of Construction Needs and Probable Costs

| | instruction needs and 1 100 | | | Total | Span | Overall | Road | | | | | Capital Needs/Construction Costs | | | Dato of |
|--------------|--|---|----------|-----------------------|-----------------------|---------------------------|----------------------|-------------------------|--------------------------------|--|-----------------------|----------------------------------|---------------------------------------|------------------------------------|-------------------------------|
| Structure ID | Structure Location | Structure Type | 2024 BCI | Deck Length (m) | Span Length (m) | Structure Width (m) | Road Width (m) | Year of Construction | Year of Last Rehabilitation | Comments (Including Routine Maintenance and Roadside Safety Needs) | | Items | Timing of Recommended Work Item | Estimated Construction Costs | Date of Last Inspection |
| 1002 | Pike Creek at Twelfth Concession Road | Concrete Rigid Frame (Bridge) | 78.2 | 17.3 | 15.8 | 9.8 | 8.5 | 1961 | 2016 | Wet staining and efflorescence was observed on the soffit. Medium spalling was observed on the SW parapet wall due to a vehicle impact. Medium honeycombing was observed adjacent to the wall drains on the north abutment wall in addition to light honeycombing throughout both walls. The northeast wingwall was observed with a discrete location of medium spalling. The southwest wingwall was observed to have a medium vertical crack extending from wingwall into rear of parapet into a medium spall. The southeast wingwall was observed to have a narrow to medium crack at the parapet wall into joint. The granular base supporting the curb NW curb slab has eroded away, exposing the underside of the concrete curb. Hairline to narrow cracks were observed on curbs and parapet walls. Maintenance Recommended work includes routine maintenance including erosion control of the northwest curb slab. Roadside Safety No improvements necessary, Improvements were included in the most recent rehabilitation. | No work is necessary. | | | | 27-Jun-24 |
| 1003 | Pike Creek at Twelfth Concession Road | Concrete Slab on Steel Girder (Bridge) | 77.4 | 16.3 | 15.7 | 8.6 | 8.0 | 1965 | 2013 | The deck wearing surface was observed with narrow longitudinal cracking along the centreline of the road and two locations of narrow transverse cracks. The approach wearing surface was observed with narrow longitudinal cracking along the centreline of the Fourity approach and both sides of the North approach. The west fascia has a narrow longitudinal crack extending the full bridge length with discrete locations of active wet staining and efflorescence near the edge. Debris build up was noted in the spillways and expansion joint strip seals. Halrline map cracking was observed throughout the parapet walls in addition to light spalling on the northeast corner. Medium corrosion was observed at the bearing shoe plates. Both abutment walls had medium cracking with active wet staining and efflorescence. Maintenance Recommended maintenance includes bearing shoe plates should be wire-brushed, primed and coated: and routine bridge cleaning including cleaning of the deck joints and drains. Roadside Safety No improvements necessary, Improvements were included in the most recent rehabilitation. | No work is necessary. | | | | 27-Jun-24 |
| 1004 | Sullivan Drain at Twelfth Concession Road | Concrete Non-Rigid Frame (Bridge) | 77.8 | 7.5 | 6.8 | 9.3 | 7.0 | 1965 | 2019 | Hairline longitudinal crack noted along the full span of the soffit extending from concrete patch repair. Light scour noted at abutment footings, however footings are not being undermined. Roadside Safety No improvements necessary. (Wa-33 were installed during recent rehabilitation per Dillon 2019 Roadside Safety Improvements Memo recommendation). | No work is necessary. | | | | 27-Jun-24 |
| 1005 | Pike Creek at Baseline Road | Concrete Slab on Steel Girder (Bridge) | 79.3 | 15.3 | 15.0 | 8.6 | 8.0 | 1955 | 2014 | The wearing surfaces were observed with medium to wide cracks in addition to settlement on the southeast approach. Both fascias were observed with hairline to narrow cracks extending the full bridge span with discrete wet areas and efflorescence staining. Hairline cracking was seen throughout the soffit. The joints were noted to have light corrosion staining and wear from winter maintenance, and additionally were filled with debris. The northwest parapet end wall was observed with light spalling in addition to the light honeycombing and hairline cracking throughout both walls. Collision damage was seen on the southwest guide railing system in addition to a missing offset block. The south corner of the west abutment had rust staining and light honeycombing at the joint between the new and old concrete. Both ballast walls had narrow to hairline vertical cracks in discrete locations. The southwest wingwall was observed with light spalling, narrow map cracking, and light honeycombing at the joint between the new and old concrete. The northwest wingwall has light honeycombing. Multiple anchor rods were observed to be misaligned in the longitudinal direction. Insufficient erosion protection was observed at the southeast, southwest, and northwest embankments, causing rotation of guide rail posts as well as undermining of asphalt at the southwest corner and the northeast corner. Maintenance Recommended maintenance includes routine bridge cleaning of the joints and drains; repair or replace damaged guiderail; remove debris from stream and install erosion protection improvements; and crack sealing of the wearing surface. Roadside Safety Extend the SBGR at the eastbound approach to relocate the steel beam energy attenuating terminal (SBEAT) away from utility poles. (Refer to Dillon 2015 Bridge Roadside Safety Review Report). The limits of the SBGR should be reassessed based on updated standards. | No work is necessary. | | | | 27-Jun-24 |
| 1006 | Sullivan Creek at Baseline Road | Concrete Rigid Frame (Culvert) | 86.9 | 5.9 | 5.2 | 19.8 | 9.3 | 2015 | N/A | Six (6) locations of light spalling or delamination was observed on the culvert barrel soffit at the joints of the precast units. Fourteen (14) light spalls were observed at the south headwall. The precast concrete block wingwalls were observed with light to very severe scaling on the top faces. A full lane width, medium transverse crack was observed in the E.B.L. of the east approach. Hairline cracks were seen in discrete locations along the curb and gutter. Light debris buildup was observed in the curb/gutter. Roadside Safety No improvements necessary. Improvements were included in the structure replacement. | No work is necessary. | | | | 27-Jun-24 |
| 1009 | Pike Creek at Malden Road | Concrete Rigid Frame (Culvert) | 77.6 | 5.5 | 4.8 | 13.0 | 7.3 | 2007 | N/A | The deck wearing surface was observed with repaired/sealed cracks. One (1) severe transverse crack extending the entire width of the road was observed at approximately midspan, severe transverse cracking was observed at south end, and medium longitudinal cracks were observed along the centreline. One localized area of impact damage was noted on the guide rail at the west shoulder. The east barrier system was observed with several posts exhibiting settlement and rotation on the east side and two (2) bent posts on the west side. Both fascia were observed with a number of hairline to narrow cracks with staining extending to the top of the headwall. The northwest and southwest wingwalls were each observed with one (1) hairline crack. Two (2) ruptures were seen in the gabion basket retaining walls at the southeast embankment. The northwest embankment rip-rap was in poor condition. Similarly to the deck wearing surface, the approach wearing surfaces have a number of repaired/sealed cracks and isolated, narrow to medium transverse cracking in both lanes. Maintenance Recommended maintenance includes repair settled and tilted barrier posts and upgrade the erosion protection at the embankment(s): repair gabion basket; install bridge object marker signs; and rout and seal the wearing surfaces. Roadside Safety No improvements necessary. (Refer to Dillon 2015 Bridge Roadside Safety Review Report) | No work is necessary. | | | | 26-Jun-24 |
| 1010 | West Townline Drain at Malden Road | Corrugated Steel Pipe Arch (Culvert) | 74.4 | 4.8 | 4.8 | 25.2 | 9.6 | 1995 | N/A | Severe transverse cracks and medium to severe map cracks were observed in the asphalt wearing surface at the joint between the asphalt over the culvert and at both approaches. Settlement was noted at the south side of the east approach. The retaining walls had severe scaling, very severe honeycombing, and light isolated spalls. Medium corrosion was observed on the culvert barrel at the spring line as well as light to medium corrosion of the boths at the plate joints. Severe corrosion was noted below the inlet pipes. One (1) rupture of the north outlet gabion baskets was observed. Past inspection noted concerns with rotation of retaining wall, no significant changes were observed during this inspection. (Note: The retaining wall is part of the drain which is attributed to the County Road. However, it was addressed since it is located in the vicinity of the bridge.) Maintenance Recommended maintenance includes crack sealing of the wearing surfaces; repair gabion basket; monitor NE embankment. Roadside Safety No improvements necessary. North and south curved portions of SBGR were maintained, and all approach and leaving end portions were replaced, extended and terminated with SBEATs and object marker signs per Dillon 2019 Roadside Safety Improvements Memo. | No work is necessary. | | | | 26-Jun-24 |

Summary of Construction Needs and Probable Costs

| | | | | Total | Span | Overall | Road | Vacant | Voor of Lost | Commonte | Capital Needs/Construction Costs | | | Date of |
|--------------|--|---|----------|-----------------------|---------------|---------------------------|--------------|-------------------------|--------------------------------|---|--|---------------------------------------|---|--------------------|
| Structure ID | Structure Location | Structure Type | 2024 BCI | Deck Length (m) | Length (m) | Structure Width (m) | Width (m) | Year of Construction | Year of Last Rehabilitation | Comments (Including Routine Maintenance and Roadside Safety Needs) | Items | Timing of Recommended Work Item | Estimated Construction Costs | Last Inspection |
| 1011 | South Talbot Drain at Malden Road | Concrete Rigid Frame (Culvert) | 72.9 | 4.3 | 3.7 | 39.5 | 16.0 | 2007 | N/A | All cracks were repaired/sealed at the approach wearing surface and medium map cracking observed at the east approach. The west approach wearing surface had very severe transverse cracking and severe map cracking. The culvert barrel soffit had one (1) full width hairline crack with efflorescence and light honeycombing was observed throughout. The vertical walls of the barrel had two (2) hairline cracks with efflorescence. | | | | 26-Jun-24 |
| | | | | | | | | | | Maintenance Recommended maintenance includes repairs to gabion baskets and replacing exposed waterproofing on culvert top. Note this is a confined space and requires trained personnel or a camera inspection to gather future information. | No work is necessary. | | | |
| | | | | | | | | | | Roadside Safety No improvements necessary. (Refer to Dillon 2015 Bridge Roadside Safety Review Report) | | | | |
| 1013 | Merrick Drain at Eighth Concession Road | Concrete Non-Rigid Frame (Bridge) | 78.9 | 4.2 | 3.6 | 9.2 | 6.3 | 1965 | 2020 | Light delamination was observed at the west end of the deck soffit. Light scaling and four (4) light spalls were noted on the west curb and both abutment walls had isolated light scaling. There is one (1) medium crack at the junction of the SE wingwall and abutment wall. Debris was observed in waterway. | | | | 26-Jun-24 |
| | | | | | | | | | | Roadside Safety No improvements necessary. (Refer to Dillon 2019 Roadside Safety Improvements Memo) | No work is necessary. | | | |
| 1014 | Colchester Townline Drain at Sixth Concession Road | Concrete Non-Rigid Frame (Culvert) | 80.4 | 4.2 | 3.7 | 15.3 | 8.5 | 1955 | 2019 | Narrow transverse crack in new portion of west end of the deck soffit. Light map cracking was noted in the culvert headwalls. Light honeycombing was observed throughout the vertical walls of the barrel. | No work is necessary. | | | 26-Jun-24 |
| | | | | | | | | | | Roadside Safety No improvements necessary. (Refer to Dillon 2019 Roadside Safety Improvements Memo) | * | | | |
| 1015 | Merrick Creek Drain at Sixth Concession Road | Concrete Rigid Frame (Culvert) | 78.4 | 6.3 | 5.5 | 15.0 | 6.5 | 2007 | N/A | Severe alligator cracking and light to medium progressive edge cracking was observed throughout the entire wearing surface. The culvert walls had light honeycombing and isolated hairline to narrow cracking with efflorescence extending from the inlet pipes. One (1) hairline crack with efflorescence was observed on the northwest, southwest, and southeast wingwall and one (1) hairline crack was observed on the northwest wingwall. Light spall was also observed on the northwest wingwall. Debris build up was seen in the stream near the culvert inlet. Severe erosion of the shoulder was observed at the edge of the southeast wingwall. The southwest embankment had a severe slope and its filter cloth was exposed. The northeast and southeast rip-rap embankments were noted to be unstable. Maintenance Rout and Seal asphalt cracks. Prior to replacing or performing maintenance on the existing wearing surface, consideration should be made to investigate the underlying pavement issues by removal of wearing surface and base materials at the structure. | No work is necessary. | | | 26-Jun-24 |
| | | | | | | | | | | Recommended maintenance includes; clearing of the stream and embankments; and repair erosion on the southeast shoulder. Roadside Safety | | | | |
| 1016 | Collins Drain | Concrete Rigid/Non-Rigid Frame | 72.3 | 3.6 | 3.1 | 40.4 | 23.6 | 1975 | 2005 | No improvements necessary. (Refer to Dillon 2015 Bridge Roadside Safety Review Report) One (1) wood post was damaged and disconnected from the east guardrail. Seven (7) wide to medium cracks were observed on the original section of barrel | | | | 26-Jun-2 |
| | at Outer Drive | (Culvert) | | | | | | | | soffit showing active signs of efflorescence as well as severe delamination. Four (4) of these cracks were noted to be sealed from previous works. The barrel walls were noted to have light scaling and light scour at the footings, however footings are not being undermined. The north barrel wall had two (2) injected, wide cracks, one light delamination, and one (1) wide vertical crack was observed in the new footing jacket. Minor debris buildup and excessive vegetation growth was seen in the waterway to the north of the structure. Hazard marker signs seem to be missing on the northeast and southeast corners. Recommended work includes major rehabilitation in the next six (6) to ten (10) years. The scope of rehabilitation includes: installation or replacement of | Rehabilitation Needs Removal of Asphalt and Waterproofing Excavation and Backfill of Structure Concrete repairs (patches and crack sealing) Asphalt replacement | 6-10 Years | \$ 10,000.00 \$ 20,000.00 \$ 93,180.00 \$ 30,000.00 | |
| | | | | | | | | | | waterproofing, concrete patch repairs and crack injection to the original culvert structure. Additional maintenance includes barrier post repair; routine maintenance on the north embankments and waterway; and add missing signs. Crack widths should also be monitored. | Deck waterproofing Environmental Control | Subtotal | \$ 13,000.00 \$ 10,000.00 \$ 176,180.00 | |
| | | | | | | | | | | Roadside Safety No improvements necessary. (Refer to Dillon 2015 Bridge Roadside Safety Review Report) | Engineering (Design, Tender, Environmental Applications, CA, and CO) Mobilization, Traffic Signage, and Traffic Control Construction Contingency | 20% 15% 20% Total | \$ 35,236.00 \$ 26,427.00 \$ 35,236.00 \$ 273,079.00 | |
| 1021 | Pike Creek at Twelfth Concession Road | Corrugated Steel Pipe Arch (Culvert) | 70.6 | 6.5 | 6.5 | 11.8 | 3.7 | 1965 | N/A | Minor buckling along fasteners at top of CSPA, minor dents, and deformations were observed in the culvert barrel as well as light corrosion above the springline. Approximately ten (10) bolts in the culvert section were missing at random locations. Minor erosion of the embankments and debris build up was seen in the waterway downstream. No object marker signs were present. | | | | 27-Jun-24 |
| | | | | | | | | | | Maintenance Recommended maintenance includes improve erosion control; and install object marker signs as the structure is still likely utilized by maintenance vehicles and agricultural equipment. | No work is necessary. | | | |
| | | | | | | | | | | Roadside Safety No improvements necessary. (Refer to Dillon 2015 Bridge Roadside Safety Review Report) | | | | |
| 2001 | Colchester Townline Drain at Eighth Concession Road | Corrugated Steel Pipe Arch (Culvert) | 67.0 | 3.1 | 3.1 | 25.5 | 11.0 | 2012 | N/A | Asphalt wearing surface was observed with severe alligator and edge cracking over the bridge and at both approaches. Top of culvert has minor sagging under the roadway as well as localized deformations and leakage at culvert joints. Medium corrosion at springline and severe corrosion below inlet pipes. Precast | Minor Rehabilitation Needs | 1- 5 Years | | 26-Jun-2 |
| | | | | | | | | | | headwall blocks at inlet and outlet were noted to have cracked grout and separation at the joints. Maintenance Recommended maintenance includes crack sealing or asphalt repaving; install object marker signs. | Removal and replacement of Asphalt Excavation and Backfill of Structure Concrete and grouting repairs Environmental Control | | \$ 4,000.00 \$ 10,000.00 \$ 40,000.00 \$ 10,000.00 | |
| | | | | | | | | | | Roadside Safety No improvements necessary. (Refer to Dillon 2019 Roadside Safety Improvements Memo) | Engineering (Design, Tender, Environmental Applications, CA, and CO) Mobilization, Traffic Signage, and Traffic Control Construction Contingency | 20% 15% 20% Total | \$ 64,000.00 \$ 12,800.00 \$ 9,600.00 \$ 12,800.00 \$ 99,200.00 | |
| 1 | Lakewood Park Pedestrian Bridge | Steel Pedestrian Crossing | 68.8 | 23.8 | 23.8 | 3.7 | N/A | 2016 | N/A | Light surface rust was observed on all screws at the top of deck and threshold plates at either deck end were not flush with the concrete and could be a potential tripping hazard. Medium splits and checks on 21 wood planks throughout. Deterioration consisting of failure of floor coating system and has | Replacement Cost | Rounded Total | 1 \$ 100,000.00 | 27-Jun-2 |
| | | | | | | | | | | advanced significantly since the last inspection. The progression of the coating failure confirmed that the previously noted severe corrosion and section loss of the floor system was coating failure. Light corrosion was observed throughout with areas of medium corrosion observed on the stringers. | Delivery, Fabrication, and Erection New Tied Arch Structure (Including Removal of Existir Environmental Control | | \$ 132,300.00 \$ 5,200.00 | |
| | | | | | | | | | | A steel condition survey in order to quantify the extent of the deterioration and confirm presence of section loss is not considered required at this time but could be considered in the future dependant on the findings from future inspections. Annual inspections are recommended until the structure is replaced. | Engineering (Design, Tender, Environmental Applications, CA, and CO) Mobilization and Access Construction Contingency | 20% 10% 30% Total | \$ 137,500.00 \$ 27,500.00 \$ 13,750.00 \$ 41,250.00 \$ 220,000.00 \$ 220,000.00 | |
| 2 | Malden Road | Steel Pedastrian Crossing | QΛΕ | 10.0 | 12.2 | 2 49 | NI/A | 201F | N/A | Minor sottlement of procest retaining wall blocks at north embankment, as well as corrected staining on the of blocks. Embankments were noted to have | | Kounded 10ta | ı | 27-Jun-2 |
| ۷ | Maiden Road Pedestrian Bridge | Steel Pedestrian Crossing | 84.5 | 12.2 | 12.2 | 2.68 | N/A | 2015 | N/A | Minor settlement of precast retaining wall blocks at north embankment, as well as corrosion staining on top of blocks. Embankments were noted to have erosion and are potentially unstable, however is not a concern for the structure foundations. | No work is necessary. | | | 27-JUI1-2 |



QUOTATION

Date: November 9, 2022

89 Hamilton Road, New Hamburg, ON, N3A 2H1 Validity: 15 Days

To:Owner:Tender No:Mazen CharraouiTown of TecumsehN/A

Project: Lakewood Bowstring Pedestrian Bridge

We are pleased to submit our price for the project noted above. We have based our quotation on the reference documents listed below and have include addendums N/A. This quotation is subject to the Terms and Conditions specified below. In the event of any inconsistencies between the terms of the body of this quotation and the terms of the reference documents or addendums, the terms of the body of this quotation shall prevail.

Reference Documents

• Email dated October 6, 2022 from Dillon Consulting

Scope of Work

Iron Bridge Fabrication is certified by the Canadian Welding Bureau, CWB to W47.1 division 2 and is Canadian Institute of Steel Construction CISC Certified for Complex Steel Bridges with Fracture Critical Endorsement. As such, we offer the following scope of work:

- All work to be completed in accordance with CSA S6-19 and OPSS 906 Standards
- All welding to conform to CWB Standards W47.1 and W59
- All work to conform to C.I.S.C. Code of Standard Practice
- Rehabilitation of Lakewood Structure
- Includes pdf copy of shop drawings sealed by a design P.Eng
- Includes removal of existing bridge
- Includes installation of rehabilitated existing bridge
 - Replacing the floor system in the shop with a 3-coat painted system
 - Material to be A500C HSS and 50W bar stock and plate (mild steel)
 - Includes removal of existing bridge and bringing it back to IBF's shop, salvaging the trusses and replacing the floor system (Stringers, Floor Beams, Wind Bracing and baseplates.
 - Includes replacement of wood decking to be nominal 2x10 SPF PT
 - Pricing option to blast off powder coating system on trusses and re-coating with a 3-coat paint system
 - b) Replacing the floor system in the shop with a 3-coat painted system





- Material to be A847 HSS and A588 bar stock and plate (Corten steel)
- Includes removal of existing bridge and bringing it back to IBF's shop, salvaging the trusses and replacing the floor system (Stringers, Floor Beams, Wind Bracing and baseplates.
- Includes replacement of wood decking to be nominal 2x10 SPF PT
- Pricing option to blast off powder coating system on trusses and re-coating with a 3-coat paint system

Replacement of Lakewood Pedestrian Bridge with a similar Bowstring Arch Pedestrian Bridge

- Includes fabrication, delivery and erection of new structure
- Includes removal of existing bridge
- Includes pdf copy of shop drawings sealed by a design P.Eng
- Includes vertical picket railing system
- Includes Bicycle rail
- Includes Stainless Steel threshold plates
- Decking to be nominal 2x10 (1.5"x9.25") pressure treated SPF
- Includes Hilti Hit anchoring system
 - a) Weathering Steel Option
 - Material to be A847 HSS and A588 bar stock and plate (self-weathering steel)
 - b) Galvanized Steel
 - Material to be A500C HSS and 50 bar stock and plate (Mild steel)
 - Bridge to be spliced in 2 or 3 locations to facilitate the Galvanizers' tank
 - c) Mild Steel option with 3-coat paint system
 - Material to be A500C HSS and 50 bar stock and plate (Mild steel)
 - Includes 3-coat paint system as per OPSS 906 RAL to be determined
 - d) Weathering Steel option with 3-coat paint system
 - Material to be A847 HSS and A588 bar stock and plate (self-weathering steel)
 - Includes 3-coat paint system as per OPSS 906 RAL to be determined

Schedule of Prices

This engagement will be conducted on a Contract basis. The total value for the items listed in the Schedule of Pricing pursuant to this Quotation shall remain unchanged unless otherwise agreed to by both parties via the Change Order procedure, as outlined within. A CO will be issued specifying the change in value.

| Rehabilitation of Lakewood Structure | | | | | | | |
|--------------------------------------|--|----------|------|--------------|--------------|--|--|
| Item | Description | Quantity | Unit | Unit Price | Total Price | | |
| 1.1 | Replacing floor system in IBF's shop with a 3-coat paint system (Mild Steel) | 1 | LS | \$83,500.00 | \$83,500.00 | | |
| 1.1.1 | With re-coating the truss with a 3-coat paint system | 1 | LS | \$110,000.00 | \$110,000.00 | | |
| 1.2 | Replacing floor system in IBF's shop with a 3-coat paint system (Weathering Steel) | 1 | LS | \$86,500.00 | \$86,500.00 | | |
| 1.2.1 | With re-coating the truss with a 3-coat paint system | 1 | LS | \$113,000.00 | \$113,000.00 | | |





| Replacement of Lakewood Structure | | | | | | |
|-----------------------------------|---|----------|------|--------------|--------------|--|
| Item | Description | Quantity | Unit | Unit Price | Total Price | |
| 2.1 | Weathering Steel Bowstring Bridge | 1 | LS | \$97,000.00 | \$97,000.00 | |
| 2.2 | Galvanized Steel Bowstring Bridge | 1 | LS | \$134,500.00 | \$134,500.00 | |
| 2.3 | Mild Steel 3-coat painted Bowstring bridge | 1 | LS | \$118,000.00 | \$118,000.00 | |
| 2.4 | Weathering Steel 3-coat painted Bowstring bridge | 1 | LS | \$126,000.00 | \$126,000.00 | |

Clarifications

- Pricing is based on non-union labour working a 40 hour regular work week and does not include overtime or evening/night shifts
- Any damage, disruption or displacement of, or to, existing structures, facilities, roadways, parking lots, sidewalks, landscaping, curbs or services however caused to be rectified by the client.
- Field work is based on one mobilization to be completed in a continuous, uninterrupted manner.
- The construction access will be suitable for the easy passage by cranes. Existing trail/road grades, slopes and widths must be reviewed and modified by others to the satisfaction of IBF.
- All access roads, staging areas, work areas will be graveled at a minimum, free of water, mud and any other contaminant that could jeopardize safety or efficiency of our work
- In advance of our field operations, all underground, surface, above-ground and overhead interferences, services or utilities will be identified, located, protected, de-energized, removed or diverted by others to prevent any delay or safety hazard.

Exclusions

- Third party inspection (painting, welding, fabrication, erection)
- Design calculations & Certificate of Conformance, if required will be an additional \$2,500 fee/each
- Pedestrian handrail not included

Client Responsibilities

- If required, design and construction of suitable access roads, crane pads, assembly areas and rail crossings subject to the satisfaction of IBF
- Assembly areas and crane pads to be provide if required, Crane pads to be at a maximum 3m from the face
 of the abutment
- Flat suitable crane pads (+-50mm elevation tolerance) including a level area at the same elevation for the nose of the crane.
- Continuous maintenance of jobsite for safety of all equipment and employees
- All items listed in the General Terms and Conditions below. The client is responsible for any costs
 incurred by IBF's determination of inadequate completion of the above responsibilities.





General Terms and Conditions

1) Confidentiality

This proposal is being provided to you in confidence. The information contained in this proposal, including but not limited to, commercial information, financial values, operational information, methodologies, and schedule is sensitive and shall be protected. Disclosure of any of the information contained in this proposal will cause harm to Iron Bridge Fabrication and is strictly prohibited.

2) General

- a) This offer is conditional upon acceptance of our tender in 30 days, availability of crews, equipment and prior sale of materials.
- b) IBF shall not be bound by any representation, promise or incentive, made by any agent or employee of IBF not specifically stated withing this document.
- c) This proposal is based on the conditions of the C.I.S.C. Code of Standard Practice and the terms and conditions of a standard CCDC form of contract that includes our quotation letter as an appendix.
- d) Values listed in the schedule of prices are for accounting purposes only and are not stand-alone prices.
- e) This proposal does not include bonding costs, tariffs, H.S.T. or any other applicable provincial and federal taxes.
- f) Material pricing is subject to availability and mill increases. Due to the volatility in the steel industry and until further notice, all prices for quotations are subject to mill increases at the time order is placed.

3) Delays

- a) We will not be held responsible for delays due to force majeure, pandemics, new legislation, regulation, government order, labour shortages, supply chain issues, material availability, transportation, break-downs, lock-outs, strikes, civil unrest, acts of war, fire, flood, weather, accident or any causes beyond our control.
- b) Liquidated damages, consequential damages and penalties will not be accepted by IBF.
- c) Delays caused by the Client, the project owner or their consultants/representatives will result in schedule and price increases as decided by IBF.

4) Change Order Procedure

- a) A Change Order (CO) will be the vehicle for communicating change. The CO must describe the change, the rationale for the change, and the effect the change will have on the project cost, schedule and other terms and conditions of the Agreement.
- b) A designated Project Manager from Iron Bridge Fabrication and from the Client will review the impact of the proposed change and, if mutually agreed, a Change Order will be executed.
- c) A written Change Order must be signed by both parties to authorize implementation of the reviewed changes.

5) Jobsite

- a) We reserve the right to refuse work in an unsafe or an unhealthy environment.
- b) The Client will prepare and continuously maintain the site to the satisfaction of IBF in a manner suitable for the delivery, assembly, installation, operation and removal of our products, equipment, cranes and delivery trucks. Dry, stable, compacted and level working surfaces including ramps, assembly areas and crane pads will be provided when required. Any necessary demolition of existing structures shall be provided.
- c) Secure on-site storage areas suitably located for our materials, tools and equipment are to be provided by the Client.
- d) The Client shall be responsible for identifying any unusual site conditions such as hidden services, underground structures, etc., which could be damaged by any crane(s) or other equipment
- e) The Client warrants that the soil, pavement and any structure of the job site or the neighbourhood can withstand the weight of crane(s) or other equipment, loaded or not and moving or not, as well as any vibration or shaking that may come therefrom.
- f) If the work site is inadequate to provide clear passage or to support the operation of crane(s) or other heavy equipment, or if the subsurface conditions necessitate reinforcement and/or relocation of facilities and/or services, all such work and the co-ordination of same required to permit the work to proceed in a timely manner shall be the sole responsibility of and at the expense of the customer.





- g) If additional towing or pushing of our equipment is required because of site conditions, any costs incurred will be invoiced as an extra to the contract. Any damages incurred to property or equipment (including Iron Bridge Fabrication's equipment) as a result of towing or pushing will be charged as an extra.
- h) IBF will not be held responsible for damage, disruption or displacement of, or to, existing structures, facilities, roadways, parking lots, sidewalks, landscaping, curbs or services however caused. (The Client will indemnify and protect IBF from any claim).
- i) The Client is responsible for all on-site supervision, parking spaces for IBF vehicles, removals, access to work areas, work platforms, scaffolding, site protection, including pedestrian and traffic control (including crash trucks for access/egress for deliveries as required), lane & shoulder closures and all permits, signage, barricades, fences, hoarding, site security, hydro line insulation/relocation/de-energizing if required, tree trimming/removal, street cleaning, snow removal, dust control, flagmen, pay duty police, lighting sufficient to permit night time (or low light) erection (if required) etc.
- j) Review/approval of site access/prep will be required prior to installation.

6) Verification

- a) Unless specifically stated in the Scope of Work all field verification is the responsibility of the Client.
- b) It is the Client's responsibility to identify conflicts between issued for construction drawings, tender drawings, Client construction drawings, other sub-trade drawings and our shop drawings. All revisions to our drawings, fabrication and or erection procedures as a result of these conflicts will be charged as an extra to the contract.
- c) Abutment dimensions and elevations to be verified by Client prior to installation
- d) The Client shall provide IBF complete and accurate survey information in AutoCAD format as follows:
 - Abutment, pier, bearing seat, anchor bolt locations, dimensions and elevations three weeks prior to delivery of steel.
 - ii) Existing site conditions including location and dimensions of access roads, assembly areas, crane locations, abutments, piers, and all interferences, obstructions, sensitive areas, and working limits two weeks prior to IBF developing our erection plan.
 - Modified site conditions directed by IBF to facilitate our erection plan one week prior to delivery of steel to site.
- e) IBF will not accept any liability for additional work due to an incomplete or inaccurate survey or as a result of the Client failing to prepare the worksite as either indicated on the erection plan or agreed to.

7) Weather

- a) Adverse weather conditions can affect deliveries. IBF reserves the right to delay or cancel and re-schedule deliveries for weather related concerns as we see fit with no responsibility for delay of schedule or additional costs incurred by the Client as a result.
- b) Adverse weather conditions can affect hoisting operations. IBF reserves the right to delay or cancel and reschedule hoisting for weather related concerns as we see fit with no responsibility for delay of schedule or additional costs incurred by the Client as a result.
- c) Rain Days and Wind Days When in the opinion of IBF rain or wind either poses a risk to safety or reduces efficiency our operations will cease with no responsibility for delay of schedule or additional costs incurred by the Client as a result.
- d) Extreme Temperatures When ambient temperatures below -18° C or wind chill temperatures below -23° C, or ambient temperatures above 30° C or a humidex index above 40° C are expected or occur, IBF reserves the right to refuse work with no responsibility for delay of schedule or additional costs incurred by the Client as a result.
- e) Winter Weather December 1st to March 1st an inefficiency factor of 25% will be applied

8) Schedule

- A project schedule shall be mutually agreed upon prior to the commencement of any work.
- b) IBF must receive Issued For Construction (IFC) Drawings from the Client prior to starting shop drawings, ordering material and or scheduling production time.
- c) IBF may issue Requests For Information (RFI's) prior to and or during the shop drawing phase, responses to RFI's must be received withing 48 hours of issuance. If responses are not received within 48 hours the project schedule will be extended one business day for every business day the response is past due up to a maximum of three business days at which time the project will be put on hold.





- d) IBF will issue shop drawings for Client review and must receive written approval to fabricate within five business days of issuance to ensure schedule can be maintained. If written approval to fabricate is not within five business days the project schedule will be extended one business day for every business day the response is past due up to a maximum of ten business days at which time the project will be put on hold.
- e) Once a project is put on hold; design time, drafting time, shop space, labour forces, and equipment resources will be reallocated to other projects. All costs incurred will be immediately invoiced and due upon receipt. Once the required answers or approvals are received the project schedule will be re-evaluated and a new project schedule will be developed based on the current and anticipated production commitments. Additional fees, not limited to; disruption, accelerated schedule requests, and storage will apply.

9) Payment

- a) Payment by Client is NOT contingent on Client's receipt of money from Owner or Paid when Paid Clauses
- b) IBF will issue monthly invoices on the 25th of the month for material received, work completed and anticipated to be completed by the end of the month. Invoices will be due in 30 days regardless of owner's acceptance of payment schedule or any Client or owner requirements for material to be on site for payment.
- c) Terms of Payment: 90% of monthly progress invoices shall be paid within 30 days of invoice date.
- d) Full payment including 10% holdback shall be made within 45 days of substantial completion of our work.
- e) This agreement is contingent upon credit approval. Credit investigations will generally be completed within five business days of receiving completed credit application and responses from credit references and bank references.
- f) IBF may delay or stop shipment of goods at any time if the Client's account is not in good standing or if any time reasonable doubt exists as to the Client's financial position.
- g) Interest will be charged at a rate of 2% per month, 24% annually on all overdue invoices and accounts.

We thank you for the opportunity of assisting you on this project, and look forward to working with you in the future. If you have any questions or concerns about this proposal, please feel free to contact me at any time.

| | | erms and Conditions. I hereby order the ervices covered in this quotation. |
|----------------------------|--------------|--|
| Quoted By: Mercedes Mattes | Accepted By: | |
| Name: Mercedes Mattes | Name: | |
| Title: Lead Estimator | Company: | |
| | Title: | |
| | Date: | |





I have reviewed, understand and accept this quotation

Appendix C

OSIM Inspection Forms and Photos



Structure Number

| Inventory Data: | | |
|----------------------------|--------------------------------------|---|
| Structure Name | Pike Creek at Twelfth Concession Roa | ıd Bridge |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Twelfth Concession Road | |
| Structure Location | 0.40 km South from County Road 42 | |
| Latitude | 42° 16' 32" | Longitude -82° 52' 42" |
| Owners | Town of Tecumseh | Heritage Not Consid: Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Local x |
| MTO District | | Posted Speed 50 No. of Lanes 2 |
| Old County | | AADT 650 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Rigid Frame | Interchange Number |
| Total Deck Length | 17.3 m | Interchange Structure Number |
| Overall Str. Width | 9.8 m | Min. Vertical Clearance m |
| Total Deck Area | 169.5 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 8.5 m | Detour Length Around Bridge 5.5 km |
| Skew Angle | 16 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structurem |
| Span Lengths | Total = 15.8 (1) = 15.8; | m |
| Historical Data: | | |
| Year Built | 1961 | Year of Last Major Rehab. 2016 |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Ir | | Current Load Limit |
| Enhanced Access Equi | | |
| (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / I | Description) | |
| Major rehabilitation com | npleted in July 2016. | |

Structure Number

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Date of Inspection: June 27, 2024 Type of Inspection: x OSIM Enhanced OSIM | Field Inspection Informa | tion: | | | | |
|--|----------------------------|----------------------|----------------------------|---------------|-------------|---------|
| Others in Party: Stephen Strachan (Dillon Consulting Limited) Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 27.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: X Detailed Deck Condition Survey: X Detailed Timber Investigation: X Detailed Timber Investiga | Date of Inspection: | June 27, 2024 | Type of Inspection | n: x OSIM | Enhanced OS | SIM |
| Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 27.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: x Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Detailed Coating Condition Survey: x Detailed Coating Condition Survey: x Detailed Timber Investigation: x Detailed Timber Investigation: x Underwater Investigation: x Underwater Investigation: x Structure Evaluation: x Structure Evaluation: x Nonitoring Nonitoring of Deformations, Settlements and Movements: x Nonitoring of Deformations, Settlements and Movements: x Nonitoring Grack Widths: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Waintenance: Place additional granular to support the northwest curb. | Inspector: | Monica Sokolski, E.I | .T. (Dillon Consulting Lin | nited) | | |
| Weather: Sunny Temperature: 27.0 °C Additional Investigations Required: | Others in Party: | Stephen Strachan ([| Dillon Consulting Limited |) | | |
| Temperature: 27.0 °C | Access Equipment Used: | Camera, Measuring | tape, Measuring wheel, | and Hammer | | |
| Additional Investigations Required: None | Weather: | Sunny | | | | |
| Material Condition Survey Detailed Deck Condition Survey: | Temperature: | 27.0 °C | | | | |
| Material Condition Survey Detailed Deck Condition Survey: | Additional Investigations | Required: | | | Priority | |
| Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Major Rehab. Timing of Recommended Work: Maintenance: Place additional granular to support the northwest curb. | 3 | | | None | | Urgent |
| Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Major Rehab. Timing of Recommended Work: Maintenance: Place additional granular to support the northwest curb. | Material Condition Current | | | | | |
| Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x Detailed Coating Condition Survey: x Detailed Timber Investigation: x Post-Tensioned Strand Investigation: x Underwater Investigation: x Seismic Investigation: x Seismic Investigation: x Structure Evaluation: x Structure Evaluation: x Structure Evaluation: x Structure Evaluation: x Monitoring of Deformations, Settlements and Movements: x Monitoring Crack Widths: x Investigation Notes: Monitoring Crack Widths: None X Maintenance Minor Rehab. Replace Major Rehab. | | ion Survey: | | V | | |
| Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Seismic Investigation: Seismic Investigation: Seismic Investigation: Seismic Investigation: Seismic Investigation: Whonitoring Monitoring Monitoring Operations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Replace Major Rehab. Timing of Recommended Work: Naintenance: Place additional granular to support the northwest curb. | | | snhalt-Covered Deck | | | |
| Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Seismic Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None x Maintenance Minor Rehab. Major Rehab. Timing of Recommended Work: I to 5 years Overall Comments: Maintenance: Place additional granular to support the northwest curb. | | | Spriait Govered Deck. | | | |
| Detailed Timber Investigation: | | | | | | |
| Post-Tensioned Strand Investigation: | | | | | | |
| Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years Overall Comments: Maintenance: Place additional granular to support the northwest curb. | | | | Х | | |
| Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: | | <u> </u> | | Х | | |
| Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None x Maintenance Minor Rehab. Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Maintenance: Place additional granular to support the northwest curb. | - | | | Х | | |
| Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None x Maintenance Minor Rehab. Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Maintenance: Place additional granular to support the northwest curb. | • | | | Х | | |
| Monitoring of Deformations, Settlements and Movements: | Structure Evaluation: | | | Х | | |
| Monitoring Crack Widths: x Investigation Notes: Overall Structure Notes: | Monitoring | | | | | |
| Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None x Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Maintenance: Place additional granular to support the northwest curb. | | | nd Movements: | Х | | |
| Overall Structure Notes: Recommended Work on Structure: None x Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Maintenance: Place additional granular to support the northwest curb. | ŭ | ths: | | X | | |
| Recommended Work on Structure: None x Maintenance Minor Rehab. Major Rehab. Timing of Recommended Work: Overall Comments: Maintenance: Place additional granular to support the northwest curb. | Investigation Notes: | | | | | |
| Timing of Recommended Work: Overall Comments: Major Rehab. 1 to 5 years 6 to 10 years Maintenance: Place additional granular to support the northwest curb. | Overall Structure Notes: | | | | | |
| Timing of Recommended Work: Overall Comments: It to 5 years 6 to 10 years Maintenance: Place additional granular to support the northwest curb. | Recommended Work on S | Structure: None | x Maintenance | Minor Rehab | | Replace |
| Overall Comments: Maintenance: Place additional granular to support the northwest curb. | | | _ | Major Rehab | | _ |
| Overall Comments: Maintenance: Place additional granular to support the northwest curb. | Timing of Recommended | Work: | 1 to 5 years | 6 to 10 years | 3 | |
| Date of Next Inspection: June 2026 | | | | | | urb. |
| | Date of Next Inspection: | June 2020 | 6 | | | |

Structure Number

1002

Element Data

| Element Group: | Decks | | | Length: | 17.3 | m | |
|--|---------------------------------------|--------------------|---------------------|---|-----------------------------|--------------------|-------------------|
| Element Name: | Wearing Su | ırface | | Width: | 8.0 | | |
| Location: | | | | Height: | 0.1 | | |
| Material: | Asphalt | Asphalt | | | | | |
| Element Type: | | | | | 138.4 | Sq.m | |
| Environment: | Moderate | | | Limited Inspec | tion | | |
| Protection System: | | | | | | | Perform. |
| Condition | ı | Jnits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 64.6 | 63.5 | 8.7 | 1.7 | |
| Comments: | | | | | | | |
| Signs of ponding obse | • . | • | L: Narrow tr | ansverse crack ol | oserved (0.2 | 5 x 0.8 m) a | nd light rippling |
| 1m from south abutme | one (0 x 0.0 m) | • | | | | | |
| Recommended Work | , , | Rehab | Replace | | Maintenanc | e Needs: | |
| | , , | | Replace 6-10 yea | | Maintenanc Urgent | e Needs: 1 year | 2 year |
| | , , | Rehab | | | | 1 1 | 2 year |
| | , , | Rehab | | | | 1 year | 2 year |
| Recommended Work | :: | Rehab | | rs | Urgent | 1 year | 2 year |
| Recommended Work | Decks | Rehab | | Length: | Urgent 17.3 | 1 year | 2 year |
| Recommended Work Element Group: Element Name: | Decks | Rehab 1-5 years | | Length: | Urgent 17.3 | 1 year | 2 year |
| Recommended Work Element Group: Element Name: Location: | Decks Deck Top | Rehab 1-5 years | | Length: Width: | 17.3 9.2 | 1 year | 2 year |
| Recommended Work Element Group: Element Name: Location: Material: | Decks Deck Top | Rehab 1-5 years | | Length: Width: Height: Count: | 17.3 9.2 159.2 | 1 year | 2 year |
| Recommended Work Element Group: Element Name: Location: Material: Element Type: | Decks Deck Top Cast-in-place | Rehab 1-5 years | | Length: Width: Height: Count: Total Quantity: | 17.3 9.2 159.2 | m m Sq.m | 2 year Perform. |
| Element Group: Element Name: Location: Material: Element Type: Environment: | Decks Deck Top Cast-in-place Moderate | Rehab 1-5 years | | Length: Width: Height: Count: Total Quantity: | 17.3 9.2 159.2 | m m Sq.m | |

The condition of the deck in the NBL near the south abutment was assumed to be fair due to observed asphalt defects.

| Recommended Work: | | Rehab | | Replace | Maintenance Needs: | | | |
|-------------------|--|-----------|--|------------|--------------------|--|--------|--|
| | | 1-5 years | | 6-10 years | Urgent 1 year | | 2 year | |
| | | | | | | | | |
| | | | | | | | | |

the edge of the soffit and fascia (Est. 0.5 sq.m).

1002

Element Data

| Element Group: | Decks | | Length: | 15.8 | m | |
|-------------------------|---------------------------------------|------------|-----------------------|--------------|-------------|----------------|
| Element Name: | Soffit - Thick Slab | | Width: | 9.2 | m | |
| Location: | | | Height: | | | |
| Material: | Cast-in-place concrete | | Count: | | | |
| Element Type: | | | Total Quantity: | 145.4 | Sq.m | |
| Environment: | Moderate | | Limited Inspecti | on | | |
| Protection System: | | | | <u> </u> | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 9.0 | 133.4 | 2.0 | 1.0 | |
| Comments: | · | | <u> </u> | | | |
| Four pieces of formwo | rk were left in place. Two light | to medium | n HC, a light delamir | nation and a | ı medium sı | oall was |
| observed (Est. 0.5 sq.) | m). W Side : Wet staining, nar | row map cr | acking and effloreso | cence was o | observed in | locations near |

| Recommended Work: | | Rehab | | Replace | Maintenance | | | |
|-------------------|--|------------------------------------|--|---------|-------------|--|--|--|
| | | 1-5 years 6-10 years Urgent 1 year | | 2 year | | | | |
| | | | | | | | | |
| | | | | | | | | |

| Element Group: | Barriers | Barriers | | | m | |
|--------------------|----------------------------------|------------------------|----------------|------|--------------|----------|
| Element Name: | Barrier/Parapet Walls - Exte | rior | Width: | 0.3 | m | |
| Location: | NE / SW corners | | Height: | 1.1 | m | |
| Material: | Cast-in-place concrete | Cast-in-place concrete | | | | |
| Element Type: | | | Total Quantity | 5.0 | Sq.m | |
| Environment: | Moderate | | Limited Inspec | tion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 1.0 | 3.7 | 0.2 | 0.1 | |

Comments:

SW Corner: Medium spalling due to vehicular damage was observed (0.25x0.25m)

| Recommended Work: | Rehab | Replace | Maintenance | Maintenance Needs: | | |
|-------------------|-----------|------------|---------------|--------------------|--------|--|
| | 1-5 years | 6-10 years | Urgent 1 year | | 2 year | |
| | | _ | | | | |
| | | | | | | |

Element Data

| Element Group: | Barriers | | | Length: | 2.2 | m | |
|--------------------|----------------------|-----------------|---------|----------------|-------------|----------|--------------|
| Element Name: | Barrier/Parap | et Walls - Exte | erior | Width: | 0.3 | m | _ |
| Location: | NW / SE corr | ners | | Height: | 1.1 | m | |
| Material: | Cast-in-place | concrete | | Count: | 2 | | |
| Element Type: | | | | Total Quantity | : 11.0 | Sq.m | |
| Environment: | Moderate | | | Limited Inspec | tion | | |
| Protection System: | | | | | | | Perform. |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 5.1 | 5.9 | 0.0 | 0.0 | |
| Comments: | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | e Needs: | |
| | 1-5 years 6-10 years | | | rs | Urgent | 1 year | 2 year |
| | _ | | | | | | |

| Element Group: | Barriers | | Length: | 21.7 | m | |
|--------------------|----------------------------------|---------|---------------------------|-------|------|--------------|
| Element Name: | Barrier/Parapet Walls - Inter | ior | Width: | 0.3 | m | |
| Location: | East/West - Edges | | Height: | 0.475 | m | |
| Material: | Concrete Parapet | | Count: | 2 | | |
| Element Type: | Parapet wall with Two Tube | Railing | Total Quantity: 54.3 Sq.m | | | |
| Environment: | Severe | | Limited Inspection | | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 54.2 | 0.0 | 0.1 | |

Comments:

Narrow cracks throughout parapet (16 on west parapet and 10 on east parapet). No joint filler was observed at the deck end joints. One piece of formwork (wood) was left in the south parapet wall at the east side.

| Recommended Work: | Rehab | Replace | Maintenance | Maintenance Needs: | | |
|-------------------|-----------|------------|-------------|--------------------|--------|--|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year | |
| | | | | | | |
| | | | | | | |

Element Data

| Element Group: | Barriers | | | Length: | 21.7 | m | |
|---------------------------------------|---------------------|-----------------|--------------|-----------------|-------------|----------|--------------|
| Element Name: | Barrier/Para | oet Walls - Int | erior | Width: | 0.3 | m | |
| Location: | Interior (Eas | t/West) | | Height: | 0.9 | m | |
| Material: | Steel Railing | | | Count: | 2 | | |
| Element Type: | Parapet wall | with Two Tub | e Railing | Total Quantity: | 43.4 | m | |
| Environment: | Severe | | | Limited Inspect | tion | | |
| Protection System: | | | | | | | Perform. |
| Condition | U | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | ach / % / all | 0.0 | 43.4 | 0.0 | 0.0 | |
| Comments: Light surface rust on to | p end cap bol | t at the southe | east corner. | | | | |
| Recommended Work: | | Rehab | Replace | N | Maintenance | e Needs: | |
| | | 1-5 years | 6-10 yea | ars | Urgent | 1 year | 2 year |
| | | | | | | | |
| Element Group: | Barriers | | | Length: | 75.0 | | |
| Element Name: | Railing Syste | em | | Width: | 70.0 | | |
| | + <u>-</u> | | | | + | | |

| Element Group: | Barriers | | | Length: | 75.0 | m | | |
|--------------------|---------------------|----------------|----------|-----------------------|------------|----------|--------------|--|
| Element Name: | Railing Syst | tem | | Width: | | | | |
| Location: | NE/SW corr | ners | | Height: | | | | |
| Material: | Steel | | | Count: | | | | |
| Element Type: | Guide rail | | | Total Quantity | 75.0 | m | | |
| Environment: | Moderate | | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. | |
| Condition | ı | Units | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / 6 | each / % / all | 15.0 | 60.0 | 0.0 | 0.0 | | |
| Comments: | | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenanc | e Needs: | | |
| | | 1-5 years | 6-10 yea | rs | Urgent | 1 year | 2 year | |
| | | | | | | <u> </u> | | |

Element Data

| Element Group: | Abutments | | | Length: | 9.2 | 2 m | | |
|--|----------------------|---------------|----------|----------------|------------|----------|--------------|--|
| Element Name: | Abutment Wa | alls | | Width: | | | | |
| Location: | North/South | | | Height: | : 3.4 m | | | |
| Material: | Cast-in-place | concrete | | Count: | 2 | 2 | | |
| Element Type: | | | | Total Quantity | : 62.6 | Sq.m | | |
| Environment: | Moderate | | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. | |
| Condition | U | nits | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ach / % / all | 0.0 | 56.5 | 6.0 | 0.1 | | |
| Comments: N Wall: Efflorescence of honeycombing was obs | | | | | | • | and light | |
| Recommended Work: | Rehab Replace | | | | Maintenand | e Needs: | | |
| | | 1-5 years | 6-10 yea | rs | Urgent | 1 year | 2 year | |
| | L. | | | | | | | |

| Element Group: | Abutments | | Length: | 4.4 | m | |
|--------------------|----------------------------------|------|-----------------------|--------|------|--------------|
| Element Name: | Wingwalls | | Width: | 0.3 | | |
| Location: | All Four Quadrants | | Height: | Var. | m | |
| Material: | Cast-in-place concrete | | Count: | 4 | | |
| Element Type: | | | Total Quantity | : 35.2 | Sq.m | |
| Environment: | Moderate | | Limited Inspec | tion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 33.2 | 1.0 | 1.2 | |

Comments:

NE: One medium spall was observed (0.5 sq.m) **SW:** Medium vertical crack extending into rear of parapet into a medium spall (0.25 x 0.5 m). **SE:** Narrow to medium crack at parapet wall into joint (0.2x0.25 m).

| Recommended Work: | Rehab | Replace | Maintenance | Maintenance Needs: | | |
|-------------------|-----------|------------|-------------|--------------------|--------|--|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year | |
| | | | | | | |
| | | | | | | |

Element Data

| Element Group: | Embankment | & Streams | | Length: | | | | |
|--------------------|-------------|---------------------|-----------|----------------|-------------|----------|--------------|--|
| Element Name: | Streams and | Waterways | | Width: | | | | |
| Location: | | | | Height: | | | | |
| Material: | | | | Count: | 1 | 1 | | |
| Element Type: | | | | Total Quantity | : 1 | all | | |
| Environment: | | | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. | |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m/m/ea | ch / % / all | 0 | 1 | 0 | 0 | | |
| Comments: | | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | e Needs: | | |
| | | 1-5 years | 6-10 year | 'S | Urgent | 1 year | 2 year | |
| | | | | | | | | |

| Element Group: | Embankments & Streams | | Length: | | | |
|--------------------|----------------------------------|------|-----------------------|--------------|------|--------------|
| Element Name: | Embankments | | Width: | | | |
| Location: | All Four Quadrants | | Height: | | | |
| Material: | | | Count: | 4 | | |
| Element Type: | | | Total Quantity | <i>'</i> : 4 | each | |
| Environment: | Moderate | | Limited Inspe | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 4 | 0 | 0 | |

Comments:

Embankment slopes were modified and new gabion walls were added to provide more stability.

NW Corner: Granular supporting curb slab has eroded away, exposing the underside of the concrete curb.

| Recommended Work: | Rehab | Replace | M | Maintenance Needs: | | | | |
|-------------------|-----------|------------|---|------------------------|-----|-------------|---|------------|
| | 1-5 years | 6-10 years | | Urgent | Χ | 1 year | | 2 year |
| | | | | ace additor W curb. | nal | granular to | S | upport the |

Fair

Good

Poor

1

Deficiencies

1002

Element Data

| Element Group: | Embankments | s & Streams | | Length: | | | |
|--|----------------|---------------------|----------------------|---|-----------------------------|----------|-----------------|
| Element Name: | Slope protecti | ion | | Width: | | | |
| Location: | All Four Quad | | | Height: | | | |
| Material: | | | | Count: | 4 | | |
| Element Type: | Hand Laid Rip | o-Rap, Gabior | n Baskets | Total Quantity: | Quantity: 4 each | | |
| Environment: | Moderate | <u> </u> | | Limited Inspec | tion | | |
| Protection System: | | | | | | | Perform. |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m/m/ea | ch / % / all | 0 | 4 | 0 | 0 | |
| | | | , | the wingwalls. | | | |
| Recommended Work | : | Rehab 1-5 years | Replace 6-10 year | | Maintenand Urgent | e Needs: | 2 year |
| | | Rehab | Replace | rs | | 1 1 | 2 year |
| | Signs | Rehab | Replace | | | 1 1 | 2 year |
| Element Group: | | Rehab | Replace | Length: | | 1 1 | 2 year |
| Element Group: Element Name: Location: | Signs | Rehab | Replace | rs Length: | | 1 year | 2 year |
| Element Group: Element Name: Location: | Signs | Rehab 1-5 years | Replace | Length: Width: Height: | Urgent | 1 year | 2 year |
| Element Group: Element Name: Location: Material: | Signs Signs | Rehab 1-5 years | Replace | Length: Width: Height: Count: | Urgent | 1 year | 2 year |
| Element Group: Element Name: Location: Material: Element Type: | Signs Signs | Rehab 1-5 years | Replace | Length: Width: Height: Count: Total Quantity: | Urgent | 1 year | 2 year Perform. |

Comments:

Condition

Data:

One of the hazard marker signs was missing at the southeast corner.

Units

Sq.m / m / **each** / % / all

A natural gas warning sign was observed in the northwest corner of the structure.

| Recommended Work: | Rehab | Replace | Ма | intenance | Needs: | |
|-------------------|-----------|------------|----|-----------|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | 1 year | 2 year |
| | | | | | | |
| | | | | | | |

Exc.

Element Data

| Element Group: | Approaches | | | | | Length: | | 29.0 ו | m | | |
|-------------------------------------|--|-----|-------------|--|-----------|-----------------------|------------|------------|----|--------|--------------|
| Element Name: | Wearing Surf | fa | ce | | | Width: | | Var. ı | m | | |
| Location: | North/South | | | | | Height: | | | | | |
| Material: | Asphalt | | | | | Count: | | 2 | | | |
| Element Type: | | | | | | Total Quantity | ' : | 406.0 | Sq | ı.m | |
| Environment: | Moderate | | | | | Limited Inspec | ctic | on | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | Uı | nit | ts | | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ac | h / % / all | | 189.5 | 216.5 | | 0.0 | | 0.0 | |
| Comments: Lane width ranges from | Comments: Lane width ranges from 4.0 m over the bridge to 3.0 m at the road. | | | | | | | | | | |
| Recommended Work: | | | Rehab | | Replace | | Ma | aintenance | N | leeds: | |
| | | | 1-5 years | | 6-10 year | S | | Urgent | | 1 year | 2 year |
| | | | | | | | | | | | |

| Element Group: | Approaches | | Length: | | | |
|--------------------|----------------------------------|----------|------------------------|-------|------|--------------|
| Element Name: | Drainage | | Width: | | | |
| Location: | All Four Quadrants | Height: | | | | |
| Material: | Cast-in-Place concrete | Count: 4 | | | | |
| Element Type: | Spillways | | Total Quantity: 4 each | | each | |
| Environment: | Moderate | | Limited Inspec | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 4 | 0 | 0 | |

Comments:

A build up of debris was observed.

| Recommended Work: | Rehab | Replace | Maintenance | e Needs: | |
|-------------------|-----------|------------|-------------|----------|--------|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year |
| | | | | | |
| | | | | | |

Element Data

| Element Group: | Approaches | | | Length: | Var. | m | |
|--|----------------------|------------------------|----------|----------------|-------------|-------------|--------------|
| Element Name: | Curb/gutters | Curb/gutters | | | 0.3 | m | |
| Location: | NE/SW corne | NE/SW corners | | | 0.2 | m | |
| Material: | Cast-in-place | Cast-in-place concrete | | | 2 | | |
| Element Type: | | | | Total Quantity | : 25.0 | m | |
| Environment: | Moderate | | | Limited Inspec | tion | | |
| Protection System: | | | | | | • | Perform. |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ich / % / all | 11.7 | 13.3 | 0.0 | 0.0 | |
| Comments: NE Corner: 13.0 m lon Both appear to have se | • | • | | | | | |
| Recommended Work | : | Rehab | Replace | | Maintenance | e Needs: | |
| | | 1-5 years | 6-10 yea | rs | Urgent | 1 year | 2 year |
| | | | | | | | |
| | | | | | | | |

| Element Group: | Approaches | Length: | 4.9 | m | | | |
|--------------------|----------------------------------|--------------------------------|----------------|------|-----------------------|--------------|--|
| Element Name: | Curb/gutters | Curb/gutters \ | | | m | | |
| Location: | NW/SE corners | Height: | | | | | |
| Material: | Cast-in-place concrete | Count: | 2 | | | | |
| Element Type: | Concrete Pad for TL-2 and | Concrete Pad for TL-2 and TL-3 | | | Total Quantity: 9.8 m | | |
| Environment: | Moderate | | Limited Inspec | tion | | | |
| Protection System: | | | | | | Perform. | |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 4.0 | 5.8 | 0.0 | 0.0 | | |

Comments:

Seventeen (17) hairline to narrow transverse cracks were observed on both curbs. Pad is undermined at NW Corner.

| Recommended Work: | Rehab | Replace | N | /laintenanc | e Needs: | |
|-------------------|-----------|------------|---|-------------|----------|--------|
| | 1-5 years | 6-10 years | | Urgent | 1 year | 2 year |
| | | | | | | |
| | | | | | | |



Photograph 1: Overview of the structure (Looking South)



Photograph 2: South approach (Looking North)





Photograph 3: North approach (Looking North)



Photograph 4: Expansion joint between the deck and the north approach (Looking East)





Photograph 5: End treatment at the northwest quadrant of the structure



Photograph 6: Concrete barrier wall at the northwest quadrant of the structure





Photograph 7: Guide rail at the south approach



Photograph 8: Guide rail at the north approach



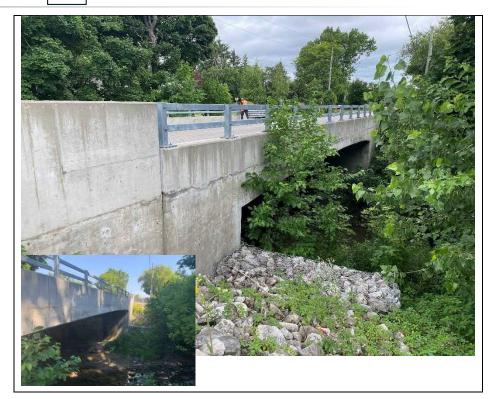


Photograph 9: Parapet wall on the west side of the structure



Photograph 10: Parapet wall on the east side of the structure





Photograph 11: East elevation



Photograph 12: West elevation





Photograph 13: Erosion below approach slab at the northwest wingwall



Photograph 14: North abutment wall







Photograph 15: Efflorescence and honeycombing on north abutment wall



Photograph 16: South abutment wall





Photograph 17: Typical condition of wall drains on the south abutment wall and typical honeycombing



Photograph 18: Former wet staining and efflorescence on west edge of soffit (Rehab in 2016)





Photograph 19: Localized spall, wet staining, and light honeycombing on the edge of soffit



Photograph 20: Typical condition of wingwalls (Southeast quadrant shown)





Photograph 21: Embankment at northwest quadrant of the structure



Photograph 22: Embankment at southwest quadrant of the structure





Photograph 23: Waterway, looking east from under the structure



Photograph 24: Waterway, looking west from under the structure



| uctu | | |
|------|--|--|
| | | |
| | | |

| Inventory Data: | | |
|--|---|---|
| Structure Name | Pike Creek at Twelfth Concession Brido | ge |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Twelfth Concession Road | |
| Structure Location | 1.00 km South from County Road 42 | |
| Latitude | 42° 16' 11" | Longitude -82° 52' 43.8" |
| Owners | Town of Tecumseh | Heritage Not Consid: Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Collector Local x |
| MTO District | | Posted Speed 50 No. of Lanes 2 |
| Old County | | AADT 650 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Slab on Steel Girders | Interchange Number |
| Total Deck Length | 16.3 m | Interchange Structure Number |
| Overall Str. Width | 8.6 m | Min. Vertical Clearance |
| Total Deck Area | 140.2 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 8.0 m | Detour Length Around Bridge 5.5 km |
| Skew Angle | 20 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structurem |
| Span Lengths | Total = 15.7 (1) = 15.7; | m |
| Historical Data: | | |
| Year Built | 1965 | Year of Last Major Rehab. 2013 |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM I | | Current Load Limit |
| Enhanced Access Equi (ladder, boat, lift, etc.) | | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / | Description) | |
| Major rehabilitation con | npleted in 2013, incl. new concrete deck, | steel beams, parapet walls, bearings and guiderails. |

| Ontario Structure | Inspection | Manual - Ir | nspection Form |
|--------------------------|------------|-------------|----------------|
| | | | |

Structure Number

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |
| | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Field Inspection Informa | tion: | | | | | |
|---------------------------|---------------|------------------|--|------------------|---------------|-------------|
| Date of Inspection: | June 27, 2 | 024 | Type of Inspection: | x OSIM | Enhanced OS | SIM |
| Inspector: | Monica Sc | kolski, E.I.T. (| Dillon Consulting Lim | ited) | | |
| Others in Party: | Stephen S | trachan (Dillo | n Consulting Limited) | | | |
| Access Equipment Used: | Camera, N | leasuring tape | e, Measuring wheel, a | nd Hammer | | |
| Weather: | Sunny | | | | | |
| Temperature: | 27.0 °C | | | | | |
| Additional Investigations | Required | | | | Priority | |
| J | · | | | None | Normal | Urgent |
| Material Condition Survey | | | | | | |
| Detailed Deck Condit | ion Survey | | | х | I | |
| Non-Destructive Dela | | | alt-Covered Deck | X | | |
| Concrete Substructur | | | an Govered Book. | X | | |
| Detailed Coating Con | | | | X | | |
| Detailed Timber Inves | | <i>.</i> | | X | | |
| Post-Tensioned Strar | | tion: | | X | | |
| Underwater Investigation: | ia irrvootige | | | X | | |
| Fatigue Investigation: | | | | X | | |
| Seismic Investigation: | | | | X | | |
| Structure Evaluation: | | | | X | | |
| Monitoring | | | | | 1 | 1 |
| Monitoring of Deforma | ations. Sett | lements and N | Movements: | Х | | |
| Monitoring Crack Wid | | | | Х | | |
| Investigation Notes: | | | | • | | • |
| | | | | | | |
| Overall Structure Notes: | | | | | | |
| Recommended Work on S | Structure: | None | x Maintenance | Minor Rehab |). | Replace |
| | | _ | | Major Rehab |). | _ |
| Timing of Recommended | Work: | T | x 1 to 5 years | 6 to 10 years | S | |
| Overall Comments: | | | plates should be wire | | | Place scour |
| | | protection alo | ng stream banks. Req e joints and deck drai | gular maintenanc | e is recommer | ided for |
| Date of Next Inspection: | | June 2026 | | | | |

Structure Number

1003

Element Data

| | q.m | | |
|--------------------------|---|-----------|--|
| | q.m | | |
| | q.m | | |
| | q.m | | |
| | | | |
| | | | |
| | Perfo | Perforn | |
| Units Exc. | | | |
| 6 / all | 0.0 | | |
| ong the CL bserved (a | I throughout. | ghout. | |
| ab | Needs: | : | |
| 20 | 1 year 2 yea | ar 2 year | |
| | ab Replace Maintenance vears G-10 years Urgent | | |

| Element Group: | Decks | | Length: | 15.2 | m | |
|--------------------|----------------------------------|------|----------------------------|--------------|------|--------------|
| Element Name: | Deck Top | | Width: | Width: 8.6 m | | |
| Location: | | | Height: | | | |
| Material: | Cast-in-place concrete | | Count: | | | |
| Element Type: | | | Total Quantity: 130.6 Sq.m | | | |
| Environment: | Moderate | | Limited Inspec | tion | х | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 34.8 | 95.8 | 0.0 | 0.0 | |

Comments:

Top of deck condition based on the condition of the wearing surface of the deck.

| Recommended Work: | Rehab | Replace | N | laintenanc | | |
|-------------------|-----------|------------|---------------|------------|--------|--|
| | 1-5 years | 6-10 years | Urgent 1 year | | 2 year | |
| | | | | | | |
| | | | | | | |

Structure Number

1003

Element Data

| Element Group: | Decks | | | Length: | 13.8 | m | | |
|---|---------------------------------|-------------|---------------------|---|--------------------------|----------|-----------------|--|
| Element Name: | Soffit - Thin Slab - Ext | erior | | Width: | 0.9 |) m | | |
| Location: | East/West Edge of De | ck | | Height: | | | | |
| Material: | Cast-in-place concrete | | | Count: | 2 | 2 | | |
| Element Type: | | | | Total Quantity: | ntity: 24.8 Sq.m | | | |
| Environment: | Moderate | | | Limited Inspec | tion | | | |
| Protection System: | | | | | | • | Perform. | |
| Condition | Units | 011110 | | | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / | all | 6.6 | 15.2 | 2.0 | 1.0 | | |
| Recommended Work | : Rehab | | Replace | | Maintenanc | T T | | |
| Recommended Work | Rehab | ırs | Replace 6-10 yea | | Maintenand Urgent | e Needs: | 2 year | |
| Recommended Work | | ırs | • | | | 1 year | 2 year | |
| | 1-5 yea | | • | rs | Urgent | 1 year | 2 year | |
| Element Group: | 1-5 yea | | • | Length: | Urgent | 1 year | 2 year | |
| Element Group: Element Name: | 1-5 yea | erior | • | Length: | Urgent | 1 year | 2 year | |
| Element Group: Element Name: Location: | Decks Soffit - Thin Slab - Inte | erior | • | Length: Width: | 13.8 6.8 | 1 year | 2 year | |
| Element Group: Element Name: Location: Material: | Decks Soffit - Thin Slab - Inte | erior | • | Length: Width: Height: Count: | 13.8 6.8 93.8 | 1 year | 2 year | |
| Element Group: Element Name: Location: Material: Element Type: | Decks Soffit - Thin Slab - Inte | erior | • | Length: Width: Height: Count: Total Quantity: | 13.8 6.8 93.8 | 1 year | 2 year Perform. | |
| Element Group: Element Name: Location: Material: Element Type: Environment: | Decks Soffit - Thin Slab - Inte | erior | • | Length: Width: Height: Count: Total Quantity: | 13.8 6.8 93.8 | 1 year | | |

Comments:

| Recommended Work: | Rehab | Replace | Maintenance | | |
|-------------------|-----------|------------|-------------|--------|--------|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year |
| | | | | | |
| | | | | | |

Element Data

| Element Group: | Decks | | | | Length: | 1.0 | m | | |
|--------------------|----------------------|----------------------|--|-----------|-----------------------|-------------|----------|--------------|--|
| Element Name: | Soffit - Thin S | Slab - End | | | Width: | 8.6 | m | | |
| Location: | North/South | lorth/South Abutment | | | | | | | |
| Material: | Cast-in-place | concrete | | | Count: | 2 | | | |
| Element Type: | | | | | Total Quantity | : 17.2 | Sq.m | | |
| Environment: | Moderate | | | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | | Perform. | |
| Condition | U | Units Exc. | | | | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ach / % / all | | 4.6 | 12.6 | 0.0 | 0.0 | | |
| Comments: | | | | | | | | | |
| Recommended Work: | | Rehab | | Replace | | Maintenance | e Needs: | | |
| | | 1-5 years | | 6-10 year | S | Urgent | 1 year | 2 year | |
| | | | | | | | | | |

| Element Group: | Decks | | | | | Length: | | | | | |
|--------------------|-------------------|-------|--------------------|--|--------------|--------------|------|------------|------|-----------|--------------|
| Element Name: | Drainage | | | | | Width: | | | | | |
| Location: | | | | | | Height: | | | | | |
| Material: | Steel | Steel | | | | Count: | | 6 | | | |
| Element Type: | Metal drain pipes | | | | Total Quanti | ty: | 6 | ead | ch | | |
| Environment: | Moderate | | | | | Limited Insp | ecti | on | | | |
| Protection System: | | | | | | | | • | | | Perform. |
| Condition | l | Jn | its | | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / 6 | eac | h / % / all | | 0 | 6 | | 0 | | 0 | |
| Comments: | | | | | | | | | | | |
| December ded Work | | | Rehab | | Donloos | | | -:t | . NI | | |
| Recommended Work: | | | | | Replace | | IVI | aintenance | ; N(| eeas: | |
| | | | 1-5 years | | 6-10 year | S | | | | 1 year | 2 year |
| | | | | | | | R | epair NW d | rair | nage pipe |). |

Element Data

| Element Group: | Decks | | | Length: | | | | |
|-------------------------------------|-----------------|---------------------|-----------------|-----------------------|---------------|------------|--------------|--|
| Element Name: | Drainage | | | Width: | | | | |
| Location: | | | | Height: | | | | |
| Material: | PVC | | | Count: | 4 | | | |
| Element Type: | PVC drain pip | es | | Total Quantity | : 4 | each | | |
| Environment: | Moderate | | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. | |
| Condition | Un | its | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ch / % / all | 0 | 3 | 1 | 0 | | |
| Comments: Four (4) PVC of 2 inch | diameter are lo | ocated at the s | soffit corners. | . NW drain was o | disconnected. | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | Needs: | | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | x 2 year | |
| | | • | | | Repair / reco | nnect NW d | rain. | |

| Element Group: | Joints | | Length: | 8.5 | i m | |
|---|--|------|------------------------|------|------|--------------|
| Element Name: | Seals/Sealants | | Width: | | | |
| Location: | North/South end of Deck | | Height: | | | |
| Material: | | | Count: | | | |
| Element Type: | Strip Seal | | Total Quantity: 2 each | | | |
| Environment: | Severe | | Limited Inspec | | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 2 | 0 | 0 | |
| Comments: | | | <u>.</u> | | | |
| Production in the Production of the Association | and the first the state of a second co | | | | | |

Debris build up observed in both strip seals.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent X 1 year | 2 year |
| | | | Bridge cleaning | |
| | | | | |

Structure Number

1003

Element Data

| Element Group: | Joints | | | | Length: | | 8.5 | m | | | |
|---|----------------------|-----------------------|--|--------|-----------------------|------------|------------|----------|-----|--|-------------|
| Element Name: | Concrete end | dams | | | Width: | | 0.5 m | | | | |
| Location: | North/South A | North/South Abutments | | | | | | | | | |
| Material: | Cast-in-place | concrete | | | Count: | | 4 | | | | |
| Element Type: | | | | | Total Quantity | / : | 17.0 | Sc | m.p | | |
| Environment: | Severe | | | | Limited Inspe | cti | on | | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | Un | its | | Exc. | Good | | Fair Poor | | | | eficiencies |
| Data: | Sq.m / m / ea | ch / % / all | | 0.0 | 16.9 | | 0.1 0.0 | | | | |
| Comments: Light spall likely due to plow damage observed at the south joint in the south bound lane. Narrow longitudinal crack was observed at the north joint, sealed. | | | | | | | | | | | |
| Recommended Work: | | Rehab Replace | | | | | aintenance | e Needs: | | | |
| | | S | | Urgent | | 1 year | | 2 year | | | |
| | | | | | | | | | | | |

| Element Group: | Joints | | Length: | 8.5 | m | |
|--------------------|----------------------------------|------------------------|--------------------|------|------|--------------|
| Element Name: | Armouring/Retaining device | S | Width: | | | |
| Location: | North/South Abutments | | Height: | | | |
| Material: | Steel | | Count: 4 | | | |
| Element Type: | | Total Quantity: 34.0 m | | | | |
| Environment: | Severe | | Limited Inspection | | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 34.0 | 0.0 | 0.0 | |

Comments:

Spots of light corrosion observed throughout.

| Recommended Work: | Rehab | Replace | Maintenance | | |
|-------------------|-----------|------------|-------------|--------|--------|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year |
| | | | | | |
| | | | | | |

Element Data

| Element Group: | Barriers | | Length: | 1.0 | m | |
|--------------------|----------------------------------|-------|------------------|------|------|--------------|
| Element Name: | Parapet Walls - Exterior | | Width: | 0.25 | m | |
| Location: | East/West Edge of Deck | | Height: | 0.8 | m | |
| Material: | Cast-in-place concrete | | Count: | 4 | | |
| Element Type: | Parapet Wall with Single ra | iling | Total Quantity: | 7.4 | Sq.m | |
| Environment: | Moderate | | Limited Inspecti | | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 6.7 | 0.4 | 0.3 | |
| Comments: | • | • | | | • | • |

Hairline map cracking throughout. **NE**: Light spalling (0.15x0.15m). **NW**: Medium scaling. (0.25x0.10m). **SE**: impact damage (0.25x0.25m) and delamination of grout under last railing post (0.25 x 0.25).

| Recommended Work: | Rehab | | Replace | Maintenance Needs: | | | | |
|-------------------|-------|----------|------------|--------------------|--------|--------|--------|--|
| | 1- | -5 years | 6-10 years | | Urgent | 1 year | 2 year | |
| | | | | | | | | |

| Element Group: | Barriers | | Length: | 23.0 | m | |
|--------------------|----------------------------------|-------|-----------------------|--------|--------------|----------|
| Element Name: | Parapet Walls - Interior | | Width: | 0.25 | m | |
| Location: | East/West Edge of Deck | | Height: | 0.8 | m | |
| Material: | Cast-in-place concrete | | Count: | 2 | | |
| Element Type: | Parapet Wall with Single rai | iling | Total Quantity | : 85.1 | Sq.m | |
| Environment: | Moderate | | Limited Inspec | | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 22.7 | 62.3 | 0.1 | 0.0 | |

Comments:

Hairline map cracking was observed throughout. Two light spalls were observed on the southeast barrier wall.

| Recommended Work: | Rehab | Replace | I | Maintenanc | | |
|-------------------|-----------|------------|---|------------|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | 1 year | 2 year |
| | | | | | | |
| | | | | | | |

Structure Number

1003

Element Data

| Element Group: | Barriers | | | | Length: | 23.0 | | | |
|--|----------------------|---------------|----|------------|-----------------------|-------------|--------|--------------|--|
| Element Name: | Hand Railings | • | | | Width: | | | | |
| Location: | East/West Ed | ge of Deck | | | Height: | | | | |
| Material: | Steel | | | | Count: | 2 | 2 | | |
| Element Type: | Single Rail | | | | Total Quantity | : 46.0 | 46.0 m | | |
| Environment: | Severe | | | | Limited Inspec | tion | | | |
| Protection System: | | | | | | | | Perform. | |
| Condition | Un | its | | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ch / % / all | | 0.0 | 46.0 | 0.0 | 0.0 | | |
| Comments: Light corrosion on railin | g posts observ | red throughou | t. | | | | | | |
| Recommended Work: | | Rehab | R | Replace | | Maintenance | Needs: | | |
| | | 1-5 years | 6 | 5-10 years | 3 | Urgent | 1 year | 2 year | |
| | | | | | | | | | |

| Element Group: | Barriers | | Length: | Varries | | |
|--------------------|----------------------------------|------------------------|--------------------|---------|--------------|----------|
| Element Name: | Railing Systems | | Width: | | | |
| Location: | NE / NW / SE | Height: | | | | |
| Material: | Steel | Count: 3 | | | | |
| Element Type: | Single Rail (Steel Beam, an | Total Quantity: 99.7 m | | | | |
| Environment: | Moderate | | Limited Inspection | | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 0.0 | 99.7 | 0.0 | 0.0 | |

Comments:

Quantities: NE: 23.7m, **NW:** 23.7m, **SE:** 52.3m. **SW**: Energy attenuator with concrete pad was observed to be in good condition with light rust at structure connection and void under the concrete pad.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | | | |
|-------------------|-----------|------------|--------------------|--------|--------|--|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year | |
| | | | | | | |
| | | | | | | |

Benign

Units

Sq.m / m / each / % / all

Perform.

Deficiencies

Element Data

| Element Group: | Beams/MLE's | | | Length: | 4.0 | m | | |
|---------------------------------|-------------------|--------------------|--|--------------------|----------------------|-------------------------|--------------|--|
| Element Name: | Girders (End) | | | Width: | 0.27 | m | | |
| Location: | | | | Height: | 0.75 | m | | |
| Material: | Steel | | | Count: | 5 | 5 | | |
| Element Type: | I-type | | | Total Quantity: | 46.2 | | | |
| Environment: | Moderate | | | Limited Inspect | ion | | | |
| Protection System: | | | | - | | I I | Perform. | |
| Condition | Uni | Units Exc. | | | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / ead | ch / % / all | 12.3 | 33.8 | 0.0 | 0.1 | | |
| Pasammandad Wark: Robab | | | | | | | • | |
| Medium corrosion on s | shoe plates (typ. | .) Light surтас | e area ioss v | vas observed on ti | ne northwe: | st exterior sr | noe plate. | |
| Dagammandad Warls | | Dahah | Donlage | - 1 | laintanana | | · · | |
| Recommended Work | : | Rehab | Replace | | laintenanc | e Needs: | · | |
| Recommended Work | | Rehab 1-5 years | Replace 6-10 year | | laintenanc Urgent | | 2 year | |
| Recommended Work | : | 1 | | | 1 | e Needs: | | |
| Recommended Work | : | 1 | | | 1 | e Needs: | | |
| Recommended Work | Beams/MLE's | 1-5 years | | | 1 | e Needs: | | |
| | | 1-5 years | | rs | Urgent | e Needs: 1 year | | |
| Element Group: | Beams/MLE's | 1-5 years | | Length: | Urgent | e Needs: 1 year m m | · | |
| Element Group: Element Name: | Beams/MLE's | 1-5 years | | Length: | Urgent 11.7 0.27 | e Needs: 1 year m m m | · | |

Comments:

Environment:
Protection System:

Condition

Data:

| 2 year |
|--------|
| 2 |

Exc.

75.7

Limited Inspection

Fair

0.0

Poor

0.0

Good

59.5

Element Data

| Element Group: | Beams/MLE | i's | | Length: | 1.8 | m | | |
|--------------------|--------------|---------------|-----------|----------------|------------|----------|--------------|--|
| Element Name: | Diaphragms | | | Width: | 0.13 | m | | |
| Location: | North/South | Abutment | | Height: | 0.35 | 0.35 m | | |
| Material: | Galvanaized | l Steel | | Count: | 8 | 8 | | |
| Element Type: | I-type | | | Total Quantity | : 8 | each | | |
| Environment: | Moderate | | | Limited Inspec | tion | х | | |
| Protection System: | | | | | | | Perform. | |
| Condition | L | Jnits | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / e | ach / % / all | 0 | 8 | 0 | 0 | | |
| Comments: | | | | | | | | |
| Recommended Work | | Rehab | Replace | | Maintenanc | e Needs: | | |
| | | 1-5 years | 6-10 year | rs . | Urgent | 1 year | 2 year | |
| | | | | | | | | |
| Element Group: | Beams/MLE | Beams/MLE's | | | 1.7 | m | | |
| Clament Name: | Dianhrama | | | \A/: al4la . | 0.00 | | | |

| Element Group: | Beams/MLE's | | | Length: | 1.7 | ⁷ m | |
|--------------------|----------------------------------|-----------|-----------|-----------------------|------------|----------------|--------------|
| Element Name: | Diaphragms | | | Width: | 0.08 | 3 m | |
| Location: | Intermediate | | | Height: | 0.31 | 0.31 m | |
| Material: | Galvanaized Steel | | | Count: | 8 | 3 | |
| Element Type: | C-Channel | | | Total Quantity | : 8 | 3 each | |
| Environment: | Moderate | | | Limited Inspec | ction | х | |
| Protection System: | | | | | | • | Perform. |
| Condition | Units | | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | | 0 | 8 | 0 | 0 | |
| Comments: | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenand | e Needs: | |
| | | 1-5 years | 6-10 year | rs | Urgent | 1 year | 2 year |
| | | | | | | | |

Structure Number

1003

| Element Group: | Coatings | | | | Length: | 2.0 | m | | |
|--|----------------------|--------------|----|-------------|-----------------------|--------------------------------|-----------|------------|---------------------|
| Element Name: | Structural Ste | el | | | Width: | 0.27 | m | | |
| Location: | Girder End | | | | Height: | 0.75 | m | | |
| Material: | | | | | Count: | 10 | | | |
| Element Type: | | | | | Total Quantity | : 46.2 | 46.2 Sq.m | | |
| Environment: | Moderate | | | | Limited Inspec | ction | х | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | Un | its | | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | | 9.7 | 33.9 | 2.3 | | 0.3 | |
| Comments: No coating on shoe plat was observed at the no | | | at | ed approxii | mately 2 m lengt | h. Active cor | rosi | on and lig | ht section loss |
| Recommended Work: | | Rehab | | Replace | | Maintenanc | e Ne | eeds: | |
| | | 1-5 years | | 6-10 years | s | Urgent | X | 1 year | 2 year |
| | | | | | | Wire brush, p to reduce rat | | | at shoe plates n |

| Element Group: | Coatings | | | | | Length: | | 1.8 | m | | |
|--------------------|---------------------|-----|-------------|--------------------------|-----------|----------------|--------|-----------|-----|--------|--------------|
| Element Name: | Structural St | tee | el . | | | Width: | | 0.13 m | | | |
| Location: | End Diaphra | agn | n | | | Height: | | 0.35 m | | | |
| Material: | Galvanized | Ste | eel | | | Count: | | 8 | | | |
| Element Type: | | | | | | Total Quantity | y: | 15.5 Sq.m | | | |
| Environment: | Moderate | | | | | Limited Inspe | ecti | on | Х | | |
| Protection System: | | | | | | | | | | • | Perform. |
| Condition | L | Jni | ts | | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / e | eac | h / % / all | | 4.1 | 11.4 | | 0.0 | | 0.0 | |
| Comments: | | | | | | | | | | | |
| Recommended Work: | | | Rehab | | Replace | | M | aintenanc | e N | leeds: | |
| | | | 1-5 years | 6-10 years Urgent 1 year | | 1 year | 2 voor | | | | |
| | | | 1-5 years | | 0-10 year | 3 | | Orgent | | i yeai | 2 year |

Structure Number

1003

Element Data

| Element Group: | Abutments | | Length: | 8.5 | m | |
|--------------------|----------------------------------|-----------------------|----------------|-------|------|--------------|
| Element Name: | Abutment walls | | Width: | | | |
| Location: | North/South Abutment | Height: | 3.5 | m | | |
| Material: | Cast-in-place concrete | | Count: | 2 | | |
| Element Type: | Conventional closed | Total Quantity | : 59.5 | Sq.m | | |
| Environment: | Moderate | | Limited Inspec | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 47.0 | 8.0 | 4.5 | |

Comments:

N Wall: A full height medium crack showing signs of previous leaking and efflorescence was observed (4.0x0.5m). Light spalling was observed at tie rod locations.

S Wall: Medium crack with a medium delamination showing signs of active leaking and efflorescence (4.0x0.5m)

| Recommended Work: | Rehab | Replace | Maintenance | Maintenance Needs: | | | |
|-------------------|-----------|------------|-------------|--------------------|--------|--|--|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year | | |
| | | | | | | | |

| Element Group: | Abutments | | Length: | 8.5 | m | |
|--------------------|----------------------------------|------|----------------|----------------|------|--------------|
| Element Name: | Ballast walls | | Width: | | | |
| Location: | North/South Abutment | | Height: | 1.0 | m | |
| Material: | Cast-in-place concrete | | Count: | 2 | | |
| Element Type: | Reinforced concrete | | Total Quantity | /: 16.2 | Sq.m | |
| Environment: | Moderate | | Limited Inspe | ction | х | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 16.2 | 0.0 | 0.0 | |

Comments:

Hairline to narrow cracks were observed throughout.

| Recommended Work: | Rehab | Replace | ľ | Maintenance Needs: | | | | |
|-------------------|-----------|------------|---|--------------------|--------|--|--------|--|
| | 1-5 years | 6-10 years | | Urgent | 1 year | | 2 year | |
| | | | | | | | | |
| | | | | | | | | |

Structure Number

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Element Data

| Element Group: | Abutments | | | Length: | 4.4 | m | |
|--------------------------------------|----------------------|---------------|-----------|---------------------------|------------|----------|--------------|
| Element Name: | Wingwalls | | | Width: | | | |
| Location: | North/South A | Abutment | | Height: | 4.5 | m | |
| Material: | Cast-In-place | concrete | | Count: 4 | | | |
| Element Type: | Reinforced co | oncrete | | Total Quantity: 79.2 Sq.m | | | |
| Environment: | Benign | | | Limited Inspec | ction | х | |
| Protection System: | | | | | | • | Perform. |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 44.4 | 34.8 | 0.0 | 0.0 | |
| Comments: Top of wingwalls recons | structed during | g 2013 rehab. | | · | | | |
| Recommended Work: | | Rehab | Replace | | Maintenanc | e Needs: | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | 2 year |
| | | | | | | | |

| Element Group: | Abutments | | Length: | | | |
|--------------------|----------------------------------|------|----------------|------|------|--------------|
| Element Name: | Bearings | | Width: | | | |
| Location: | North/South Abutment | | | | | |
| Material: | Laminated Elastomeric Bea | ring | Count: | 10 | | |
| Element Type: | | | Total Quantity | : 10 | each | |
| Environment: | Moderate | | Limited Inspec | tion | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 10 | 0 | 0 | |

Comments:

Medium corrosion on shoe plates (typ.)

| Recommended Work: | Rehab | Replace | Ma | aintenance | Ne | eds: | | |
|-------------------|-----------|------------|-----------------------------|---------------|-----|-----------|------|------------|
| | 1-5 years | 6-10 years | Х | Urgent | , | 1 year | | 2 year |
| | | | W | ire brush, pı | rim | e and coa | ıt s | hoe plates |
| | | | to reduce rate of corrosion | | | | | |

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| Element Group: | Embankments | s & Streams | | | Length: | | | | |
|--------------------------------------|-----------------|---------------------|----|------------|-----------------------|------------------------|-------|--------------|------------|
| Element Name: | Streams and | Waterways | | | Width: | | | | |
| Location: | | | | | Height: | | | | |
| Material: | | | | | Count: | 1 | | | |
| Element Type: | | | | | Total Quantity | : 1 | 1 all | | |
| Environment: | | | | | Limited Inspec | ction | on | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | Units Exc. | | | Good | Fair | | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ch / % / all | | 0 | 0 | 1 | | 0 | |
| Comments: Stream alignment is shi | fted against sc | outh abutment | t. | | | | | | |
| Recommended Work: | | Rehab | | Replace | | Maintenance | e N | leeds: | |
| | | 1-5 years | | 6-10 years | s | Urgent | | 1 year | x 2 year |
| | | | | | | Place scour p banks | orc | tection ald | ong stream |

| Element Group: | Embankmen | its & Streams | | Length: | | | |
|--------------------|---------------------|---------------|-----------|----------------|------------------------|----------|--------------|
| Element Name: | Embankmen | nts | | Width: | | | |
| Location: | All Four Qua | drants | | Height: | | | |
| Material: | | | | Count: 4 | | | |
| Element Type: | | | | | Total Quantity: 4 each | | |
| Environment: | Moderate | | | Limited Inspec | ction | | |
| Protection System: | | | | | | • | Perform. |
| Condition | Units | | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | ach / % / all | 0 | 3 | 1 | 0 | |
| Comments: | | | | | | | |
| Recommended Works | | Rehab | Replace | | Maintenanc | e Needs: | |
| | | 1-5 years | 6-10 year | rs | Urgent | 1 year | 2 year |
| | · | · | · | | | | |

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| Element Group: | | | | | | | |
|---|---------------|------------------------------------|----------------------|--|-------------|--------|-----------------------|
| Lieilleilt Group. | Embankmei | nts & Streams | | Length: | | | |
| Element Name: | Slope prote | ction | | Width: | | | |
| Location: | | | | Height: | | | |
| Material: | | | | Count: | 3 | | |
| Element Type: | Hand laid rip | orap | | Total Quantity: | 3 | each | |
| Environment: | Moderate | | | Limited Inspec | tion | | |
| Protection System: | | | | | | | Perform. |
| Condition | ι | Jnits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 0 | 2 | 1 | 0 | |
| Comments: | | 1 | | | | | |
| Recommended Work: | : | Rehab | Replace | | Maintenanc | | |
| | | 1-5 years | 6-10 yea | irs | Urgent | 1 year | 2 year |
| Element Group: | Signs | | | Length: | | | |
| Flowsont Noves | Signs | | | Width: | | | |
| Element Name: | | | | TTIME!!! | | | |
| Location: | J.g.i.e | | | Height: | | | |
| | e.ge | | | | 3 | | |
| Location: | Hazard Mar | ker Signs | | Height: | | each | |
| Location: Material: | | ker Signs | | Height: Count: | 3 | | |
| Location: Material: Element Type: | | ker Signs | | Height: Count: Total Quantity: | 3 | | Perform. |
| Location: Material: Element Type: Environment: | Hazard Mar | ker Signs Jnits | Exc. | Height: Count: Total Quantity: | 3 | | Perform. Deficiencies |
| Location: Material: Element Type: Environment: Protection System: | Hazard Mar | <u> </u> | Exc. | Height: Count: Total Quantity: Limited Inspec | tion 3 | each | |
| Location: Material: Element Type: Environment: Protection System: Condition | Hazard Mar | Jnits | - | Height: Count: Total Quantity: Limited Inspec | tion Fair | each | |
| Location: Material: Element Type: Environment: Protection System: Condition Data: | Hazard Mar | Jnits each / % / all | 0 | Height: Count: Total Quantity: Limited Inspec | tion Fair | each | |
| Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Hazard Mar | Jnits each / % / all | 0 | Height: Count: Total Quantity: Limited Inspec Good 3 npact damage. | tion Fair | Poor 0 | |
| Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Northwest and northea | Hazard Mar | Jnits each / % / all both observed | 0 d with light im | Height: Count: Total Quantity: Limited Inspec Good 3 npact damage. | tion Fair 0 | Poor 0 | |

| Element Group: | Approaches | | | | | Length: | | 6.0 | m | | | |
|------------------------|----------------------|------|---------------|-----|-------------|------------------|------------|-------------|-------|-------------|--------|----------|
| Element Name: | Wearing sur | fac | се | | | Width: | | 7.0 | m | | | |
| Location: | North/South | Αŗ | oproach | | | Height: | | | | | | |
| Material: | Asphalt | | | | | Count: | 2 | | | | | |
| Element Type: | | | | | | Total Quantity | / : | 84.0 | Sq | .m | | |
| Environment: | Moderate | | | | | Limited Inspe | cti | on | | | | |
| Protection System: | | | | | | | | | | | Pe | rform. |
| Condition | U | Jnit | ts | | Exc. | Good | | Fair | | Poor | Defic | ciencies |
| Data: | Sq.m / m / e | ac | h/%/all | | 0.0 | 83.0 | | 1.0 | | 0.0 | | |
| Comments: | | | • | | | • | | • | | • | | |
| S Approach: Settlemen | it with a seal | ed | crack of 3.5 | m | length was | s observed on tl | he | west side o | of th | ne approac | h | |
| (3.5x0.25m). N Approac | ch : Settleme | nt | with a sealed | d c | rack of 1.0 | m length was | obs | erved on b | oth | sides of tl | ne app | proach |
| 2x(1.0x0.25m) | | | | | | - | | | | | | |
| Recommended Work: | | | Rehab | | Replace | | M | aintenance | e N | eeds: | | |
| | | | 1-5 years | | 6-10 years | S | | Urgent | | 1 year | 2 y | /ear |

| Element Group: | Approaches | | Length: | 6. | 0 m | |
|--------------------|----------------------------------|------------------------|-----------------|------|--------|--------------|
| Element Name: | Approach Slabs | | Width: | 7. | 0 m | |
| Location: | North/South Approach | | Height: | 0.2 | 5 m | |
| Material: | Cast-in-place concrete | Cast-in-place concrete | | | 2 | |
| Element Type: | | | Total Quantity: | 84. | 0 Sq.m | |
| Environment: | Moderate | | Limited Inspec | tion | х | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 84.0 | 0.0 | 0.0 | |
| Comments: | | | - | | * | - |

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

Structure Number

1003

Element Data

| Element Group: | Approaches | | Length: | 10.0 | m | |
|--------------------|----------------------------------|--------------|-----------------|------|------|--------------|
| Element Name: | Curb/Gutters | | Width: | 0.3 | m | |
| Location: | NE / NW / SE | NE / NW / SE | | 0.15 | m | |
| Material: | Cast-in-place concrete | | Count: | 3 | | |
| Element Type: | | | Total Quantity: | 30.0 | m | |
| Environment: | Moderate | | Limited Inspec | tion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 29.9 | 0.1 | 0.0 | |

Comments:

Light debris build up was observed at all spillways. Northwest spillway was observed to have light map cracking (Est. 0.1 sq. m). Settlement of east curbs at bridge end of approx. 1".

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |



Photograph 1: Overview of structure (Looking North)



Photograph 2: Overview of structure (Looking South)





Photograph 3: Wearing surface at the south approach (Looking West)



Photograph 4: Wearing surface at the south approach (Looking East)





Photograph 5: Wearing surface at the north approach (Looking North)



Photograph 6: Typical condition of expansion joins (South joint shown)





Photograph 7: Typical debris build up in expansion joints



Photograph 8: Deck drainage and east parapet wall (Looking North)





Photograph 9: Typical condition of parapet walls



Photograph 10: Typical condition of parapet end walls





Photograph 11: Light spall on north east end wall

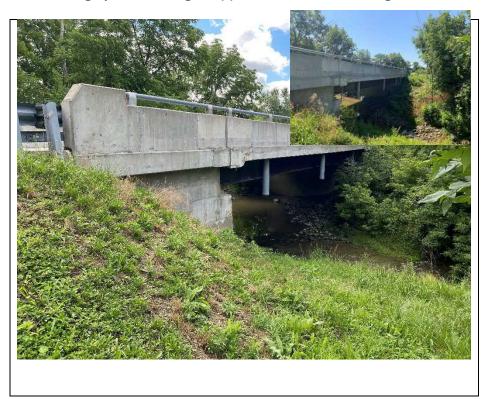


Photograph 12: Typical condition of energy attenuator at the southwest approach (Looking North)





Photograph 13: Missing bolt(s) at bottom of northwest guardrail



Photograph 14: West elevation





Photograph 15: East elevation



Photograph 16: Deck soffit, steel girders, and diaphragms (Looking South)





Photograph 17: End diaphragms at north abutment wall



Photograph 18: Shoe plate corrosion at north abutment wall





Photograph 19: Medium crack with active wet areas and efflorescence at north abutment wall



Photograph 20: Medium crack with active wet areas and efflorescence at south abutment wall





Photograph 21: Embankments and waterway east of structure



Photograph 22: Embankments and waterway at northwest quadrant of structure





Photograph 23: Waterway west of structure



Structure Number

| Inventory Data: | | | |
|---|---|---|--|
| Structure Name | Sullivan Drain at Twelfth Concession B | ridge | |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other | |
| Hwy/Road Name | Twelfth Concession Road | | |
| Structure Location | 1.40 km South from County Road 42 | | |
| Latitude | 42° 15' 59.3" | Longitude -82° 52' 44.6" | |
| Owners | Town of Tecumseh | Heritage Not Consid: Cons/not App. List/n.d. Designation Desig./not list Desig & List | |
| MTO region | | Road Class: Freeway Arterial Local X | |
| MTO District | | Posted Speed 50 No. of Lanes 2 | |
| Old County | | AADT 650 % Trucks | |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence | |
| Structure Type | Concrete Non-Rigid Frame | Interchange Number | |
| Total Deck Length | 7.5 m | Interchange Structure Number | |
| Overall Str. Width | 9.3 m | Min. Vertical Clearance m | |
| Total Deck Area | 69.8 sq. m | Special Transit Truck Routes: School Bicycle | |
| Roadway Width | 7.0 m | Detour Length Around Bridge 5.5 km | |
| Skew Angle | 36.0 Degrees | Direction of Structure N/S | |
| No. of Spans | 1.0 | Fill on Structure 0.3 m | |
| Span Lengths | Total = 6.8 (1) = 6.8; | m | |
| | | | |
| Historical Data: | | | |
| Year Built | 1965 | Year of Last Major Rehab. 2019 | |
| Last OSIM Inspection | 2022 | Last Evaluation | |
| Last Enhanced OSIM Ir | nspection | Current Load Limit | |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # | |
| Last Underwater Inspec | ction | By-Law Expiry Date | |
| Last Condition Survey | | | |
| Rehab History: (Date / I | Description) | | |
| | ated in Fall 2019. Work included: concret b reconstruction, concrete deck overlay, | te patches, addition of precast block retaining walls to improve new waterproofing and asphalt. | |

| Ontario | Structure | Inspection | Manual - | Inspection | Form |
|---------|-----------|------------|----------|------------|-------------|
| • | • | | | | . • |

Structure Number

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Field Inspection Informa | tion: | | | | | |
|---------------------------|--------------|-------------------|-------------------------|--------------|-------------|---------|
| Date of Inspection: | June 27, 2 | 2024 | Type of Inspection: | x OSIM | Enhanced OS | SIM |
| Inspector: | Monica Sc | kolski, E.I.T. (l | Dillon Consulting Limit | ted) | | |
| Others in Party: | Stephen S | trachan (Dillor | Consulting Limited) | | | |
| Access Equipment Used: | Camera, N | leasuring tape | , Measuring wheel, ar | nd Hammer | | |
| Weather: | Sunny | | | | | |
| Temperature: | 28 °C | | | | | |
| Additional Investigations | s Required | : | | | Priority | |
| | | | | None | Normal | Urgent |
| Material Condition Survey | | | | | | |
| Detailed Deck Condit | ion Survev: | | | Х | | |
| Non-Destructive Dela | | | Ilt-Covered Deck: | Х | | |
| Concrete Substructur | | | | Х | | |
| Detailed Coating Con | dition Surve | ey: | | Х | | |
| Detailed Timber Inves | stigation: | | | Х | | |
| Post-Tensioned Strar | nd Investiga | ition: | | Х | | |
| Underwater Investigation: | | | | Х | | |
| Fatigue Investigation: | | | | Х | | |
| Seismic Investigation: | | | | Х | | |
| Structure Evaluation: | | | | Х | | |
| Monitoring | | | | | | _ |
| Monitoring of Deforma | | lements and M | lovements: | Х | | |
| Monitoring Crack Wid | lths: | | | Х | | |
| Investigation Notes: | | | | | | |
| Overell Chrysters Notes | | | | | | |
| Overall Structure Notes: | | | | | | |
| Recommended Work on S | Structure: | x None | Maintenance | Minor Reha | b | Replace |
| | | | | Major Reha | b. | |
| Timing of Recommended | Work: | | 1 to 5 years | 6 to 10 year | rs | |
| Overall Comments: | | Structure reha | bilitated in 2019. | | | |
| Date of Next Inspection: | | June 2026 | | | | |
| Date of Next Hisperion. | | Jan 2020 | | | | |

Structure Number

1004

Element Data

| Element Group: | Decks | | | Length: | 7.5 | m | |
|---|----------------------|---------------|--------------|-----------------|----------------|--------------|--------------|
| Element Name: | Wearing Sur | face | | Width: | 7.0 | m | |
| Location: | | | | Height: | | | |
| Material: | Asphalt | Asphalt C | | | | | |
| Element Type: | | T | | | 52.5 | Sq.m | |
| Environment: | Moderate | | | Limited Inspec | ction | | |
| Protection System: | | | | | • | | Perform. |
| Condition | Uni | ts | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 35.0 | 15.8 | 1.7 | 0.0 | |
| Comments: Repaved in 2019. Narro grooves. (Est. 1.7 sq. m | • | as observed | at the south | east and southw | vest corners a | long the for | m and fill |
| Recommended Work: | | Rehab | Replace | | Maintenance | Needs: | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | 2 year |
| | | | | | | | |

| Element Group: | Decks | | Length: | 7.5 | m | |
|--------------------|----------------------------------|------|-----------------------|--------|------|--------------|
| Element Name: | Deck Top | | Width: | 8.6 | m | |
| Location: | | | Height: | | | |
| Material: | Cast-in-place concrete | | Count: | | | |
| Element Type: | Reinforced concrete | | Total Quantity | : 64.5 | Sq.m | |
| Environment: | Moderate | | Limited Inspec | ction | х | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 43.0 | 21.5 | 0.0 | 0.0 | |

Comments:

Concrete deck overlay in 2019.

| Recommended Work: | Rehab | Replace | M | aintenance | | |
|-------------------|-----------|------------|---|------------|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | 1 year | 2 year |
| | | | | • | • | • |
| | | | | | | |

Structure Number

1004

Element Data

| Element Group: | Decks | | | Length: | | 6.8 r | m | | | |
|--------------------------------------|---------------------|-----------------|---------------|------------------|------------|---------|----|--------|---|-------------|
| Element Name: | Soffit - Thick | slab | | Width: | | 9.3 r | m | | | |
| Location: | | | | Height: | | | | | | · |
| Material: | Cast-in-plac | e concrete | | Count: | | | | | | |
| Element Type: | Reinforced of | concrete | | Total Quantity | ' : | 63.2 \$ | Sq | ı.m | | |
| Environment: | Benign | | | Limited Inspec | ction | | | | | |
| Protection System: | | | | | | | | | | Perform. |
| Condition | Ur | nits | Exc. | Good | F | Fair | | Poor | D | eficiencies |
| Data: | Sq.m / m / e | ach / % / all | 0.0 | 63.2 | | 0.0 | | 0.0 | | |
| Comments: Soffit patches in 2019. | Hairline crack | c noted full sp | oan (N/S) ext | tending from cor | ncrete | patch. | | | | |
| Recommended Work: | | Rehab | Replace | | Main | tenance | N | leeds: | | |
| | | 1-5 years | 6-10 year | 'S | Ur | rgent | | 1 year | | 2 year |
| | | | | | | | | | | |

| Element Group: | Abutments | | Length: | 9.3 | m | | |
|--------------------|----------------------------------|------|-----------------------|--------|------|-----|--------------|
| Element Name: | Abutment Walls | | Width: | | | | |
| Location: | North/South Abutment | | Height: | 3.5 | m | | |
| Material: | Cast-in-place concrete | | Count: | 2 | | | |
| Element Type: | Reinforced concrete | | Total Quantity | : 64.2 | Sq.m | | |
| Environment: | Benign | | Limited Inspe | ction | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Р | oor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 64.2 | 0.0 | C |).8 | |

Comments:

Crack injection and parging in 2019. Light scour and concrete erosion at footings, however footings are not being undermined. N: two narrow vertical cracks with active leaking were observed (0.5 x 1.5 m).

| Recommended Work: | Rehab | Replace | Maintenance | Maintenance Needs: | | | |
|-------------------|-----------|------------|-------------|--------------------|--------|--|--|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year | | |
| | | | | · · | • | | |
| | | | | | | | |

Structure Number

1004

Element Data

| Element Group: | Abutments | | | Length: | 4.6 | m | |
|--|----------------------|--------------|--------------|-----------------------|---------------|---------------|--------------|
| Element Name: | Wingwalls | | | Width: | | | |
| Location: | | | | Height: | 2.6 | m | |
| Material: | Cast-in-place | concrete | | Count: | 4 | | |
| Element Type: | Reinforced co | oncrete | | Total Quantity | : 47.8 | Sq.m | |
| Environment: | Moderate | | | Limited Inspec | ction | | |
| Protection System: | | | | | | | Perform. |
| Condition | Uni | is | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | 15.1 | 29.4 | 0.3 | 3.0 | |
| Comments: | | | | | | | • |
| Precast block retaining NE: Medium vertical cra | | | longitudinal | crack full length | of wingwall a | and fascia (0 | .25x11m) |
| Recommended Work: | | Rehab | Replace | | Maintenanc | e Needs: | |
| | | 1-5 years | 6-10 year | 'S | Urgent | 1 year | 2 year |
| | | _ | | | | | |

| Element Group: | Sidewalks/Curbs | | Length: | 23.0 | m | | |
|--------------------|----------------------------------|------|-----------------------|--------|----|------|--------------|
| Element Name: | Curbs | | Width: | 0.3 | m | | |
| Location: | | | Height: | 0.4 | m | | |
| Material: | Cast-in-place concrete | | Count: | | | | |
| Element Type: | | | Total Quantity | : 16.1 | Sq | .m | |
| Environment: | Severe | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 16.1 | 0.0 | | 0.0 | |

Comments:

Curbs raised in 2019 to accommodate raise in asphalt (due to deck overlay).

| Recommended Work: | Rehab | Replace | Maintenance Needs: | | | | |
|-------------------|-----------|------------|--------------------|--------|---|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | | 1 year | 2 year |
| | | | | • | - | | • |
| | | | | | | | |

Structure Number

1004

| | Embankmer | nts & Streams | 3 | Length: | | | |
|---|---|----------------------------------|-----------|---|-------------|---------------------|-----------------------|
| Element Name: | Streams and | d Waterways | | Width: | | | |
| Location: | | · | | Height: | | | |
| Material: | | | | Count: | 1 | | |
| Element Type: | | | | Total Quantity: | 1 | all | |
| Environment: | | | | Limited Inspec | tion | | |
| Protection System: | | | | | | . | Perform. |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m/m/e | each / % / all | 0 | 1 | 0 | 0 | |
| Consider drain & structu | ire realignme | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenanc | | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | 2 year |
| | | | | | | | |
| | | nts & Streams | 6 | Length: | | | |
| Element Name: | Embankmer | nts | 5 | Width: | | | |
| Element Name: | | nts | 3 | | | | |
| Element Name: | Embankmer | nts | 5 | Width: | 4 | | |
| Element Name: Location: | Embankmer | nts | S | Width: Height: Count: Total Quantity: | 4 | each | |
| Element Name: Location: Material: Element Type: Environment: | Embankmer | nts | 5 | Width: Height: Count: | 4 | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Embankmer | nts | 5 | Width: Height: Count: Total Quantity: | 4 | | Perform. |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Embankmer All Four Qua | nts adrants nits | Exc. | Width: Height: Count: Total Quantity: | 4 | | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Embankmer All Four Qua | nts adrants | | Width: Height: Count: Total Quantity: Limited Inspec | 4 tion | each | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Embankmer All Four Qua Ur Sq.m / m / e | nts adrants nits each / % / all | Exc. 0 | Width: Height: Count: Total Quantity: Limited Inspec | tion Fair 0 | Poor 0 | Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Precast block retaining v | Embankmer All Four Qua Ur Sq.m / m / e | nts adrants nits each / % / all | Exc. 0 | Width: Height: Count: Total Quantity: Limited Inspector Good 4 ankment slope. Line. | tion Fair 0 | Poor 0 m scaling ob | Deficiencies |

Structure Number

1004

Element Data

| Element Group: | Embankment | s & Streams | 3 | Length: | | | | | · |
|------------------------------------|-----------------|---------------------|-----------|----------------|------|-----------|-----|--------|--------------|
| Element Name: | Slope Protect | ion | | Width: | | | | | |
| Location: | All Four Quad | Irants | | Height: | | | | | |
| Material: | | | | Count: | | 4 | | | |
| Element Type: | Hand laid ripr | ар | | Total Quantity | y: | 4 | ea | ch | |
| Environment: | Moderate | | | Limited Inspe | ctio | on | | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | Unit | s | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | 4 | 0 | | 0 | | 0 | |
| Comments: Light to medium veget | ation growth ob | served thro | ughout. | | | | | | |
| Recommended Work | : | Rehab | Replace | | Ma | aintenanc | e N | leeds: | |
| | | 1-5 years | 6-10 year | S | | Urgent | | 1 year | 2 year |
| | | | | | | | | | |

| Element Group: | Approaches | | Length: | | | |
|--------------------|----------------------------------|------|-----------------------|-------|------|--------------|
| Element Name: | Curb and Gutters - Spillw | ays | Width: | | | |
| Location: | NE, SE, SW Quadrants | | Height: | | | |
| Material: | Cast-in-Place Concrete | | Count: | 3 | | |
| Element Type: | Spillway | | Total Quantity | y: 3 | each | |
| Environment: | Severe | | Limited Inspec | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 3 | 0 | 0 | |

Comments:

Spillways installed in 2019. Noted to be at an appropriate elevation unlike previously noted.

| Recommended Work: | Rehab | Replace | M | aintenance | ۱ (| leeds: | |
|-------------------|-----------|------------|---|------------|-----|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | | 1 year | 2 year |
| | | | | • | | • | • |
| | | | | | | | |

Structure Number

1004

| Element Group: | Signs | | | Length: | | | | |
|--|-----------------------------------|------------------------|-----------------|--|--------------------------|-------|-------------|-----------------------|
| Element Name: | Signs | | | Width: | | | | |
| Location: | All Four Qu | adrants | | Height: | | | | |
| Material: | | | | Count: | 4 | | | |
| Element Type: | Hazard Mai | rker Signs | | Total Quantity: | 4 | each | | |
| Environment: | | <u> </u> | | Limited Inspec | | | | |
| Protection System: | | | | • | | 11 | | Perform. |
| Condition | U | nits | Exc. | Good | Fair | F | oor | Deficiencies |
| Data: | Sq.m/m/ | each / % / all | 3 | 1 | 0 | | 0 | |
| Comments: 3 new object markers in | nstalled in 20 | 019. NW corne | er is original. | | | | | |
| Recommended Work | : | Rehab | Replace | I | Maintenanc | e Nee | eds: | |
| | | 1-5 years | 6-10 year | 'S | Urgent | 1 1 | year | 2 year |
| | | | | | | | | |
| Flement Group | Annroaches | 3 | | I ength: | 6.0 | m | | |
| Element Group: | Approaches | | | Length: | 6.0 | | | |
| Element Name: | Approaches Wearing Su | | | Width: | 6.0 | | | |
| Element Name: Location: | Wearing Su | | | Width: Height: | | m | | |
| Element Name: Location: Material: | | | | Width: Height: Count: | 7.0 | m | 1 | |
| Element Name: Location: | Wearing Su | | | Width: Height: Count: Total Quantity: | 7.0 2 84.0 | m | 1 | |
| Element Name: Location: Material: Element Type: | Wearing Su Asphalt | | | Width: Height: Count: | 7.0 2 84.0 | m | 1 | Perform. |
| Element Name: Location: Material: Element Type: Environment: | Asphalt Moderate | | Exc. | Width: Height: Count: Total Quantity: | 7.0 2 84.0 | Sq.m | n Poor | _ |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Asphalt Moderate | urface | Exc. 56.0 | Width: Height: Count: Total Quantity: Limited Inspec | 7.0 2 84.0 tion | Sq.m | | _ |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Asphalt Moderate U Sq.m / m / c | nits each / % / all | 56.0 | Width: Height: Count: Total Quantity: Limited Inspec Good 28.0 | 7.0 2 84.0 tion | Sq.m | Poor | _ |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Asphalt Moderate U Sq.m / m / c | nits each / % / all | 56.0 | Width: Height: Count: Total Quantity: Limited Inspec Good 28.0 s of the culvert. | 7.0 2 84.0 tion | Sq.m | Poor 0.0 | _ |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Repaved in 2019. Light | Asphalt Moderate U Sq.m / m / c | nits each / % / all | 56.0 | Width: Height: Count: Total Quantity: Limited Inspec Good 28.0 s of the culvert. | 7.0 2 84.0 tion Fair 0.0 | Sq.m | Poor 0.0 | Perform. Deficiencies |



Photograph 1: Overview of structure (Looking North)



Photograph 2: Wearing surface over the structure (Looking North)





Photograph 3: Object marker and raised curbs on west side (Looking South)



Photograph 4: Concrete spillway, precast block retaining wall and raised curb at southwest quadrant of structure (Looking North)





Photograph 5: East elevation of structure



Photograph 6: Concrete soffit patch at east end of soffit





Photograph 7: Concrete soffit patch at west end of soffit



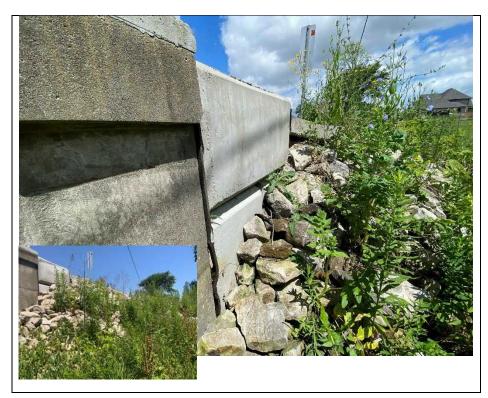
Photograph 8: Crack repairs at north abutment wall







Photograph 9: Scour and concrete erosion at south abutment footings (typ.)



Photograph 10: New precast block retaining wall and slope protection at northeast embankment (Looking West)





Photograph 11: New slope protection at southeast embankment (Looking South)



Photograph 12: New precast block retaining wall and slope protection at southwest embankment (Looking South)





Photograph 13: Waterway, looking west from inside the structure

Structure Number

| Inventory Data: | | |
|---|------------------------------------|---|
| Structure Name | Pike Creek at Baseline Road Bridge | |
| Main Hwy/Road # | On Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Baseline Road | |
| Structure Location | 0.50 km West from Manning Road | |
| Latitude | 42° 15' 37.1" | Longitude -82° 52' 42.4" |
| Owners | Town of Tecumseh | Heritage Not Consid: x Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Collector x Local |
| MTO District | | Posted Speed 60 No. of Lanes 2 |
| Old County | | AADT 1646 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Slab on Steel Girders | Interchange Number |
| Total Deck Length | 15.3 m | Interchange Structure Number |
| Overall Str. Width | 8.6 m | Min. Vertical Clearance |
| Total Deck Area | 131.6 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 8.0 m | Detour Length Around Bridge 7.8 km |
| Skew Angle | 15 Degrees | Direction of Structure E/W |
| No. of Spans | 1.0 | Fill on Structurem |
| Span Lengths | Total = 15.0 (1) = 15.0: | m |
| Historical Data: | | |
| Year Built | 1955 | Year of Last Major Rehab. 2014 |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Inspection | | Current Load Limit |
| Enhanced Access Equipment (ladder, boat, lift, etc.) | | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / Description) | | |
| Major rehabilitation completed in 2014, including but not limited to new beams, deck and parapet walls. | | |

| Ontario Structure | Inspection | Manual - Ir | nspection Form |
|--------------------------|------------|-------------|----------------|
| | | | |

Structure Number

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |
| | | |
| | | |
| | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Field Inspection Informa | tion: | | | | | | | | | |
|---------------------------|--|--|------------------------|------------------|---------|--|--|--|--|--|
| Date of Inspection: | June 27, 2024 | Type of Inspection | n: x OSIM | Enhanced OS | SIM | | | | | |
| Inspector: | Monica Sokolski, E.I | .T. (Dillon Consulting Lin | nited) | | | | | | | |
| Others in Party: | Stephen Strachan (D | Dillon Consulting Limited | on Consulting Limited) | | | | | | | |
| Access Equipment Used: | Camera, Measuring | tape, Measuring wheel, | and Hammer | | | | | | | |
| Weather: | Sunny | | | | | | | | | |
| Temperature: | 28 °C | | | | | | | | | |
| Additional Investigations | s Required: | | | Priority | | | | | | |
| | · | | None | Normal | Urgent | | | | | |
| Material Condition Survey | | | | | | | | | | |
| Detailed Deck Condit | ion Survey | | х | T | | | | | | |
| | mination Survey of As | sphalt-Covered Deck: | X | | | | | | | |
| Concrete Substructur | | <u> </u> | Х | | | | | | | |
| Detailed Coating Con | | | Х | | | | | | | |
| Detailed Timber Inves | • | | х | | | | | | | |
| Post-Tensioned Strar | - | | х | | | | | | | |
| Underwater Investigation: | Ŭ | | Х | | | | | | | |
| Fatigue Investigation: | | | Х | | | | | | | |
| Seismic Investigation: | | | Х | | | | | | | |
| Structure Evaluation: | | | Х | | | | | | | |
| Monitoring | | | | | | | | | | |
| Monitoring of Deform | ations, Settlements ar | nd Movements: | Х | | | | | | | |
| Monitoring Crack Wid | lths: | | Х | | | | | | | |
| Investigation Notes: | | | | | | | | | | |
| South fascia should be mo | | narrow crack extends the | ne entire fascia le | ength with obse | rved | | | | | |
| efflorescence and wet are | as. | | | | | | | | | |
| Overall Structure Notes: | | | | | | | | | | |
| Recommended Work on S | Structure: None | x Maintenance | Minor Reha | · | Replace | | | | | |
| Timing of Recommended | Work: | x 1 to 5 years | 6 to 10 yea | rs | | | | | | |
| Overall Comments: | Maintenar abutment. rail repairs | nce: Remove debris in st Strip seal joints should s. | ream and place | erosion protecti | | | | | | |
| Date of Next Inspection: | June 2026 | 3 | | | | | | | | |

| Element Group: | Deck | | | Length: | 14.4 | m | | |
|--|---------------------|--------------------|---------------------|---------------------|-----------------------|-------------------------|--------------|--|
| Element Name: | Wearing Sur | rface | | Width: | 8.0 | 8.0 m | | |
| Location: | | | | Height: | | | | |
| Material: | Asphalt | | | Count: | | | | |
| Element Type: | · | | | | 115.1 | 115.1 Sq.m | | |
| Environment: | Moderate | Moderate | | | tion | İ | | |
| Protection System: | | | | | | | Perform. | |
| Condition | , | Units | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / e | ach / % / all | 38.4 | 59.5 | 17.3 | 0.0 | | |
| VVBL. Light pitting of | 15% of the aspi | nait surface and | l a medium lo | ngitudinal crack fu | II length of st | tructure. | | |
| WBL. Light pitting of | 15% of the aspi | nait surface and | l a medium lo | ngitudinal crack fu | II length of s | tructure. | | |
| Recommended Wor | | Rehab | | | Il length of si | | | |
| | | | Replace 6-10 yea | | | | 2 year | |
| | | Rehab | Replace | | Maintenance | e Needs: | 2 year | |
| | | Rehab | Replace | | Maintenance | e Needs: 1 year | 2 year | |
| Recommended Wor | rk: | Rehab | Replace | ırs | Maintenance Urgent | e Needs: 1 year m | 2 year | |
| Recommended Wor | Decks | Rehab | Replace | Length: | Maintenance Urgent | e Needs: 1 year m | 2 year | |
| Recommended Wor Element Group: Element Name: | Decks | Rehab 1-5 years | Replace | Length: | Maintenance Urgent | e Needs: 1 year m | 2 year | |

| Element Group: | Decks | | | Length: | 14.4 | ł m | | |
|--------------------|----------------------|------------------------|---------|-----------------|------------|----------|--------------|--|
| Element Name: | Deck Top | | | Width: | 8.6 | 8.6 m | | |
| Location: | | | | Height: | | | | |
| Material: | Cast-in-place | Cast-in-place concrete | | | | | | |
| Element Type: | | | | Total Quantity: | 123.7 | 7 Sq.m | | |
| Environment: | Moderate | | | Limited Inspec | tion | x | | |
| Protection System: | | | | | | | Perform. | |
| Condition | ı | Jnits | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ach / % / all | 41.2 | 82.4 | 0.0 | 0.0 | | |
| Comments: | | | | | | | | |
| | | | | | | | | |
| Recommended Work | : | Rehab | Replace | | Maintenand | e Needs: | | |

1005

| Element Group: | Decks | | | Length: | 13.0 | m | | | |
|---|----------------------|-----------------|----------|----------------|----------------|----------------|-----------------|--|--|
| Element Name: | Soffit - Thin S | Slab - Exterior | | Width: | 0.9 | m | | | |
| Location: | | | | Height: | | | | | |
| Material: | Cast-in-place | concrete | | Count: | 2 | 2 | | | |
| Element Type: | | | | | 23.4 | Sq.m | | | |
| Environment: | Moderate | | | Limited Inspec | tion | | | | |
| Protection System: | | | | | | | Perform. | | |
| Condition | Units | | Exc. | Good | Fair | Poor | Deficiencies | | |
| Data: | Sq.m / m / ea | ach / % / all | 7.8 | 10.1 | 4.0 | 1.5 | | | |
| Comments: N & S Fascia: Longitue efflorescence (N: 10m, | | | | | ull bridge spa | n with discret | e wet areas and | | |
| Recommended Work | : | Rehab | Replace | | Maintenance | e Needs: | | | |
| | | 1-5 years | 6-10 yea | rs | Urgent | 1 year | 2 year | | |
| | | | | | | | | | |

| Decks | | | Length: | | 13.0 | m | | |
|------------------------|--|---|---|--|---|--|--|--|
| Soffit - Thin | Slab - Interior | | Width: | | 6.8 m | | | |
| | | | Height: | | | | | |
| Cast-in-place concrete | | | Count: | | | | | |
| | | | Total Quanti | ty: | 88.3 | S | q.m | |
| Benign | | | Limited Insp | ecti | on | | | |
| | | | | | | | | Perform. |
| ı | Units | Exc. | Good | | Fair | | Poor | Deficiencies |
| Sq.m / m / e | ach / % / all | 53.0 | 35.3 | | 0.0 | | 0.0 | |
| | | | | | | | | |
| | Rehab | Replace | | M | aintenanc | e N | leeds: | |
| | 1-5 years | 6-10 yea | rc | | Urgent | | 1 year | 2 year |
| | Soffit - Thin : Cast-in-place Benign Sq.m / m / e | Soffit - Thin Slab - Interior Cast-in-place concrete Benign Units Sq.m / m / each / % / all | Soffit - Thin Slab - Interior Cast-in-place concrete Benign Units Exc. Sq.m / m / each / % / all 53.0 | Soffit - Thin Slab - Interior Height: Cast-in-place concrete Count: Total Quanti Benign Limited Insp Units Exc. Good Sq.m / m / each / % / all 53.0 35.3 | Soffit - Thin Slab - Interior Height: Cast-in-place concrete Count: Total Quantity: Benign Limited Inspection Units Exc. Good Sq.m / m / each / % / all 53.0 35.3 | Soffit - Thin Slab - Interior Width: 6.8 | Soffit - Thin Slab - Interior Width: 6.8 m Height: | Soffit - Thin Slab - Interior Width: 6.8 m |

| Element Group: | Decks | | | Length: | | 1.0 | 1.0 m | | | |
|--------------------------------------|------------------------|-------------------|----------------|---------------|-------------|----------|-------|--------|--------------|--|
| Element Name: | Soffit - Thin S | Slab - End | | Width: | | 8.6 | 8.6 m | | | |
| Location: | | | | | | | | | | |
| Material: | Cast-in-place concrete | | | Count: | | 2 | | | | |
| Element Type: | | | | Total Quantit | ty: | 17.2 | S | q.m | | |
| Environment: | Moderate | | | Limited Inspe | ecti | on | | | | |
| Protection System: | | | | | | | | | Perform. | |
| Condition | ı | Units | Exc. | Good | | Fair | | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ach / % / all | 5.7 | 11.5 | | 0.0 0.0 | | | | |
| Comments: Hairline cracking was o | observed in va | rious locations a | long the soffi | t. | | | | | | |
| | | Dahah | Replace | | Maintenance | | | Joods: | | |
| Recommended Work | : | Rehab | Replace | | IVI | annenanc | C 1 | veeus. | | |

| Element Group: | Decks | Length: | | | | | |
|--------------------|----------------------------------|---------|-----------------------|------|-----------|----|--------------|
| Element Name: | Drainage | | Width: | | | | |
| Location: | | Height: | | | | | |
| Material: | Steel | Count: | 6 | | | | |
| Element Type: | Metal drain pipes | | Total Quantity | : 6 | ead | ch | |
| Environment: | Severe | | Limited Inspection | | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units Exc. | | Good | Fair | Fair Poor | | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 4 | 0 | | 2 | |

Comments:

Four (4) additional PVC of 2 inch diameter are located at the soffit corners.

SE: Broken at structure.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

1005

Element Data

| Element Group: | Joints | | | | Length: | | 8.3 | m | | |
|--|------------------|---------------------|-------|------------|----------------|------------|-----------|-----|--------|--------------|
| Element Name: | Seals/sealant | S | | | Width: | | | | | |
| Location: | East/West Ab | outment | | | Height: | | | | | |
| Material: | | | | | Count: | | 2 | | | |
| Element Type: | Strip Seal | • | | | Total Quantity | y : | 2 | ea | ıch | |
| Environment: | Severe | | | | Limited Inspe | ctio | on | Х | | |
| Protection System: | | | | | | | | • | • | Perform. |
| Condition | U | Inits | Ex | C. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m/m/ea | ch / % / all | C |) | 2 | | 0 | | 0 | |
| Comments: Strip seal joints were fi | lled with debris | (Typ. E & W Jo | oint) | | | | | | | |
| Recommended Work | | Rehab | Rep | olace | | Ma | aintenanc | e N | leeds: | |
| | | 1-5 years | 6-10 | 6-10 years | | | Urgent | Х | 1 year | 2 year |
| | | | | Br | idge joint o | clea | aning. | | | |

| Element Group: | Joints | | Length: | 8.3 | m | |
|--------------------|----------------------------------|--------|-----------------------|--------|------|--------------|
| Element Name: | Concrete End Dams | Width: | 0.5 | m | | |
| Location: | East/West Abutment | | Height: | | | |
| Material: | Cast-in-place concrete | Count: | 4 | | | |
| Element Type: | | | Total Quantity | : 16.5 | Sq.m | |
| Environment: | Severe | | Limited Inspection | | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 16.5 | 0.0 | 0.0 | |

Comments:

Light rust staining was observed throughout. **W**: two light spalls in EBL (0.1 m2).

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

Severe

Units

Sq.m / m / each / % / all

Perform.

Deficiencies

Poor

0.1

Element Data

| Element Group: | Joints | | | Length: | | 8.3 | m | | |
|-------------------------|----------------------|------------------------|---------------|-----------------|--------|----------|-------------------|----------|--------------|
| Element Name: | Armouring/R | etaining device | S | Width: | | | | | |
| Location: | East/West A | butment | | Height: | | | | | |
| Material: | Steel | | | Count: | | 4 | | | |
| Element Type: | | Total Quantit | y: | 33.0 | m | | | | |
| Environment: | Severe | | | Limited Inspe | ectio | n | | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | ı | Units | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 0.0 | 31.5 | | 1.5 | | 0.0 | |
| Recommended Work: | | Rehab | Replac | е | Ма | | aintenance Needs: | | |
| Light scraping and coat | ing removed i | nom snow plow | s use. Ligiti | to mediam conos | 551011 | observed | um | ougnout. | |
| Recommended work: | | | | | | | | | la voor |
| | | 1-5 years | 6-10 ye | ears | | Urgent | | 1 year | 2 year |
| | | | | | | | | | |
| | | | | | | | | | |
| Element Group: | Barriers | | | Length: | | 1.0 | m | | |
| Element Name: | Parapet Wal | ls - Ends | | Width: | | 0.3 m | | | |
| Location: | Solid parape | t at 4 corners | | Height: | | 0.8 | m | | |
| Material: | Cast-in-place | Cast-in-place concrete | | | | 4 | | | |
| Elamant T | | | Count: | | | | | | |
| Element Type: | Parapet Wal | | | Total Quantit | y: | 7.4 | Sq. | m | |

Comments:

Environment:

Protection System:

Condition

Data:

SE Corner: Light HC and map cracking was observed throughout. **NW Corner**: Light spalling and light rust staining observed on the top of the parapet end wall (0.15x0.15m).

Exc.

0.0

Limited Inspection

Fair

0.2

Good

7.1

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-------------|------------|--------------------|----------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | <u> </u> | | <u> </u> |
| | | | | |

| Element Group: | Barriers | | | Length: | | 23.0 | m | | |
|-------------------------------------|----------------------------------|------------------|--------------|------------------|------------|----------|------|------------|--------------|
| Element Name: | Parapet Wall | s - Interior | | Width: | | 0.3 m | | | |
| Location: | | | | Height: | | 0.8 m | | | |
| Material: | Cast-in-place | concrete | | Count: | | 2 | | | |
| Element Type: | Parapet Wall with Single railing | | | Total Quantity | <i>r</i> : | 85.1 | Sc | q.m | |
| Environment: | Severe | | | Limited Inspe | ction | | | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | L | Inits | Exc. | Good | F | air | Poor | | Deficiencies |
| Data: | Sq.m / m / ea | nch / % / all | 0.0 | 85.1 0.0 | | | | 0.0 | |
| Comments: N and S Edges: Hairlir | ne map crackin | g and light hone | eycombing wa | as observed thro | ughou | t the pa | ara | pet walls. | |
| Recommended Work: | | Rehab | Replace | | Main | tenance | e N | leeds: | |
| | | 1-5 years | 6-10 yea | s | | gent | | 1 year | 2 year |
| | | | | | | | | | |

| Element Group: | Barriers | | Length: | 23.0 | m | |
|--------------------|----------------------------------|------------------------|--------------------|------|------|--------------|
| Element Name: | Hand Railing | Width: | | m | | |
| Location: | | Height: | | m | | |
| Material: | Steel | Count: | 2 | | | |
| Element Type: | Parapet Wall with Single Raili | Total Quantity: 46.0 m | | | | |
| Environment: | Severe | | Limited Inspection | | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 46.0 | 0.0 | 0.0 | |

Comments:

Light corrossion observed at centreline splice of north railing and throughout the posts. Grouting under posts missing / spalled in all but 1 location.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

Urgent

x 1 year Repair or replace damanged guiderail

2 year

Element Data

| Element Group: | Barriers | | Length: | 120.6 | m | |
|--------------------|--|---------|--------------------|--------------|---------------|-----------------|
| Element Name: | Railing Systems | | Width: | | | |
| Location: | NW / SE / SW | | Height: | | | |
| Material: | Steel | | Count: | | | |
| Element Type: | Single Rail (Steel Beam, an | d Post) | Total Quantity: | 120.6 | m | |
| Environment: | Moderate | | Limited Inspect | ion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 40.2 | 76.4 | 0.0 | 4.0 | |
| | act damage was observed (4r nce concerns at all 3 corners | | set block missing. | Slope erosio | on causing ro | tation of posts |
| Recommended Work | : Rehab | Replace | N | /laintenance | Needs: | |

6-10 years

1-5 years

| Element Group: | Beams/MLE's | | Length: | 4.0 |) m | |
|--------------------|----------------------------------|---------------------------|----------------|------|------|--------------|
| Element Name: | Girders - End | Width: | 0.3 | 3 m | | |
| Location: | | Height: | 0.0 | 3 m | | |
| Material: | Weathering Steel | Count: | į | 5 | | |
| Element Type: | I type | Total Quantity: 46.2 Sq.m | | | | |
| Environment: | Moderate | | Limited Inspec | ion | х | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 15.4 | 30.8 | 0.0 | 0.0 | |
| Comments: | • | | | | | " |
| | | | | | | |

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-------------|------------|--------------------|-------------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | _ | _ | |
| | | | | |

| Element Group: | Beams/ML | E's | | | Length: | | 11.5 | m | | | |
|--------------------|-------------------|-----------|---------------------|-----------|-----------------|------|---------------------------|-----|--------|-----|--------------|
| Element Name: | Girders - M | lido | lle | | Width: | | 0.3 | m | | | |
| Location: | | | | | Height: | | 0.8 m | | | | |
| Material: | Weathering | g S | teel | | Count: | | 5 | , | | | |
| Element Type: | I type | | | | Total Quantity: | : | 132.8 Sq.m | | | | |
| Environment: | Benign | | | | Limited Inspec | ctio | n | х | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | | Units Exc | | | Good | | Fair | | Poor | I | Deficiencies |
| Data: | Sq.m / m / | ea | ch / % / all | 79.7 | 53.1 | | 0.0 | | 0.0 | | |
| Comments: | | | | | | | | | | | |
| Recommended Work | : | | Rehab | Replace | | Mai | intenanc | e 1 | 1 | | 1 |
| | | | 1-5 years | 6-10 year | 'S | l | Jrgent | | 1 year | | 2 year |
| Element Group: | Beams/ML | F's | | | Length: | | 1.8 | m | | | |
| Element Name: | Diaphragm | | | | Width: | | 0.1 m | | | | |
| Location: | - 15 -115 -15 | | | | Height: | | 0.4 m | | | | |
| Material: | Galvanized | l St | eel | | Count: | | 8 | ; | | | |
| Element Type: | I-type | | | | Total Quantity: | : | 8 | ea | ach | | |
| Environment: | Moderate | | | | Limited Inspec | ctio | n | Х | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | | U | nits | Exc. | Good | | Fair | | Poor | 7 (| Deficiencies |
| Data: | Sq.m / m / | ead | ch / % / all | 3 | 5 | | 0 | | 0 | | |
| Comments: | | | | | | | | | | • | |
| Recommended Work | | 1 | 5 | T In . | | | | | | | |
| | : | | Rehab | Replace | | Mai | intenanc | e l | Needs: | | |
| | • | | 1-5 years | 6-10 year | | | intenanc Jrgent | e r | 1 year | | 2 year |

| Element Group: | Beams/MLE | 's | | Length: | 1.7 | m | |
|---|--|-------------------------|-----------|--|---------------------------------|-----------------|-----------------------|
| Element Name: | Diaphragms | - Intermediate | | Width: | 0.1 | m | |
| Location: | | | | Height: | 0.3 | m | |
| Material: | Galvanized | Steel | | Count: | 8 | | |
| Element Type: | I-type | | | Total Quantity: 8 each | | | |
| Environment: | Benign | | | Limited Inspect | ion | х | |
| Protection System: | | | | | | | Perform. |
| Condition | | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 6 | 2 | 0 | 0 | |
| Comments: | | T | | 1- | | | |
| Recommended Work: | | Rehab | Replace | | <u>laintenanc</u> | | |
| | | 1-5 years | 6-10 year | 'S | Urgent | 1 year | 2 year |
| | | | | | | | |
| Element Group: | Coatings | | | Length: | 2.0 | m | |
| Element Group: | Coatings Structural | | | Length: | 2.0 | | |
| • | | | | Width: | 2.0 0.3 0.8 | m | |
| Element Name: | Structural | | | <u> </u> | 0.3 | m m | |
| Element Name: Location: | Structural | | | Width: Height: | 0.3 0.8 10 | m m | |
| Element Name: Location: Material: | Structural | | | Width: Height: Count: | 0.3 0.8 10 46.2 | m m | |
| Element Name: Location: Material: Element Type: | Structural Girder Ends | | | Width: Height: Count: Total Quantity: | 0.3 0.8 10 46.2 | m m | Perform. |
| Element Name: Location: Material: Element Type: Environment: | Structural Girder Ends Moderate | Units | Exc. | Width: Height: Count: Total Quantity: | 0.3 0.8 10 46.2 | m m | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Structural Girder Ends Moderate | | Exc. 15.4 | Width: Height: Count: Total Quantity: Limited Inspect | 0.3 0.8 10 46.2 ion | m m Sq.m | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Structural Girder Ends Moderate | Units | _ | Width: Height: Count: Total Quantity: Limited Inspect | 0.3 0.8 10 46.2 ion | m m Sq.m Poor | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: | Structural Girder Ends Moderate Sq.m / m / e | Units | _ | Width: Height: Count: Total Quantity: Limited Inspect Good 30.8 | 0.3 0.8 10 46.2 ion | m Sq.m Poor 0.0 | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Structural Girder Ends Moderate Sq.m / m / e | Units each / % / all | 15.4 | Width: Height: Count: Total Quantity: Limited Inspect Good 30.8 | 0.3 0.8 10 46.2 ion Fair 0.0 | m Sq.m Poor 0.0 | |

Maintenance Needs:

1 year

Urgent

2 year

Element Data

Recommended Work:

| Element Group: | Abutments | | Length: | | | |
|--------------------|---|--------------------|----------|----------------|--------------|---------------|
| Element Name: | Abutment Walls | | Width: | 8.6 ו | m | |
| Location: | East/West Abutment | East/West Abutment | | | m | |
| Material: | Cast-in-place concrete | Count: | 2 | | | |
| Element Type: | Conventional closed | Total Quantity: | 41.3 | Sq.m | | |
| Environment: | Moderate | Limited Inspecti | on | | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 37.3 | 4.0 | 0.0 | |
| Comments: | | • | <u> </u> | • | | |
| | n wall. W: North drain is covered at the joint between new | | | n vertical cra | ack observed | . Rust stains |

| Element Group: | Abutments | Length: | |
|----------------|------------------------|---------|-------|
| Element Name: | Ballast Walls | Width: | 8.6 m |
| Location: | East/West Abutment | Height: | 0.8 m |
| Material: | Cast-in-place concrete | Count: | 2 |

Replace

6-10 years

| | | | | _ | | |
|--------------------|----------------------------------|-------------------------|-----------------|--------|------|--------------|
| Element Type: | | | Total Quantity: | : 13.8 | Sq.m | |
| Environment: | Moderate | te Limited Inspection x | | | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 4.6 | 8.4 | 0.8 | 0.0 | |

Comments:

E and W: Narrow to hairline vertical cracks observed throughout both ballast walls.

Rehab

1-5 years

| Recommended Work: | Rehab | Replace | M | Maintenance Needs: | | | |
|-------------------|-----------|------------|---|--------------------|--|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | | 1 year | 2 year |
| | | | | | | | |
| | | | | | | | |

| Element Group: | Abutments | | Length: | Var. | m | | | |
|--------------------|----------------------------------|---------------------------|--------------------|------|-------|-----|--------------|--|
| Element Name: | Wingwalls | | Width: | | | | | |
| Location: | East/West Abutment | East/West Abutment | | | 3.2 m | | | |
| Material: | Cast-In-place concrete | Count: | 4 | | | | | |
| Element Type: | Reinforced concrete | Total Quantity: 60.2 Sq.m | | | m.p | | | |
| Environment: | Benign | | Limited Inspection | | | | | |
| Protection System: | | | | | | | Perform. | |
| Condition | Units | Exc. | Good | Fair | Poor | | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 0.0 | 54.7 | 5.0 | | 0.5 | | |

Comments:

Crack Quantity (Length): NE and NW ±4.40m, SE ±3.20m, and SW ±6.80m. **SW**: Light spalling (0.5 sq.m), hairline to narrow map cracking (1.0 sq.m), and light honeycombing was observed at the joint between the new/old concrete. **NW**: Light honeycombing was observed at the joint between the new/old concrete. **NE**: 15 mm of settlement at asphalt.

| year | | |
|------|--|--|
| _ | | |

| Element Group: | Abutments | | Length: | | | | |
|--------------------|----------------------------------|-----------------------|--------------------|------|-----|---|--------------|
| Element Name: | Bearings | | Width: | | | | |
| Location: | East/West Abutment | Height: | | | | | |
| Material: | Laminated Elastomeric Bearing | Count: | 10 | | | | |
| Element Type: | | Total Quantity | antity: 10 each | | | | |
| Environment: | Moderate | | Limited Inspection | | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poo | r | Deficiencies |
| Data: | Sq.m / m / each / % / all | 4 | 6 | 0 | 0 | | |

Comments:

Multiple anchor rods were observed to be misaligned (non-vertical) in the longitudinal direction.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

1005

Element Data

| Element Group: | Embankmen | ts & Streams | | | Length: | | | | | |
|--|--------------------|---------------|------------|--------------|------------------|---|------------|--------|---------------|--------------|
| Element Name: | Streams and | Waterways | | | Width: | | | | | |
| Location: | | | | | Height: | | | | | |
| Material: | | | | | Count: | | 1 | | | |
| Element Type: | | | | | Total Quantity | : | 1 each | | | |
| Environment: | | | | | Limited Inspec | ction | 1 | | | |
| Protection System: | | | | | | | | | | Perform. |
| Condition | l | Jnits | | Exc. | Good | | Fair Poor | | Poor | Deficiencies |
| Data: | Sq.m / m / ea | nch / % / all | | 0 | 0 | | 0 | | 1 | |
| Comments: Concrete debris (large infront of the east abutr | • | • | rea | am is out of | alignment at the | e stru | ucture. Er | ros | ion of the en | nbankment |
| Recommended Work: | | Rehab | | Replace | | Mai | ntenance | e N | eeds: | |
| | 1-5 years 6-10 yea | | 6-10 years | S | U | Urgent | | 1 year | 2 year | |
| | | | | | | temove debris in stream and place rosion protection at east abutment. | | | • | |

| Element Group: | Embankments & Streams | | Length: | | | | | |
|--------------------|----------------------------------|----------------|------------------------|--------------------|------|-----|------|--------------|
| Element Name: | Embankments | | Width: | | | | | |
| Location: | All Four Quadrants, 1 additio | nal drain | Height: | | | | | |
| Material: | | Count: | Count: 5 | | | | | |
| Element Type: | | Total Quantity | Total Quantity: 5 each | | | ach | | |
| Environment: | Moderate | | Limited Inspe | Limited Inspection | | | | |
| Protection System: | | | | | | | | Perform. |
| Condition | Units | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 2 | 2 3 | | | 0 | | |
| Comments: | | • | | | | | | |

Comments

SE, SW and NW Embankments: Insufficient erosion protection.

| Recommended Work: | Rehab | Replac | е | Ma | Maintenance Needs: | | | | |
|-------------------|-----------|---------|------|----|--------------------|------|------------|--|--------|
| | 1-5 years | 6-10 ye | ears | | Urgent | Х | 1 year | | 2 year |
| | | | | In | stall erosio | on p | rotection. | | _ |
| | | | | | | | | | |

| Element Group: | Embankments & Streams | | Length: | | | | |
|----------------------------------|----------------------------------|------------|-----------------|------------------------------|----------|--------------|--|
| Element Name: | Slope Protection | | Width: | | | | |
| Location: | | | Height: | | | | |
| Material: | | | Count: | 1 | | | |
| Element Type: | Hand laid riprap | | Total Quantity: | 1 | 1 each | | |
| Environment: | Moderate | | Limited Inspec | tion | | | |
| Protection System: | | | | | | Perform. | |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 0 | 1 | 0 | 0 | | |
| Comments: NE Embankment: Slop | pe protection provided at the C | SP outlet. | | | | | |
| Recommended Work: | Rehab | Replace | | Maintenance | Needs: | | |
| | 1-5 years | 6-10 year | rs | Urgent | x 1 year | 2 year | |
| | | | | Consider eros embankments | • | | |
| Floment Crouns | Signs | | Longth | | | | |

| Element Group: | Signs | | Length: | | | | | |
|--------------------|----------------------------------|------|------------------------|--|------|--|------|--------------|
| Element Name: | Signs | | Width: | | | | | |
| Location: | | | Height: | | | | | |
| Material: | | | Count: | | 5 | | | |
| Element Type: | Т | | Total Quantity: 5 each | | ich | | | |
| Environment: | | | Limited Inspection | | | | | |
| Protection System: | | | | | | | | Perform. |
| Condition | Units | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 5 | | 0 | | 0 | |

Comments:

Three (3) HAZARD MARKER Signs at 3 corners, SPEED LIMIT Sign at South West railing system, and CHECK BOARD Sign at the pole.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

| Element Group: | Approaches | | Length: | 10.0 | m | | |
|--------------------|----------------------------------|----------|-----------------|------|---|-----|--------------|
| Element Name: | Curb/gutters | Width: | 0.3 | m | | | |
| Location: | NW / SE / SW | Height: | 0.2 | m | | | |
| Material: | Cast-in-place concrete | Count: | 3 | | | | |
| Element Type: | | | Total Quantity: | 30.0 | m | | |
| Environment: | Moderate | Moderate | | | | | |
| Protection System: | | | | | • | | Perform. |
| Condition | Units | Exc. | Good | Fair | P | oor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 10.0 | 20.0 | 0.0 | (| 0.0 | |
| Comments: | | | <u>.</u> | | | | • |

NW, NE, SW and SE: 25 mm of settlement was observed.

| 4.5 | | | | | |
|-----------|------------|------|-----|-------------|--------|
| 1-5 years | 6-10 years | Urge | ent | 1 year | 2 year |
| | | | | | |

| Element Group: | Approaches | | Length: | 6.0 | m | | |
|--------------------|----------------------------------|------|----------------|--------|-----|------|--------------|
| Element Name: | Wearing Surface | | Width: | 7.0 | m | | |
| Location: | East/West Approaches | | Height: | | | | |
| Material: | Asphalt | | Count: | 2 | 2 | | |
| Element Type: | | | Total Quantity | : 84.0 | Sq. | .m | |
| Environment: | Moderate | | Limited Inspe | ction | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 28.0 | 49.0 | 7.0 | | 0.0 | |

Comments:

East Approach: Medium transverse crack extends the full width and a medium to wide cracking with settlement was observed on south side of the approach. **West Approach**: Medium transverse crack extends the full width.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent x 1 year | 2 year |
| | | | Crack sealing. | |
| | | | | |

1005

| Element Group: | Approaches | | | Length: | 6.0 |) m | |
|---|--|-----------------|-----------------|------------------|--------------|-----------------|--------------|
| Element Name: | Approaches | Slabs | | Width: | 7.0 |) m | |
| Location: | East/West A | pproaches | | Height: | | | |
| Material: | Cast-in-place | e concrete | | Count: | 2 | 2 | |
| Element Type: | | | | Total Quantity: | 84.0 |) Sq.m | |
| Environment: | Moderate | | | Limited Inspec | tion | x | |
| Protection System: | | | | | | | Perform. |
| Condition | l | Jnits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 28.0 | 56.0 | 0.0 | 0.0 | |
| Comments: East Approach: Narro side observed. | w transverse c | crack extending | to the full wid | th and medium to | severe crac | ck with settlem | ent on south |
| Recommended Work | | Rehab | Replace | | Maintenand | e Needs: | |
| | | 1-5 years | 6-10 yea | rs | Urgent | x 1 year | 2 year |
| | <u>, </u> | | | | Crack sealir | ng. | |



Photograph 1: Overview of structure looking east



Photograph 2: Overview of structure looking west





Photograph 3: Typical condition of wearing surface



Photograph 4: Typical condition of parapet wall (Looking West)





Photograph 5: Expansion joint and railing system at northeast quadrant of structure

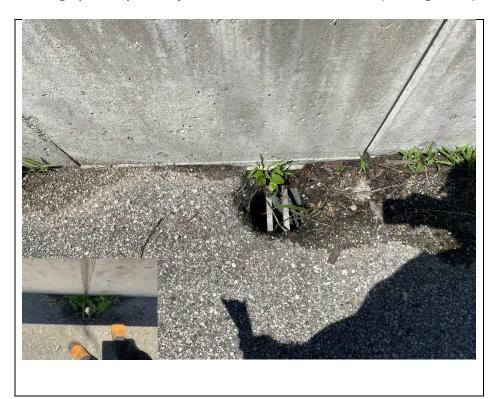


Photograph 6: SBEAT at east approach (Looking West)



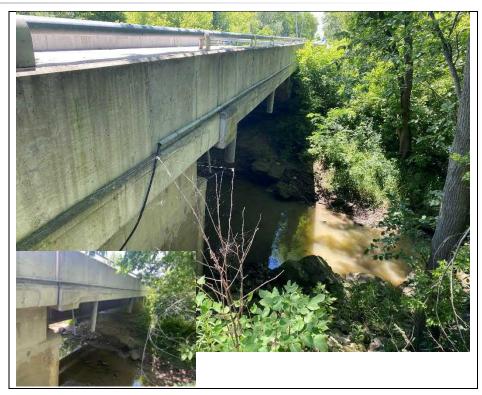


Photograph 7: Expansion joint at east side of the structure (Looking South)



Photograph 8: Typical deck drainage





Photograph 9: North elevation of structure



Photograph 10: South elevation of structure





Photograph 11: Deck soffit, main girders, diaphragms, and deck drainage (Looking West)



Photograph 12: Bearing seat at east abutment wall with typical bent anchor bolt (Looking South)





Photograph 13: Misaligned anchor rod at abutment bearings (typ.)



Photograph 14: Wall drains and erosion at footing at east abutment (Looking East)





Photograph 15: Embankments at northeast quadrant of structure (Looking East)

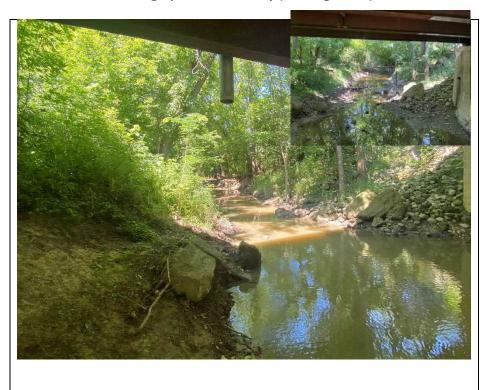


Photograph 16: Embankments and waterway at south side of structure (Looking South)





Photograph 17: Waterway (Looking South)



Photograph 18: Embankments and waterway (Looking North)



Structure Number

| Inventory Data: | | |
|--|--|---|
| Structure Name | Sullivan Creek at Baseline Road Bridge | е |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Baseline Road | |
| Structure Location | 1.20 km West from Manning Road | |
| Latitude | 42° 16' 38.2" | Longitude -82° 53' 12.2" |
| Owners | Town of Tecumseh | Heritage Not Consid: x Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Collector x Local |
| MTO District | | Posted Speed 60 No. of Lanes 2 |
| Old County | | AADT 1700 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Rigid Frame | Interchange Number |
| Total Deck Length | 5.9 m | Interchange Structure Number |
| Overall Str. Width | 19.8 m | Min. Vertical Clearance m |
| Total Deck Area | 116.8 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 9.3 m | Detour Length Around Bridge 7.8 km |
| Skew Angle | 57 Degrees | Direction of Structure E/W |
| No. of Spans | 1.0 | Fill on Structurem |
| Span Lengths | Total = 5.2 (1) = 5.2; | m |
| Historical Data: | | |
| Year Built | 2015 | Year of Last Major Rehab. |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Ir | nspection | Current Load Limit |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / I | Description) | |
| Bridge was fully replace | ed in 2015 | |

| Ontario | Structure | Inspection | Manual - | Inspection | Form |
|----------|-----------|------------|-----------|-------------|---------|
| Unitario | Ju detale | mapechon | mailuai - | III3pection | 1 01111 |

Structure Number

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |
| | | |
| | | |
| | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Field Inspection Informa | tion: | | | | | | |
|---|-----------------------|-------------------------------|---------------|-----------------|---------|--|--|
| Date of Inspection: | June 27, 2024 | Type of Inspection | n: x OSIM | Enhanced OS | SIM | | |
| Inspector: | Monica Sokolski, E.I | .T. (Dillon Consulting Lir | mited) | | | | |
| Others in Party: | Stephen S. (Dillon C | . (Dillon Consulting Limited) | | | | | |
| Access Equipment Used: | Camera, Measuring | tape, Measuring wheel, | and Hammer | | | | |
| Weather: | Sunny | | | | | | |
| Temperature: | 28 °C | | | | | | |
| Additional Investigations | s Required: | | | Priority | | | |
| 7 | o rroquii ou i | | None | Normal | Urgent | | |
| M () 10 PH (| | | | | | | |
| Material Condition Survey | : C | | 1 , | | | | |
| Detailed Deck Condit | | anhalt Cavarad Daale | X | | | | |
| | | sphalt-Covered Deck: | X | | | | |
| Concrete Substructur Detailed Coating Con | - | | X | | - | | |
| Detailed Timber Inves | X | | + | | | | |
| Post-Tensioned Strar | | | X | | + | | |
| Underwater Investigation: | id investigation. | | X | | + | | |
| Fatigue Investigation: | | | X | | | | |
| Seismic Investigation: | | | X | | | | |
| Structure Evaluation: | | | X | | + | | |
| Monitoring | | | | | | | |
| Monitoring of Deform | ations. Settlements a | nd Movements: | Х | | | | |
| Monitoring Crack Wic | | | Х | | | | |
| Investigation Notes: | | | | | | | |
| | | | | | | | |
| Overall Structure Notes: | | | | | | | |
| Recommended Work on S | Structure: None | x Maintenance | Minor Rehab | . <u> </u> | Replace | | |
| | | | Major Rehab | | | | |
| Timing of Recommended | Work: | 1 to 5 years | 6 to 10 years | ; | | | |
| Overall Comments: | | nce: Retension guiderail | | | | | |
| | | l/delaminations noted at | | ecast unit join | ts. | | |
| Date of Next Inspection: | June 2020 | 6 | | | | | |

Structure Number

1006

Element Data

| Element Group: | Decks | | | Length: | | 5.9 | m | | | |
|-------------------------------------|--------------------------|----------|---------------|----------|------------|------------|-----|--------|----------|----------|
| • | | | | | | | | | | |
| Element Name: | Wearing surface | | | Width: | | 11.0 | m | | | |
| ₋ocation: | Top of Deck | | | Height: | | | | | | |
| Material: | Asphalt | | | Count: | | | | | | |
| Element Type: | | | | | / : | 64.9 Sq.m | | | | |
| Environment: | Moderate | | Limited Inspe | cti | on | | | | | |
| Protection System: | | | | | | | | | | orm. |
| Condition | Units | | Exc. | Good | | Fair Poor | | Poor | Deficie | encies |
| Data: | Sq.m / m / each / | % / all | 26.0 | 38.4 | | 0.0 | | 0.5 | | |
| Comments: Medium to severe trans | sverse crack at sou | thwest o | corner. | | | | | | | |
| Recommended Work: | Rel | hab | Replace | | M | aintenance | e N | leeds: | | |
| | 1-5 | years | 6-10 year | S | | Urgent | | 1 year | 2 ye | ar |
| | | yours | o To year | <u> </u> | | Orgoni | | ı year | <u> </u> | <u> </u> |

| Element Group: | Barriers | | Length: | 7.0 | m | | |
|--------------------|----------------------------------|----------------------------|----------------|----------------------|---|------|--------------|
| Element Name: | Railing System | ailing System Wie | | | | | |
| Location: | Hei | | Height: | eight: 0.65 m | | | |
| Material: | Steel | teel Cor | | 2 | 2 | | |
| Element Type: | Box Beam Railing on Cui | Box Beam Railing on Curb T | | 14.0 | m | | |
| Environment: | Moderate | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units Exc. | | Good | Fair | F | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 5.6 | 8.4 | 0.0 | | 0.0 | |

Comments:

SE Corner: Channel between the box beams was observed to have rotated.

Light corrossion observed on bolts. Scrapes on tube railing with no rusting observed through out.

| Recommended Work: | Rehab | Replace | Maintenance | | |
|-------------------|-----------|------------|-------------|--------|--------|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year |
| | | | | | |
| | | | | | |

Structure Number

1006

Element Data

| | Barriers | | | Length: | | Var. | m | | | |
|--------------------------------------|--|-------|-----------|------------------|------|-----------|-------------------|------|------------|---------|
| Element Name: | Bailing Cyatam | | | | | · a | 1111 | | | |
| | ailing System | | | Width: | | | | | | |
| Location: | All four quadrants | | | Height: | | | | | | |
| Material: | Steel | Steel | | | | 4 | | | | |
| Element Type: | SBGR w/ Channel OPSD 912.130 Total Quantity: | | | y: | 34.2 | m | | | | |
| Environment: | Moderate | | | Limited Inspe | ecti | on | n | | | |
| Protection System: | | | | | | | | | | erform. |
| Condition | Units | | Exc. | Good | | Fair Poor | | De | ficiencies | |
| Data: | Sq.m / m / each / % | / all | 13.7 | 20.5 | | 0.0 | | 0.0 | | |
| Comments: NE: 7.6m, NW: 11.4m, \$ | SE : 7.6m, and SW : 7. | 6m. | | | | | | | | |
| Recommended Work: | Rehal | 0 | Replace | | М | aintenanc | aintenance Needs: | | | |
| | 1-5 ye | ars | 6-10 year | rs Urgent 1 year | | 1 year | 2 | year | | |

| Element Group: | Barriers | Barriers L | | | m | |
|--------------------|----------------------------------|-----------------------|----------------|---------|------|--------------|
| Element Name: | Railing System | Railing System W | | | | |
| Location: | All four quadrants | All four quadrants He | | | | |
| Material: | Steel | Steel C | | 4 | | |
| Element Type: | SBGR w/eccentric loader | end treat | Total Quantity | y: 95.1 | m | |
| Environment: | Moderate | | Limited Inspe | ction | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 38.0 | 57.1 | 0.0 | 0.0 | |

Comments:

NE: 34.3m, **NW**: 15.2m, **SE**: 15.2m, and **SW**: 30.3m. Cable at guiderail ends was observed to be loose at all four corners.

| Recommended Work: | Rehab | Replace | М | aintenanc | | |
|-------------------|-----------|------------|---|-----------|------------|--------|
| | 1-5 years | 6-10 years | х | Urgent | 1 year | 2 year |
| | | | R | e-Tension | guiderails | |

Structure Number

1006

Element Data

| Element Group: | Culverts | Culverts | | 5.2 | m | | |
|--------------------|----------------------------------|---------------------|----------------|---------|------|----|--------------|
| Element Name: | Barrels - Soffit | Barrels - Soffit Wi | | 19.8 m | | | |
| Location: | | | Height: | | | | |
| Material: | Precast concrete | | Count: | | | | |
| Element Type: | | To | | : 103.0 | Sq.m | | |
| Environment: | Benign | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Pod | or | Deficiencies |
| Data: | Sq.m / m / each / % / all | 65.9 | 33.5 | 3.0 | 0.6 | 6 | |

Comments:

Six (6) locations of light spalling or delamination observed at precast joints on soffit. Repair with proprietary product was observed at first joint from north. Narrow to medium cracking was observed throughout. Light corrossion was observed at bolts.

| Recommended Work: | Rehab | Replace | М | Maintenance Needs: | | | |
|-------------------|-----------|------------|---|--------------------|----------|----------|--|
| | 1-5 years | 6-10 years | | Urgent | 1 year | 2 year | |
| | | _ | | 1 | <u> </u> | <u> </u> | |
| | | | | | | | |

| Element Group: | Culverts | Culverts | | 19.8 | m | | |
|--------------------|----------------------------------|--------------------------|----------------|---------|-------|------|--------------|
| Element Name: | Barrels - Vertical Walls | Barrels - Vertical Walls | | | | | |
| Location: | East/West He | | Height: | 2.8 | 2.8 m | | |
| Material: | Precast concrete | Precast concrete Co | | 2 | 2 | | |
| Element Type: | Legs of rigid Box | Legs of rigid Box | | : 110.9 | Sq | ı.m | |
| Environment: | Benign | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units Exc. | | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 71.0 | 38.4 | 1.0 | | 0.5 | |

Comments:

Fourteen (14) light spalls (0.1 x 0.1m) noted at the south fascia. Narrow to medium crack on north culvert top connecting to crack in curb. Medium transverse crack in south deck top that continues down outside face of SE wall and four narrow cracks in curb.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|-------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | _ | | _ | _ |
| | | | | |

Structure Number

1006

Element Data

| Element Group: | Culverts | | | Length: | Va | ır. n | n | | |
|--|----------------------|-------------------------------|---------------|-------------------|----------------|-----------|-------------|--------|------------|
| Element Name: | Inlet/Outlet C | omponents | - Wingwall | Width: | | | | | |
| Location: | | | | Height: | 3 | 3.0 m | | | |
| Material: | Precast Block | recast Blocks (1.5*0.75*0.75) | | | | 4 | | | |
| Element Type: | Reinforced co | Reinforced concrete | | | / : 108 | .0 S | Sq.m | | |
| Environment: | Moderate | | | Limited Inspe | ction | | | | |
| Protection System: | | | | | · | | | F | Perform. |
| Condition | Uni | ts | Exc. | Good | Fair | Fair Poor | | De | ficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 43.2 | 61.8 | 2.0 | | 1.0 | | |
| Comments: NE and NW: 12.0m; ar blocks. | nd SE and SW | : 6.0m. Ligh | t to very sev | rere scaling obse | erved at the | top | faces of th | ne pre | ecast |
| Recommended Work: | | Rehab | Replace | | Maintenar | nce | Needs: | | |
| | | 1-5 years | 6-10 year | rs | Urgent | | 1 year | 2 | 2 year |
| | | | | | | | | _ | |

| Element Group: | Foundations | Foundations Le | | 5.2 | m | | |
|--------------------|----------------------------------|----------------------------------|----------------|--------|----|------|--------------|
| Element Name: | Foundations (below grade | oundations (below grade level) W | | 19.8 | m | | |
| Location: | He | | Height: | | | | |
| Material: | Precast concrete | Precast concrete Co | | Count: | | | |
| Element Type: | Bottom of rigid Box | Bottom of rigid Box T | | 103.0 | Sq | .m | |
| Environment: | Benign | | Limited Inspec | ction | х | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units Exc. | | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 65.9 | 37.1 | 0.0 | | 0.0 | |

Comments:

No signs of distress were observed.

| Recommended Work: | Rehab | Replace | Maintenance | | |
|-------------------|-----------|------------|-------------|--------|--------|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year |
| | | | | | |
| | | | | | |

Structure Number

1006

| Element Group: | Embankme | nts & Stream | S | Length: | | | | | |
|------------------------------------|------------------------------------|---------------------------------------|-----------|-------------------|--------------------|--------------------|----|--------|--------------|
| Element Name: | Embankme | nts | | Width: | | | | | |
| Location: | All Four Qu | adrants | | Height: | | | | | |
| Material: | | | | Count: | | 4 | | | |
| Element Type: | | | | Total Quantity | /: 4 each | | | | |
| Environment: | Benign | | | Limited Inspe | Limited Inspection | | | | |
| Protection System: | | | | | | | | • | Perform. |
| Condition | Units Exc. | | | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all 3 | | 3 | 1 | | 0 0 | | | |
| Comments: Vegetation overgrowth | observed. | | | | | | | | |
| Recommended Work: | | Rehab | Replace | <u> </u> | | Maintenance Needs: | | | |
| | | 1-5 years | 6-10 year | rs | | Urgent | | 1 year | 2 year |
| Element Group: | Embankme | nts & Stream | | Length: | | | | | |
| Element Name: | Streams an | d Waterways | | Width: | | | | | |
| Location: | | , , , , , , , , , , , , , , , , , , , | | Height: | | | | | |
| Material: | | | | Count: | 1 | | | | - |
| Element Type: | | | | Total Quantity: 1 | | Αl | l | | |
| Environment: | | | | Limited Inspe | ctic | on | | | |
| Protection System: | | | | | | | | • | Perform. |
| Condition | U | nits | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 1 | 0 | | 0 | | 0 | |
| Comments: | | | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Ma | aintenanc | e١ | leeds: | |
| | | 1-5 years | 6-10 year | rs | | Urgent | | 1 year | 2 year |
| i | | | | | 1 | | | | |

Structure Number

1006

| Element Group: | Embankments & Streams | | | Length: | | | | |
|--------------------|-----------------------|---------------|-----------|-----------------------|----------|--------|--------------|--|
| Element Name: | Slope protection | | | Width: | | | | |
| Location: | All four embankments | | | Height: | | | | |
| Material: | | | | Count: | 4 | 4 | | |
| Element Type: | Hand laid riprap | | | Total Quantity | r: 4 | 4 each | | |
| Environment: | Moderate | | | Limited Inspec | | | | |
| Protection System: | | | | | | • | Perform. | |
| Condition | Units | | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ach / % / all | 3 | 1 | 0 | 0 | | |
| Comments: | | | | | | | | |
| Recommended Work: | Rehab | Replace | | Maintenance | e Needs: | | | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | 2 year | |
| | | | | | | | | |

| Element Group: | Signs | | | Length: | | | | | |
|-------------------------|--------------------------------|---------------------|----------|---------------|------------------------|--------------------|--------------|--|--|
| Element Name: | Signs | Signs | | | | | | | |
| Location: | At Four corners of Guide rails | | | Height: | | | | | |
| Material: | | | | Count: | 4 | 4 | | | |
| Element Type: | Hazard Marl | Hazard Marker Signs | | | Total Quantity: 4 each | | | | |
| Environment: | | | | Limited Inspe | ection | | | | |
| Protection System: | | | | | | * * | Perform. | | |
| Condition | Ur | Units | | Good | Fair | Poor | Deficiencies | | |
| Data: | Sq.m / m / e | ach / % / all | 0 | 4 | 0 | 0 | | | |
| Comments: | | | | | | | | | |
| Recommended Work: Rehab | | Rehab | Replace | Replace | | Maintenance Needs: | | | |
| | | 1-5 years | 6-10 yea | ars | Urgent | 1 year | 2 year | | |
| | | , | | · - | 1 - 3 - 1 | | | | |

Structure Number

1006

| Element Group: | Approaches | | | | Length: | 6. | 0 n | n | |
|---|----------------------------------|---------------|----|-----------------------|--------------------|--------------|-----|-----------|---------------|
| Element Name: | Wearing surface | | | Width: | 11. | 0 n | n | | |
| Location: | East/West approaches | | | Height: | | | | | |
| Material: | Asphalt | | | Count: | | 2 | | | |
| Element Type: | | | | Total Quantity | : 132. | 0 S | | | |
| Environment: | Moderate | | | Limited Inspec | Limited Inspection | | | | |
| Protection System: | | | | | | | | Perform. | |
| Condition | Units | | | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | | | 52.8 | 78.2 | 1.0 | | 0.0 | |
| Comments: W / E Approach: Medion the east approach slab | | e cracking ob | se | erved in the | e E.B.L. at appro | oach slab er | nds | (4x0.25m) | and W.B.L. at |
| Recommended Work: Rehab | | | | Replace | | Maintenan | се | | |
| | | 1-5 years | | 6-10 years | S | Urgent | | 1 year | 2 year |
| | | | | | | | - | | |

| Element Group: | Approaches | Approaches | | | | 6.0 | m | | |
|-------------------------|----------------------|----------------|-----------|--------------------|-----------|------------|-----|--------|--------------|
| Element Name: | Approach sla | Approach slabs | | | | 11.0 m | | | |
| Location: | East/West ap | Height: | | 0.25 | | | | | |
| Material: | Cast-in-place | Count: | | 2 | | | | | |
| Element Type: | | | | Total Quantity | y: | 132.0 Sq.m | | | |
| Environment: | Moderate | | | Limited Inspection | | | х | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | Units | | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 52.8 | 78.2 | | 1.0 | | 0.0 | |
| Comments: | | | | | | | | | |
| Recommended Work: Rehab | | Rehab | Replace | | Maintenar | | e N | eeds: | |
| Recommended Worl | | | 6-10 year | | | Urgent | 1 | 1 year | 2 year |

Structure Number

1006

Element Data

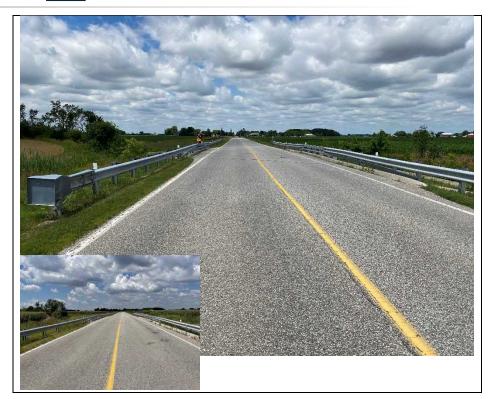
| Element Group: | Approaches | | | Length: | | | | |
|---|--------------------------------------|---------------|-----------|----------------|-------------|-------------------|--------------|--|
| Element Name: | Curb/Gutter | Curb/Gutter | | | | | | |
| Location: | All four Quad | drants | | Height: | | | | |
| Material: | Cast-in-plac | e concrete | | Count: | 4 | | | |
| Element Type: | Spillways (Curb Outlets) OPSD 605.03 | | | Total Quantity | r: 4 | each | | |
| Environment: | Moderate | | | Limited Inspec | ction | | | |
| Protection System: | | | | | | • | Perform. | |
| Condition | Units | | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / e | ach / % / all | 3 | 1 | 0 | 0 | | |
| Comments: Hairline cracking was observed throughout. Light debris buildup was observed. | | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | aintenance Needs: | | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | 2 year | |
| | | | | | | | | |

| Element Group: | Approaches L | | Length: | Var. | m | | |
|--------------------|----------------------------------|------|------------------------|------|---|------|--------------|
| Element Name: | Curb/Gutter | | Width: | | | | |
| Location: | All four Quadrants | | Height: | | | | |
| Material: | Cast-in-place concrete | | Count: | 4 | 4 | | |
| Element Type: | Barrier Curbs OPSD 605.040 | | Total Quantity: 36.0 m | | | | |
| Environment: | Moderate | | Limited Inspection | | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units Exc. | | Good | Fair | F | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 14.4 | 21.6 | 0.0 | | 0.0 | |

Comments:

Light debris buildup was observed. **NW and NE:** 15 to 25 mm of settlement was observed.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | | |
|-------------------|-----------|------------|--------------------|--|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | | 2 year |
| | | | | | |
| | | | | | |



Photograph 1: East approach



Photograph 2: West approach





Photograph 3: Typical condition of wearing surface at approaches (Looking East)



Photograph 4: Typical condition of barrier and wearing surface over the structure with medium transverse crack (Looking South)





Photograph 5: Spillway at southwest quadrant of structure



Photograph 6: Guiderail cable anchorage observed to be loose at all 4 quadrants





Photograph 7: North elevation



Photograph 8: South elevation





Photograph 9: Discrete locations of light spalling at the south headwall



Photograph 10: Typical condition of culvert barrel (Looking North)





Photograph 11: Existing concrete parging at precast unit joint



Photograph 12: Typical delamination on soffit at joints between precast units





Photograph 13: North embankments and waterway (Looking North)



Photograph 14: Embankments and waterway (Looking South)



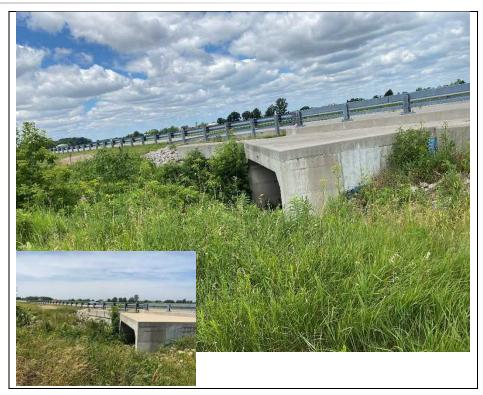


Photograph 15: Embankments and retaining walls at north side of culvert (Looking East)



Photograph 16: Embankments and retaining walls at north side of culvert (Looking West)





Photograph 17: Embankments and retaining walls at south side of culvert (Looking West)



Photograph 18: Severe scaling on top of one precast retaining wall block at southeast side of culvert



Structure Number

| Inventory Data: | | | | | |
|---|------------------------------------|---|--|--|--|
| Structure Name | Pike Creek at Malden Road Culvert | | | | |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other | | | |
| Hwy/Road Name | Malden Road | | | | |
| Structure Location | 0.90 km South West from Manning Ro | ad | | | |
| Latitude | 42° 12' 44.7" | Longitude -82° 52' 59.1" | | | |
| Owners | Town of Tecumseh | Heritage Not Consid: x Cons/not App. List/n.d. Designation Desig./not list Desig & List | | | |
| MTO region | | Road Class: Freeway Arterial Local x | | | |
| MTO District | | Posted Speed 50 No. of Lanes 2 | | | |
| Old County | | AADT 1115 % Trucks | | | |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence | | | |
| Structure Type | Concrete Rigid Frame | Interchange Number | | | |
| Total Deck Length | 5.5 m | Interchange Structure Number | | | |
| Overall Str. Width | 13.0 m | Min. Vertical Clearance m | | | |
| Total Deck Area | 70.9 sq. m | Special Transit Truck Routes: School Bicycle | | | |
| Roadway Width | 7.3 m | Detour Length Around Bridge 4.0 km | | | |
| Skew Angle | 0.0 Degrees | Direction of Structure E/W | | | |
| No. of Spans | 1.0 | Fill on Structure 1.0 m | | | |
| Span Lengths | Total = 4.8 (1) = 4.8; | m | | | |
| Wateriasi Data | | | | | |
| Historical Data: | | | | | |
| Year Built | 2007 | Year of Last Major Rehab. | | | |
| Last OSIM Inspection | 2022 | Last Evaluation | | | |
| Last Enhanced OSIM Ir | nspection | Current Load Limit | | | |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # | | | |
| Last Underwater Inspec | ction | By-Law Expiry Date | | | |
| Last Condition Survey | | | | | |
| Rehab History: (Date / I | Description) | | | | |
| The culvert was fully re | placed in 2007 | | | | |

| Ontario Structure | Inspection | Manual - Ir | nspection Form |
|--------------------------|------------|-------------|----------------|
| | | | |

Structure Number

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |
| | | |
| | | |
| | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| 4 | 000 | |
|---|-----|--|
| 1 | 009 | |
| | | |

| Field Inspection Informati | ion: | | | | | | |
|--------------------------------------|-------------|--|--|-------------------------------------|--|-----------|--|
| Date of Inspection: | June 26, 20 |)24 | Type of Inspection | ı: x OSIM | Enhanced O | SIM | |
| · | | | | | | | |
| Inspector: | Monica Sol | kolski, E.I.T. | (Dillon Consulting Lin | nited) | | | |
| Others in Party: | Stephen St | Stephen Strachan (Dillon Consulting Limited) | | | | | |
| Access Equipment Used: | Camera, M | a, Measuring tape, Measuring wheel, and Hammer | | | | | |
| Weather: | Sunny | | | | | | |
| Temperature: | 28.0 °C | | | | | | |
| | 5 | | | | 5 : :: | | |
| Additional Investigations | Requirea: | | | None | Priority | Lirgont | |
| | | | | None | Normal | Urgent | |
| Material Condition Survey | | | | | | | |
| Detailed Deck Condition | on Survey: | | | Х | | T | |
| Non-Destructive Delan | | rvev of Asp | halt-Covered Deck: | х | | | |
| Concrete Substructure | | | | х | | | |
| Detailed Coating Cond | | | | х | | | |
| Detailed Timber Investigation: | | | | х | | | |
| Post-Tensioned Strand Investigation: | | | | Х | | | |
| Underwater Investigation: | | | | х | | | |
| Fatigue Investigation: | | | | Х | | | |
| Seismic Investigation: | | | | Х | | | |
| Structure Evaluation: | | | | Х | | | |
| Monitoring | | | | | | | |
| Monitoring of Deforma | | ements and | Movements: | Х | | | |
| Monitoring Crack Widt | hs: | | | Х | | | |
| Investigation Notes: | | | | | | | |
| | | | | | | | |
| Overall Structure Notes: | | | | | | | |
| Recommended Work on Structure | | None | x Maintenance | Minor Re | hab. | Replace | |
| | | | | Major Re | hab. | | |
| Timing of Recommended W | Vork: | | x 1 to 5 years | 6 to 10 ye | ears | | |
| Overall Comments: | (i | mprove eml | aced in 2007. Maintena cankment stability (add Consider adding objec | ance: rout and ditional rip rap, | seal asphalt crac gabion repair), a | ınd guide | |
| Date of Next Inspection: | | June 2026 | | | | | |

| Element Group: | Decks | Length: | 5.5 | m | | | |
|--------------------|----------------------------------|---------|----------------|-------|---------------------------|--------------|--|
| Element Name: | Wearing Surface | | Width: | 7.0 | m | | |
| Location: | | | Height: | 0.1 | m | | |
| Material: | Asphalt | | Count: | | | | |
| Element Type: | | | | | Total Quantity: 38.2 Sq.m | | |
| Environment: | Moderate | | Limited Inspec | ction | | | |
| Protection System: | | | | | | Perform. | |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 0.0 | 22.7 | 6.5 | 9.0 | | |

Comments:

Surface has a number of sealed cracks. Medium longitudinal cracks along centreline (5x0.5m). **Midspan**: Severe transverse crack extending the entire width of the road (7x0.5m) and medium map cracking (3x1m). **South:** Severe transverse cracking (3x1m).

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|----------------|--------------------|----------|
| | 1-5 years | 6-10 years | Urgent 1 year | x 2 year |
| | | Route and seal | | |
| | | | | |

| Element Group: | Barriers I | | Length: | 23.0 | m | |
|--------------------|----------------------------------|------------------------------------|----------------|--------|------|--------------|
| Element Name: | Railing Systems | | Width: | | | |
| Location: | East/West Road Edge | | Height: | | | |
| Material: | Steel | | Count: | 2 | | |
| Element Type: | Single Rail (Steel Beam, and | Single Rail (Steel Beam, and Post) | | : 46.0 | m | |
| Environment: | Moderate | | Limited Inspec | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units Exc. | | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 44.0 | 1.0 | 1.0 | |

Comments:

NW and SE Corners: Guiderails have protective end treatments. **W Edge**: Localized deformation of rail observed between two posts. **E Edge:** Rail is disconnected from offset block at SE corner.

| Recommended Work: | Rehab | Replace | Maintenance | Maintenance Needs: | | |
|-------------------|-----------|------------|-------------|--------------------|--------|--|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year | |
| | | | | | | |
| | | | | | | |

Fair

0.0

Poor

0.0

Deficiencies

Element Data

| Barriers | | | Length: | 0.1 | m | |
|------------------------------|---|---|---|---------------------------------------|---|--|
| Posts | | | Width: | 0.2 | m | |
| East/West Ro | oad Edge | | Height: | 0.8 | m | |
| Steel | | | Count: | 25 | | |
| | | | Total Quantity: | 25 | each | |
| Moderate | | | Limited Inspec | tion | | |
| | | | | | | Perform. |
| U | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Sq.m / m / ea | i ch / % / all | 0.0 | 22.0 | 2.0 | 1.0 | |
| | | | | | | |
| used and light | splitting was o | bserved. Eas | st Side: Post sett | ement and r | otation observe | ed. Rail is |
| at S corner. V | Vest Side: Two | posts (2) are | e slightly bent. | | | |
| | | | | | | |
| | Rehab | Replace | 1 | Maintenanc | e Needs: | |
| | Rehab 1-5 years | Replace 6-10 year | | Maintenanc Urgent | e Needs: | x 2 year |
| | | ' | S | | 1 year | x 2 year |
| | | ' | S | Urgent | 1 year | x 2 year |
| | | ' | S | Urgent | 1 year | x 2 year |
| Culverts | | ' | S | Urgent | 1 year d posts. | x 2 year |
| Culverts Barrels - Soff | 1-5 years | ' | s | Urgent Repair settle | 1 year d posts. | x 2 year |
| | 1-5 years | ' | Length: | Urgent Repair settle | 1 year d posts. | x 2 year |
| | 1-5 years | ' | Length: | Urgent Repair settle | 1 year d posts. | x 2 year |
| Barrels - Soff | 1-5 years it | ' | Length: Width: | Urgent Repair settle 4.8 13.0 | 1 year d posts. | x 2 year |
| Barrels - Soff Cast-in-place | 1-5 years it | ' | Length: Width: Height: Count: | Urgent Repair settle 4.8 13.0 62.4 | 1 year d posts. m | x 2 year |
| | Posts East/West Ro Steel Moderate U Sq.m / m / ea | Posts East/West Road Edge Steel Moderate Units Sq.m / m / each / % / all used and light splitting was of | Posts East/West Road Edge Steel Moderate Units Exc. Sq.m / m / each / % / all 0.0 used and light splitting was observed. East | Posts Width: | Posts Width: 0.2 East/West Road Edge Height: 0.8 Steel Count: 25 Moderate Limited Inspection Units Exc. Good Fair Sq.m / m / each / % / all 0.0 22.0 2.0 used and light splitting was observed. East Side: Post settlement and response of the control of | Posts Width: 0.2 m East/West Road Edge Height: 0.8 m Steel Count: 25 Total Quantity: 25 each Moderate Limited Inspection Units Exc. Good Fair Poor Sq.m / m / each / % / all 0.0 22.0 2.0 1.0 used and light splitting was observed. East Side: Post settlement and rotation observed. |

Comments:

Condition

Data:

An area of parged concrete was observed at the centreline of the barrel.

Sq.m / m / each / % / all

Units

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

Exc.

20.0

Good

42.4

Benign

Units

Sq.m / m / each / % / all

Perform.
Deficiencies

Poor

0.0

Element Data

| Element Group: | Culverts | | | Length: | | 4.8 n | <u> </u> | | |
|--|---------------------|----------------|-----------|-----------------------|----------------------|--------|----------|--|--------------|
| Element Name: | Inlet / Outle | t Components | | Width: | | | | | |
| Location: | East/West (| Culvert Ends | | Height: | leight: 1.0 m | | | | |
| Material: | Cast-in-plac | ce concrete | | Count: | | 2 | | | |
| Element Type: | Reinforced | concrete | | Total Quantity | t y: 9.6 Sq.m | | | | |
| Environment: | Moderate | | | Limited Inspec | tion | | | | |
| Protection System: | | | | | | | 1 | | Perform. |
| Condition | | Units | Exc. | Good | Fair | | Poor | | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 0.0 | 9.6 | 0.0 | | 0.0 | | |
| Hairline cracks extendir Recommended Work: | | ches. Rehab | Replace | | Mainten | ance | Needs: | | |
| | | 1 1 | Renlace | | Mainton | anco | Noode: | | |
| | | 1-5 years | 6-10 year | rs | Urger | it | 1 year | | 2 year |
| | | | | | | | | | |
| Element Group: | Culverts | | | Length: | - | 13.0 n | n | | |
| Element Name: | Barrels - Ve | ertical Walls | | Width: | | | | | |
| Location: | North/South | 1 | | Height: | | 2.1 n | n | | |
| Material: | Cast-in-place | ce concrete | | Count: | | 2 | | | |
| Element Type: | Reinforced | Concrete | | Total Quantity | : ! | 54.6 S | Sg.m | | |

| Data: | |
|-----------|--|
| Comments: | |

Environment:

Protection System:

Condition

Narrow vertical cracks were observed throughout. Light spalling was observed under the wall drains.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

Exc.

17.5

Limited Inspection

Fair

0.5

Good

36.6

Repair gabion

| Element Group: | Culverts | | | | | Length: | | 3.0 | m | | | |
|--------------------------------------|---------------------|-----|---------------------|-----|-------------|-----------------|------------|-------------|-----|--------|---|--------------|
| Element Name: | Inlet/Outlet (| Со | mponents - W | ۷in | gwalls | Width: | | | | | | |
| Location: | | | | | | Height: | | 3.1 | m | | | |
| Material: | Cast-in-plac | е | concrete | | | Count: | | 4 | | | | |
| Element Type: | Reinforced (| Со | ncrete | | | Total Quantity: | | 37.2 Sq.m | | | | |
| Environment: | Moderate | | | | | Limited Inspe | cti | on | | | | |
| Protection System: | | | | | | | | | | | | Perform. |
| Condition | l | Un | its | | Exc. | Good | | Fair | | Poor | | Deficiencies |
| Data: | Sq.m / m / e | eac | ch / % / all | | 0.0 | 37.2 | | 0.0 | | 0.0 | | |
| Comments: NW: One (1) hairline cr | ack was obse | erv | ed. SW : One | (1) | hairline cr | ack was observ | ed. | | | | | |
| Recommended Work: | | | Rehab | Ī | Replace | | | laintenance | _ N | loods: | | |
| Recommended work. | | | 1-5 years | - | 6-10 year | | IVI | Urgent | C 1 | 1 year | - | 2 year |
| Element Group: | Retaining W | /al | ls | | | Length: | | 10.0 | m | | | |
| Element Name: | Walls | aı | | | | Width: | | 10.0 | | | | |
| Location: | South-East | En | nbankment | | | Height: | | 2.0 | m | | | |
| Material: | Gabions | | | | | Count: | | 1 | | | | |
| Element Type: | | | | | | Total Quantity | / : | 20.0 | Sc | m.p | | |
| Environment: | Moderate | | | | | Limited Inspe | | | | | | |
| Protection System: | | | | | | | | | | Į. | | Perform. |
| Condition | l | Un | its | | Exc. | Good | | Fair | | Poor | | Deficiencies |
| Data: | Sq.m / m / e | eac | ch / % / all | | 0.0 | 19.3 | | 0.1 | | 0.6 | | |
| Comments: Two (2) ruptures in the | wire mesh we | ere | e observed (0. | .25 | x0.25m + | 1x0.5m.) | | | | | | |
| Recommended Work: | | | Rehab | 1 | Replace | | 1.4 | laintenance | - N | loodor | 1 | |
| | | | Reliab | | Replace | | IVI | laintenance | e r | ieeus. | | |

| Element Group: | Retaining Wa | ılls | | Length: | | | | | |
|---|---------------------------|------------------|---------|--|----------|------------|-----|-----------|-----------------------|
| Element Name: | Walls | | | Width: | | | | | |
| Location: | North-West E | mbankment | | Height: | | | | | |
| Material: | Concrete Bloo | cks | | Count: | <u> </u> | | | | |
| Element Type: | | | | Total Quar | tity: | 6 | ea | ch | |
| Environment: | Moderate | | | Limited Ins | | on | | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | Uı | nits | Ex | c. Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | (|) 5 | | 1 | | 0 | |
| Comments: Differential settlement of | of block adjace | nt to structure, | as well | as corrosion stain | ing. | | | | |
| Recommended Work: | | Rehab | Re | place | M | aintenanc | e N | eeds: | |
| | | 1-5 years | 6-10 |) years | | Urgent | | 1 year | 2 year |
| | | | | | | | | | |
| Element Group: | Embankment | & Streams | | Length: | | | | | |
| Element Group: | Embankment | | | Length: | | | | | |
| • | Embankment Streams and | | | Width: | | | | | |
| Element Name: | | | | | | 2 | | | |
| Element Name: Location: Material: | | | | Width: Height: Count: | tity: | | all | | |
| Element Name: Location: | | | | Width: Height: | | 2 | | | |
| Element Name: Location: Material: Element Type: | | | | Width: Height: Count: Total Quar | | 2 | | | Perform. |
| Element Name: Location: Material: Element Type: Environment: | Streams and | | Ex | Width: Height: Count: Total Quar Limited Ins | | 2 | | Poor | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Streams and | Waterways | Ex | Width: Height: Count: Total Quar Limited Ins | | 2 on | | Poor 1 | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Streams and | Waterways | | Width: Height: Count: Total Quar Limited Ins | | on Fair | | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: | Streams and Ut | Waterways | (| Width: Height: Count: Total Quar Limited Ins | spection | on Fair | all | 1 | |

1009

Element Data

| Element Group: | Embankment | & Streams | | Length: | | | | |
|---|---------------|---------------------|----------------|-----------------------|----------------|------|---------------|-----------------|
| Element Name: | Embankment | S | | Width: | | | | |
| Location: | | | | Height: | | | | |
| Material: | | | | Count: | 6 | | | |
| Element Type: | | | | Total Quantity | : 6 | ea | ich | |
| Environment: | Moderate | | | Limited Inspec | tion | | | |
| Protection System: | | | | | | | | Perform. |
| Condition | U | nits | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | 0 | 4 | 2 | | 0 | |
| Comments: | | | | | | | | |
| Existing gabion baskets previous inspection, but | • | | structure. All | embankments a | t East (inlet) | sid | e noted to be | unstable in the |
| Recommended Work: | | Rehab | Replace | | Maintenanc | e N | leeds: | |
| | | 1-5 years | 6-10 year | S | Urgent | | 1 year | x 2 year |
| | | | | | Routine mai | nter | nance. | |

| Element Group: | Embankment & Streams | | Length: | | | |
|--------------------|----------------------------------|--------|-----------------------|-------|------|--------------|
| Element Name: | Slope Protection | Width: | | | | |
| Location: | NE/SW Embankments | | Height: | | | |
| Material: | | | Count: | 2 | | |
| Element Type: | Hand Laid riprap | | Total Quantity | r: 2 | each | |
| Environment: | Moderate | | Limited Inspec | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 0 | 1 | 1 | |

Comments:

NE: Poor rip-rap condition. Embankment slope at this propety corner should be pulled back (It was observed to be very close to the pedestrian bridge in the previous inspection but was overgrown with vegetation and could not confirm).

| Recommended Work: | Rehab | Replace | Maintenance Needs: | | | | | |
|-------------------|-----------|------------|--------------------|------------------------|----|---------------|-----|--------|
| | 1-5 years | 6-10 years | | Urgent | | 1 year | х | 2 year |
| | | | | dditional rip orks. | ra | p needed. Eml | bar | nkment |

1009

x 2 year

Element Data

| Element Group: | Signs | | | | Length: | | | | | |
|--|---------------------|---------------------------------|----------|--------------------------------|------------------------|--|-------------------|-------------|--------------|--|
| Element Name: | Signs | | | | Width: | | | | | |
| Location: | NW/SE Barr | iers | | | Height: | | | | | |
| Material: | | | | | Count: | 2 | 2 | | | |
| Element Type: | Hazard Mark | er Sign | | | Total Quantity | <i>/</i> : 2 | 2 ea | ach | | |
| Environment: | | | | | Limited Inspe | ction | | | | |
| Protection System: | | | | | | | | | Perform. | |
| Condition | l | Jnits | | Exc. | Good | Fair | | Poor | Deficiencies | |
| Data: | Sq.m / m / e | ach / % / all | | 0 | 2 | 0 | | 0 | | |
| Missing bridge OBJEC Recommended Work: | T | Rehab | | _ | | Maintanan | N | loodor | | |
| Recommended work: | | | | Replace | | | aintenance Needs: | | | |
| | | 1-5 years | <u> </u> | 6-10 year | S | Urgent 1 year Install bridge object marker s | | | x 2 year | |
| Element Group: | Approaches | | | | Length: | 6.0 |) m | | | |
| Element Name: | Wearing sur | face | | | Width: | 7.0 |) m | | | |
| Location: | North/South | Approach | | | Height: | 0. | 1 m | | | |
| Material: | Asphalt | | | | Count: | 2 | 2 | | | |
| Element Type: | | | | | Total Quantity | /: 84.0 |) S | q.m | | |
| Environment: | Moderate | | | | Limited Inspe | ction | | | | |
| | i | | | | | | • | | Perform. | |
| Protection System: | | | | | | d Fair Poor | | | | |
| Protection System: Condition | l | Jnits | | Exc. | Good | Fair | | Poor | Deficiencies | |
| • | Sq.m / m / e | | | Exc. 0.0 | Good 75.5 | Fair 5.0 | | Poor 3.5 | Deficiencies | |
| Condition Data: | ` | | | | | | | | Deficiencies | |
| Condition Data: Comments: Approaches have seve | Sq.m / m / e | ach / % / all | | 0.0 | 75.5 | 5.0 | | | Deficiencies | |
| Condition | Sq.m / m / e | ach / % / all ealed cracks in l | d ir | 0.0 th logituding the N.B.L | 75.5 ral and transvers | 5.0 | | | Deficiencies | |
| Condition Data: Comments: Approaches have seve N Approach: Narrow to | Sq.m / m / e | ach / % / all ealed cracks in l | d ir | 0.0 th logituding the N.B.L | 75.5 ral and transvers | 5.0 | | 3.5 | Deficiencies | |

6-10 years

Urgent

Rout and seal

1 year

1-5 years



Photograph 1: North approach (Looking south)



Photograph 2: South approach (Looking north)





Photograph 3: Wearing surface over the structure with transverse crack (Looking West)



Photograph 4: Guide rail end treatment at the southeast quadrant of structure





Photograph 5: Guide rail on southeast quadrant of structure with detached post



Photograph 6: Guide rail end treatment at the southwest quadrant of structure





Photograph 7: East elevation with typical cracking with efflorescence at the headwalls



Photograph 8: West elevation with typical cracking at headwalls with efflorescence





Photograph 9: Culvert barrel (Looking West)



Photograph 10: Pedestrian bridge on east side of structure (Looking South)





Photograph 11: Embankments, retaining elements on west side of structure (Looking North)



Photograph 12: Embankments, retaining elements at west side of structure (Looking South)





Photograph 13: Ruptured gabion basket at west embankment



Photograph 14: Waterway at the east inlet (Looking East)





Photograph 15: Waterway at the west outlet (Looking West)



Photograph 16: C.S.P outlet, retaining structure, pedestrian bridge and abutment at west side of structure (Looking North)



Structure Number

| Inventory Data: | | |
|--|---|---|
| Structure Name | West Townline Drain at Malden Road (| Culvert |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Malden Road | |
| Structure Location | At intersection with Manning Road | |
| Latitude | 42° 13' 3.7" | Longitude -82° 52' 30.3" |
| Owners | Town of Tecumseh | Heritage Not Consid: X Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial x Collector Local |
| MTO District | | Posted Speed 80 No. of Lanes 2 |
| Old County | | AADT 1115 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Corrugated Steel Pipe Arch | Interchange Number |
| Total Deck Length | 4.8 m | Interchange Structure Number |
| Overall Str. Width | 25.2 m | Min. Vertical Clearance m |
| Total Deck Area | 121.0 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 9.6 m | Detour Length Around Bridge 4.0 km |
| Skew Angle | 0.0 Degrees | Direction of Structure E/W |
| No. of Spans | 1.0 | Fill on Structure 2.0 m |
| Span Lengths | Total = 4.8 (1) = 4.8; | m |
| Historical Data: | | |
| Year Built | 1995 | Year of Last Major Rehab. |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM I | nspection | Current Load Limit |
| Enhanced Access Equi (ladder, boat, lift, etc.) | | Load Limit By-Law # |
| Last Underwater Inspe | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / | Description) | |
| 2024 - Curved portions extended and terminate | of SBGR were maintained. All approached with SBEATs and object marker signs | n/leaving end portions were replaced, s. |

| Ontario Structure | Inspection | Manual - Ins | pection Form |
|--------------------------|------------|--------------|--------------|
| | | | |

Structure Number

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Field Inspection Informat | ion: | | | | |
|--|---------------------------|---|----------------------|-------------------|----------|
| Date of Inspection: | June 26, 2024 | Type of Inspectio | n: x OSIM | Enhanced OS | SIM |
| Inspector: | Monica Sokolski, E.I.T. | (Dillon Consulting Li | mited) | | |
| Others in Party: | Stephan Strachan (Dillo | on Consulting Limited | d) | | |
| Access Equipment Used: | Camera, Measuring tap | e, Measuring wheel, | and Hammer | | |
| | Sunny | | | | |
| Temperature: | 28.0 °C | | | | |
| Additional Investigations | De write de | | | Driority | |
| Additional Investigations | Requirea: | | None | Priority | Lirgont |
| | | | None | Normal | Urgent |
| Material Condition Survey | | | | | |
| Detailed Deck Condition | on Survev: | | Х | | 1 |
| | mination Survey of Asph | nalt-Covered Deck: | X | | |
| Concrete Substructure | | ian 9919191 = 111 | X | | † |
| Detailed Coating Cond | | | х | | † |
| Detailed Timber Inves | • | | X | | † |
| Post-Tensioned Stran | | | Х | | 1 |
| Underwater Investigation: | | | х | | |
| Fatigue Investigation: | | | Х | | 1 |
| Seismic Investigation: | | | Х | | 1 |
| Structure Evaluation: | | | Х | | |
| Monitoring | | | | | |
| Monitoring of Deforma | ations, Settlements and I | Movements: | | Х | |
| Monitoring Crack Widt | ths: | | Х | | |
| Investigation Notes: Monitor NE embankment fo | or stability. | | | | |
| Overall Structure Notes: | | | | | |
| Recommended Work on S | tructure: None | x Maintenance | Minor Reha | ab. | Replace |
| | | — | Major Reha | ab. | - |
| Timing of Recommended V | Vork: | X 1 to 5 years | 6 to 10 yea | rs | |
| Overall Comments: | Maintenance: | asphalt crack sealing of his structure to be cool | or repaving, and rep | air of gabion bas | sket. |
| Date of Next Inspection: | June 2026 | | | | |

1010

Element Data

| Element Group: | Decks | ecks | | | | | 4.8 r | | |
|---|----------------------|---------------------------------|-----|--------------|----------------------|-------|-------------------------------------|--------------------------|--------------|
| Element Name: | Wearing surf | ace | | | Width: | | 9.6 ı | m | |
| Location: | | | | | Height: | | | | |
| Material: | Asphalt | | | | Count: | | | | |
| Element Type: | | | | | Total Quantit | y: | 46.0 | Sq.m | |
| Environment: | Moderate | Noderate Programme Today (1997) | | | Limited Inspe | ectic | on | | |
| Protection System: | | | | | | | | • | Perform. |
| Condition | Į | Jnits | | Exc. | Good | | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | | 0.0 | 43.0 | | 0.0 | 3.0 | |
| Comments: Severe transverse crac | ks at the joint | between the as | pha | alt over the | culvert and as | pha | lt at both ap | oproaches (3 | sq.m). |
| Severe transverse crac | | | pha | _ | e culvert and as | | | . , | sq.m). |
| | | Rehab | pha | Replace | | Ma | aintenance | Needs: | |
| Severe transverse crac | | | pha | _ | | Ма | | Needs: | sq.m). |
| Severe transverse crac | | Rehab | pha | Replace | | Ма | aintenance Urgent | Needs: 1 year or repave. | |
| Severe transverse crac Recommended Work: | | Rehab 1-5 years | pha | Replace | s | Ма | nintenance Urgent ack sealing | Needs: 1 year or repave. | |
| Severe transverse crac Recommended Work: Element Group: | Barriers | Rehab 1-5 years | pha | Replace | s Length: | Ма | nintenance Urgent ack sealing | Needs: 1 year or repave. | |

| Element Group: | Barriers | | Length: | 41.5 | m | |
|--------------------|----------------------------------|------------------------------------|----------------|----------|------|--------------|
| Element Name: | Railing Systems | Railing Systems | | | | |
| Location: | North/South Road Edge | Height: | | | | |
| Material: | Steel | Count: | 2 | | | |
| Element Type: | Single Rail (Steel Beam, and I | Single Rail (Steel Beam, and Post) | | | m | |
| Environment: | Moderate | | Limited Inspec | | | |
| Protection System: | | | | Perform. | | |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 60.0 | 23.0 | 0.0 | 0.0 | |

Comments

All approach/leaving SBGR end sections were replaced and terminated with SBEATs. N: 19.05 m replaced at NW + Maintained 9.12 m + 13.33 m replaced at NE. S: 17.12 m replaced at SW + Maintained 13.88 m + 10.5 m replaced at SE.

| Recommended Work: | Rehab | Rep | lace | М | Maintenance Needs: | | | |
|-------------------|-----------|----------------|------|---|--------------------|--|--------|--------|
| | 1-5 years | ars 6-10 years | | | Urgent | | 1 year | 2 year |
| · | • | • | | | | | | |
| | | | | | | | | |

| Element Group: | Barriers | | | Length: | | | |
|----------------------------------|-----------------|-----------------------|---------|---------|------------|----------|--------------|
| Element Name: | Posts | | | Width: | | | |
| Location: | North/South F | Road Edge | | Height: | | | |
| Material: | Steel | Steel | | | 46 | ; | |
| Element Type: | | | | | ty: 46 | each | |
| Environment: | Moderate | te Limited Inspection | | | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | 28 | 18 | 0 | 0 | |
| Comments: New posts installed at | new sections of | SBGR. | • | • | , | | |
| • | | | | | | | |
| Recommended Work | : | Rehab | Replace | | Maintenand | e Needs: | |

| Element Group: | Retaining Walls | Retaining Walls | | | m | |
|--------------------|----------------------------------|-----------------------|----------------|-------|------|--------------|
| Element Name: | Walls | Width: | | | | |
| Location: | South-East Embankment | Height: | 1.9 | m | | |
| Material: | Cast-in-place concrete | Count: | 1 | | | |
| Element Type: | Reinforced concrete | Total Quantity | : 29.0 | Sq.m | | |
| Environment: | Moderate | | Limited Inspec | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 12.0 | 12.0 | 5.0 | |

Comments:

Severe scaling, light spalling and very severe honeycombing along bottom portion of wall.

| Recommended Work: | Rehab | | Replace | M | Maintenance Needs: | | | | |
|-------------------|-----------|---|------------|---|--------------------|--|--------|---|--------|
| | 1-5 years | | 6-10 years | | Urgent | | 1 year | | 2 year |
| | · | - | · | | | | | • | |
| | | | | | | | | | |

| Element Group: | Culverts | | | | Length: | | 25.2 r | n | | | |
|-------------------------------------|----------------------|----------------|----|----------------|--------------------|----------|--------------|-------|------------|-----|-------------|
| Element Name: | Barrels | | | | Width: | | 4.8 r | 4.8 m | | | |
| Location: | North/South | | | | Height: | | 3.1 r | 3.1 m | | | |
| Material: | Corrugated steel | | | Count: | | 1 | | | | | |
| Element Type: | Pipe arch | | | Total Quantity | y: | 294.5 \$ | Sq.m | 1 | | | |
| Environment: | Benign | Benign | | | Limited Inspe | cti | on | | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | U | nits | | Exc. | Good | | Fair | | Poor | D | eficiencies |
| Data: | Sq.m / m / ea | ach / % / all | | 0.0 | 278.8 | | 14.5 | | 1.2 | | |
| Comments: Medium corrosion alono | g spring line. L | ight to medium | СО | rrosion of I | oolts at plate joi | nts | s. Severe co | rosio | on below p | ipe | inlets. |
| Recommended Work: | | Rehab | | Replace | | M | laintenance | Nee | eds: | | |
| | | 1-5 years | | 6-10 year | S | | Urgent | 1 1 | year | | 2 year |
| | | | | | | | | | | | |

| Element Group: | Culverts | | Length: | 10.8 | m | |
|--------------------|----------------------------------|---------|----------------------|-------|------|--------------|
| Element Name: | Inlet Components | | Width: | | | |
| Location: | South Inlet | Height: | 3.0 | 3.0 m | | |
| Material: | Gabions | Count: | 1 | | | |
| Element Type: | | | Total Quantity: 32.4 | | Sq.m | |
| Environment: | Moderate | | Limited Inspec | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 32.4 | 0.0 | 0.0 | |

Comments:

No signs of distress was observed.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | | |
|-------------------|-----------|------------|---------------------------|---------------------------------------|--|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year | |
| | · | | | · · · · · · · · · · · · · · · · · · · | |
| | | | | | |

| Element Group: | Culverts | | | Length: | 13.0 ו | 13.0 m | | | |
|---|--|------------------|---------------|-------------------|----------------|-------------|----------|--------------|--|
| Element Name: | Outlet Compo | onents | | Width: | | | | | |
| Location: | North Outlet | | | Height: | 4.0 ו | 4.0 m | | | |
| Material: | Gabions | | | Count: | 1 | 1 | | | |
| Element Type: | | | | Total Quantity | 52.0 | 52.0 Sq.m | | | |
| Environment: | Moderate | | | Limited Inspec | ction | | | | |
| Protection System: | | | | | | | | Perform. | |
| Condition | Units | | Exc. | Good | Fair | Poor | Poor Def | | |
| Data: | Sq.m / m / each / % / all | | 0.0 | 50.0 | 1.0 | 1.0 | | | |
| Comments: One (1) rupture was ob the culvert. | served on top | of a gabion basl | ket (0.25x0.2 | 25). Several anin | nal holes were | observed in | the fi | ll on top of | |
| Recommended Work: Rehab Re | | | Replace | | Maintenance | Needs: | | | |
| | | 1-5 years | 6-10 year | s | Urgent | 1 year | х | 2 year | |
| | <u>, </u> | - | | | Repair gabior | n basket | | • | |

| Element Group: | Embankments | Length: | | | | | | | | |
|--------------------|---------------------------|-----------|----------|--------------|------|--------------------|--|--------|---|--------------|
| Element Name: | Streams and Waterways | | | Width: | | | | | | |
| Location: | | | | Height: | | | | | | |
| Material: | | | | Count: | | 1 | | | | |
| Element Type: | | | | Total Quanti | ty: | 1 all | | | | |
| Environment: | | | | Limited Insp | ecti | ion | | | | |
| Protection System: | | | | | | | | | | Perform. |
| Condition | Units | | Exc. | Good | | Fair | | Poor | ı | Deficiencies |
| Data: | Sq.m / m / each / % / all | | 0 | 1 | | 0 | | 0 | | |
| Comments: | | | | | | | | | | |
| Recommended Work: | | Rehab | Replace | Replace | | Maintenance Needs: | | | | |
| | | 1-5 years | 6-10 yea | ars | | Urgent | | 1 year | | 2 year |

| Element Group: | Embankmen | ts & Streams | | Length: | | | | | |
|------------------------------|----------------------------------|--------------|-----------|----------------|--------------|--------|--------------|--|--|
| Element Name: | Embankments V | | | Width: | | | | | |
| Location: | All Four Quadrants | | | Height: | | | | | |
| Material: | | | | Count: | 4 | 4 | | | |
| Element Type: | | | | Total Quantity | <i>r</i> : 4 | 4 each | | | |
| Environment: | Moderate | | | Limited Inspe | ction | ion | | | |
| Protection System: | | | | | | • | Perform. | | |
| Condition | Units | | Exc. | Good | Fair | Poor | Deficiencies | | |
| Data: | Sq.m / m / each / % / all | | 0 | 4 | 0 | 0 | | | |
| Comments: Recommended Work: | : | Rehab | Replace | | Maintenance | Needs: | | | |
| | | 1-5 years | 6-10 year | | | | 2 year | | |
| | _ | | | | | | | | |

| Element Group: | Embankments | s & Streams | Length: | | | | · | |
|----------------------------------|-----------------------------|---------------------|------------|--------------|--------------------|----|--------|--------------|
| Element Name: | Slope protecti | Width: | | | | | | |
| Location: | NE / NW / SW Embankments | | | Height: | | | | |
| Material: | | | Count: | 3 | | | | |
| Element Type: | Hand laid riprap South west | | | Total Quanti | ty: | 3 | | |
| Environment: | Moderate | | | Limited Insp | ection | | | |
| Protection System: | | | | | | • | | Perform. |
| Condition | Units | | Exc. | Good | Fa | r | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | 0 | 2 | 0 | | 1 | |
| Comments: NE: embankment obse | erved to be clos | e to edge of ro | adway. | | | | | |
| Recommended Work: | | Rehab | Replace | 9 | Maintenance Needs: | | | |
| | | 1-5 years | 6-10 years | | Urge | nt | 1 year | 2 year |

| Element Group: | Signs | | | Length: | | | |
|---|------------------|-----------------|--------------|-----------------------|--------------|---------------|----------------|
| Element Name: | Signs | | | Width: | | | |
| Location: | | | | Height: | | | |
| Material: | | | | Count: | 6 | | |
| Element Type: | Var. | | | Total Quantity | : 6 (| each | |
| Environment: | | | | Limited Inspec | ction | | |
| Protection System: | | | | | <u>.</u> | • | Perform. |
| Condition | U | Jnits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 0 | 6 | 0 | 0 | |
| Comments: Object marker signs we structure. | ere installed at | all four SBGR e | ends. STOP S | Sign exists. LOA | D LIMIT Sign | was present j | ust to west of |
| Recommended Work: | | Rehab | Replace | Maintenance Needs: | | | |
| | | 1-5 years | 6-10 year | s | Urgent | 1 year | 2 year |
| | | | | | | | |

| Element Group: | Approaches | | Length: | 6.0 | m | |
|--------------------|----------------------------------|---------|-----------------------|-------|------|--------------|
| Element Name: | Wearing Surface | | Width: | 9.6 | m | |
| Location: | East/West Approach | Height: | | | | |
| Material: | Asphalt | Count: | 2 | | | |
| Element Type: | | | Total Quantity | 115.2 | sq.m | |
| Environment: | Moderate | | Limited Inspec | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 60.2 | 55.0 | 0.0 | |

Comments:

Medium to severe map cracking at both approaches. Severe edge cracking was observed. Settlement noted at SE structure corner (approx. 15mm).

| Recommended Work: | Rehab Replace | | Replace | Maintenance Needs: | | | | | |
|-------------------|---------------|--|------------|--------------------------|--------|--------|---|--------|--|
| | 1-5 years | | 6-10 years | | Urgent | 1 year | х | 2 year | |
| | | | | Crack sealing or repave. | | | - | | |
| | | | | | | | | | |



Photograph 1: West Approach (Looking East)



Photograph 2: Wide crack at joint between wearing surface over the culvert and the east approach





Photograph 3: Wide transverse cracking (Looking North)



Photograph 4: Wearing surface at west approach





Photograph 5: Load limit sign and new guide rail section at the northwest end



Photograph 6: New guide rail section at the northeast end





Photograph 7: New typical guiderail posts



Photograph 8: North elevation and gabion headwalls





Photograph 9: South elevation with rip-rap slope protection, and gabion basket retaining walls (Looking North)



Photograph 10: Typical condition of culvert barrel

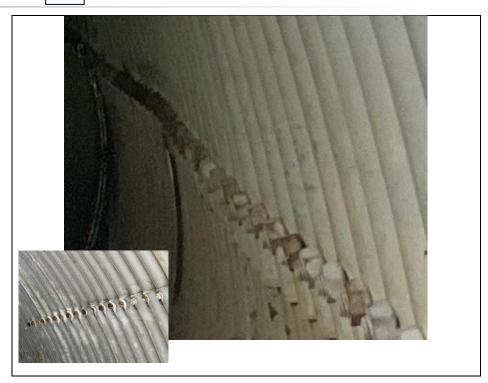




Photograph 11: Typical condition of culvert barrel soffit



Photograph 12: Typical loss of coating and light to medium corrosion along the water line



Photograph 13: Typical light to medium corrosion on bolts heads



Photograph 14: Severe corrosion below inlet pipe at west wall





Photograph 15: North embankments with gabion basket retaining walls at north (Looking South)



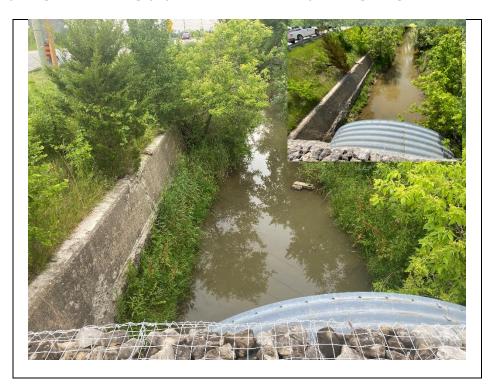
Photograph 16: Retaining wall, gabion baskets, and culvert end at south elevation (Looking East).

Note: The retaining wall is part of the drain which is attributed to the county road.





Photograph 17: Deterioration along the retaining wall at the southeast embankment consisted of medium spalling, severe scaling, pop outs and severe honeycombing along the bottom of the wall



Photograph 18: Watercourse (Looking South)





Photograph 19: Watercourse (Looking North)



Structure Number

| Inventory Data: | | |
|---|--|---|
| Structure Name | Malden Road Drain at South Talbot Ro | pad Bridge |
| Main Hwy/Road # | On X Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Malden Road | |
| Structure Location | Crossing South Talbot at Malden Inters | section |
| Latitude | 42° 12' 3.0" | Longitude -82° 54′ 0.3" |
| Owners | Town of Tecumseh | Heritage Not Consid: x Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Local |
| MTO District | | Posted Speed 80 No. of Lanes 2 |
| Old County | | AADT 319 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Rigid Frame Box | Interchange Number |
| Total Deck Length | 4.3 m | Interchange Structure Number |
| Overall Str. Width | 39.5 m | Min. Vertical Clearance m |
| Total Deck Area | 169.9 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 16.0 m | Detour Length Around Bridge 6.0 km |
| Skew Angle | 0.0 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structure < 0.3 m |
| Span Lengths | Total = 3.7 (1) = 3.7; | m |
| Historical Data: | | |
| Year Built | 2007 | Year of Last Major Rehab. |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Ir | | Current Load Limit |
| | | |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / I | Description) | |
| Culvert replaced in 200 | 7. | |

| Ontario | Structure | Inspection | Manual | - Inc | nection | Form |
|----------|------------|-------------|-----------|--------|---------|---------|
| Unitario | Ju uctui e | IIISPECTION | iviaiiuai | - 1113 | Pection | 1 01111 |

Structure Number

| Scheduled Improvements: | |
|--------------------------|----------------------|
| Regional Priority Number | Programmed Work Year |
| Nature of Program Work: | |
| | |
| | |
| | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Field Inspection Informat | ion: | | | | | | |
|---------------------------|---------------------------------------|--|-------------|-----------------|------------|--|--|
| Date of Inspection: | June 26, 2024 | Type of Inspection: | x OSIM | Enhanced OS | SIM | | |
| Inspector: | Monica Sokolski, E.I.T. | (Dillon Consulting Limit | ed) | | | | |
| Others in Party: | Stephen Strachan (Dill | on Consulting Limited) | | | | | |
| Access Equipment Used: | Camera, Measuring tap | oe, Measuring wheel, an | nd Hammer | | | | |
| Weather: | Sunny | unny | | | | | |
| Temperature: | 28.0 °C | | | | | | |
| | | | | | | | |
| Additional Investigations | Required: | | | Priority | | | |
| | | | None | Normal | Urgent | | |
| Martin I O and I Chan O | | | | | | | |
| Material Condition Survey | on Cumiou | | | 1 | 1 | | |
| Detailed Deck Condition | on Survey: nination Survey of Aspl | halt Cavarad Daak: | X | | | | |
| Concrete Substructure | | nait-Covered Deck. | X | + | + | | |
| Detailed Coating Cond | | | X | | | | |
| Detailed Timber Inves | • | | X | | | | |
| Post-Tensioned Stran | | | X | | | | |
| Underwater Investigation: | u investigation. | | X | | | | |
| Fatigue Investigation: | | | X | | | | |
| Seismic Investigation: | | | X | | - | | |
| Structure Evaluation: | | | x | | + | | |
| Monitoring | | | ^ | | | | |
| | tions, Settlements and | Movements: | | | | | |
| Monitoring Crack Widt | | Movements. | X | | | | |
| Investigation Notes: | 115. | | X | | | | |
| | | | | | | | |
| Overall Structure Notes: | | | | | | | |
| | | | | | | | |
| Recommended Work on St | tructure: None | x Maintenance | Minor Reha | ab. | Replace | | |
| | Γ | | Major Reha | · | - ' | | |
| Timing of Recommended V | Vork: | x 1 to 5 years | 6 to 10 yea | rs | | | |
| Overall Comments: | | erior only accessible fro | • | • • | | | |
| | | ecommended. Maintena lace waterpoofing on ex | | _ | abion | | |
| | والمرادع والمساهدا | owt bowwol obculates : | 00t0din the | vt inonestics = | | | |
| | have been 8 | ert barrel should be insp by years since the last ent be considered. | | • | | | |
| Date of Next Inspection: | June 2026 | | | | | | |

Fair

35.0

Good

80.8

Poor

30.0

1011

Perform.

Deficiencies

Element Data

| Element Group: | Decks | Decks L | | | 4.3 | m | |
|---|---|---------------------------------------|-----------|-----------------------------|-------------|----------|--------------|
| Element Name: | Wearing sur | face | | Width: | 16.0 | m | |
| Location: | Top of Deck | Top of Deck | | | 0.1 | m | |
| Material: | Asphalt | | | Count: | | | |
| Element Type: | • | | | Total Quantity: | 68.8 | Sq.m | |
| Environment: | Moderate | | | Limited Inspec | tion | | |
| Protection System: | | | | | | • | Perform. |
| Condition | l | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 0.0 | 63.8 | 5.0 | 0.0 | |
| Recommended Work: | | Rehab | Replace | | Maintenance | e Needs: | |
| | | | | | | | |
| Recommended work: | | | | | | | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | 2 year |
| | | | | | | | |
| | | | | | | | |
| Element Group: | | | | | | | |
| | Decks | | | Length: | 3.7 | m | |
| Element Name: | | vith Thick Slab) | | Length: | 3.7 | | |
| • | | | | | 39.4 | | |
| Element Name: | Deck Top (w | , , , , , , , , , , , , , , , , , , , | | Width: | 39.4 | m | |
| Element Name: Location: | Deck Top (w | e concrete | | Width: Height: | 39.4 | m m | |
| Element Name: Location: Material: | Deck Top (w Top of Deck Cast-in-place | e concrete | | Width: Height: Count: | 39.4 | m m | |

Comments:

Protection System:

Condition

Data:

Exposed waterproofing on top of the culvert was observed to be in fair to poor condition.

Units

Sq.m / m / each / % / all

| Recommended Work: | Rehab | Replace | Maintenance Need | is: |
|-------------------|-----------|------------|------------------------------|-----------------|
| | 1-5 years | 6-10 years | Urgent 1 ye | ear x 2 year |
| | | | Replace Waterproof surfaces. | fing on exposed |

Exc.

0.0

| Element Group: | Culverts | | Length: | 3.7 | m | |
|--------------------|----------------------------------|---------------------|----------------|-------|------|--------------|
| Element Name: | Barrels - Soffit | | Width: | 39.4 | m | |
| Location: | | | Height: | | | |
| Material: | Cast-in-place concrete | Count: | | | | |
| Element Type: | Reinforced concrete | Reinforced concrete | | 145.8 | Sq.m | |
| Environment: | Benign | | Limited Inspec | tion | х | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 46.6 | 95.4 | 3.7 | 0.0 | |

Comments:

Medium spall observed on north inlet (0.05x1m). **(From 2016):** Hairline crack across the full width (3.7x0.25m) with efflorescence observed. Light honeycombing was observed throughout. The inside can be accessed only through the north opening as the south end is closed and intersects with HDPE culvert, this is considered a confined space and requires trained personnel for entry.

| Recommended Work: | Rehab | Repl | ace | N | laintenan | ce Needs: | |
|-------------------|-----------|------|-------|---|-----------|-------------------|---------|
| | 1-5 years | 6-10 | years | | Urgent | X 1 year | 2 year |
| | | | | R | eplace wa | aterproofing on e | exposed |
| | | | | S | urfaces. | | |

| Element Group: | Culverts | | Length: | 39.4 | m | |
|--------------------|----------------------------------|------|-----------------------|--------------|------|--------------|
| Element Name: | Barrels - Vertical Walls | | Width: | | | |
| Location: | East/West | | Height: | 2.6 | m | |
| Material: | Cast-in-place concrete | | Count: | 2 | | |
| Element Type: | Reinforced concrete | | Total Quantity | 204.9 | Sq.m | |
| Environment: | Benign | | Limited Inspec | ction | x | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 65.6 | 134.1 | 5.2 | 0.0 | |

Comments:

(From 2016): E Wall:Two (2) hairline cracks showing signs of efflorescence staining, spaced approx. 2.0m was observed (2.6x0.25 each). Inspection limited due to high water level and confined space entry limitations. The south end of the culvert is closed and intersect with other HDPE culvert.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|----------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | <u> </u> |
| | | | | |

| Element Group: | Embankment | s & Streams | | | Length: | | | | | | <u> </u> |
|---|---------------|----------------|------|------------|-------------------|-----|--------------|------|--------------|--------|--------------|
| Element Name: | Slope Protect | tion | | | Width: | | | | | | |
| Location: | NW / NE Em | bankments | | | Height: | | | | | | |
| Material: | Gabions / Rip | -Rap | | | Count: | | 2 | | | | |
| Element Type: | | | | | Total Quantity | y: | 0.0 | ea | ach | | |
| Environment: | Moderate | | | | Limited Inspe | cti | on | | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | U | nits | | Exc. | Good | | Fair | | Poor | [| Deficiencies |
| Data: | Sq.m / m / ea | ich / % / all | | 0.0 | 1.0 | | 1.0 | | 0.0 | | |
| Comments: NE: Hand laid rip-rap. NW: Gabion baskets o | bserved to be | missing rocks. | Cons | sider re-i | nstating additior | nal | rocks. | | | | |
| Recommended Work: | : | Rehab | F | Replace | | M | aintenance | ۱ (| leeds: | | |
| | | 1-5 years | 6 | 6-10 year | rs | | Urgent | | 1 year | х | 2 year |
| | • | | | | | A | dd additiona | al ı | rocks to gab | oion b | askets. |

| Element Group: | Embankmer | its & Streams | | Length: | | | |
|--------------------|--------------|----------------------|----------|----------------|--------------|----------|--------------|
| Element Name: | Streams and | Waterways | | Width: | | | |
| Location: | | | | Height: | | | |
| Material: | | | | Count: | 1 | | |
| Element Type: | | | | Total Quantity | <i>r</i> : 1 | all | |
| Environment: | | | | Limited Inspec | ction | | |
| Protection System: | | | | | | | Perform. |
| Condition | l | Jnits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | ach / % / all | 0 | 1 | 0 | 0 | |
| Comments: | | | | | | | |
| Recommended Work | | Rehab | Replace | | Maintenanc | e Needs: | |
| | | 1-5 years | 6-10 yea | are | Urgent | 1 year | 2 year |

| Element Group: | Signs | | | Length: | | | |
|---|---|--|-----------------|---|--|----------------|-----------------------|
| Element Name: | Signs | | | Width: | | | |
| Location: | | | | Height: | | | |
| Material: | | | | Count: | 4 | | |
| Element Type: | Var. | | | Total Quantity | : 4 | each | |
| Environment: | | | | Limited Inspec | ction | | |
| Protection System: | | | | | | | Perform. |
| Condition | 1 | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 0 | 4 | 0 | 0 | |
| Comments: Four different signs we at the NW edge of the | | | | | n at intersect | ion, HAZARD | MARKER Sign |
| Recommended Work: | | Rehab | Replace | | Maintenance | e Needs: | |
| | | 1-5 years | 6-10 yea | rs | Urgent | 1 year | 2 year |
| | | | | | | | |
| Element Group: | Approaches | i | | Length: | 6.0 | m | |
| Element Group: Element Name: | Approaches Wearing sur | | | Length: | 6.0 Var. | | |
| • | Approaches Wearing sur East/West A | rface | | | | m | |
| Element Name: | Wearing sur | rface | | Width: | Var. | m | |
| Element Name: Location: | Wearing sur East/West A | rface | | Width: Height: | Var. 0.1 2 | m | |
| Element Name: Location: Material: | Wearing sur East/West A | rface | | Width: Height: Count: | Var. 0.1 2 : 75.0 | m m | |
| Element Name: Location: Material: Element Type: | Wearing sur East/West A Asphalt | rface | | Width: Height: Count: Total Quantity | Var. 0.1 2 : 75.0 | m m | Perform. |
| Element Name: Location: Material: Element Type: Environment: | Wearing sur East/West A Asphalt Moderate | rface | Exc. | Width: Height: Count: Total Quantity | Var. 0.1 2 : 75.0 | m m | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Wearing sur East/West A Asphalt Moderate | rface Approaches | Exc. 0.0 | Width: Height: Count: Total Quantity Limited Inspec | Var. 0.1 2 : 75.0 etion | m m Sq.m | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Wearing sur East/West A Asphalt Moderate Sq.m / m / 6 | Approaches Units each / % / all | 0.0 | Width: Height: Count: Total Quantity Limited Inspect | Var. 0.1 2 : 75.0 ction Fair 30.0 | Sq.m Poor 8.0 | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Wearing sur East/West A Asphalt Moderate Sq.m / m / e epaired / seale | Approaches Units each / % / all | 0.0 | Width: Height: Count: Total Quantity Limited Inspector Good 37.0 served at east ap | Var. 0.1 2 : 75.0 ction Fair 30.0 | Sq.m Poor 8.0 | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: All cracks have been re | Wearing sur East/West A Asphalt Moderate Sq.m / m / e epaired / seale | rface Approaches Units each / % / all ed. Medium map | 0.0 cracking ob | Width: Height: Count: Total Quantity Limited Inspector Good 37.0 served at east approximately | Var. 0.1 2 : 75.0 ction Fair 30.0 pproach (2 - 2 | Sq.m Poor 8.0 | |



Photograph 1: Wearing surface over structure (Looking West). Cracks have been sealed since the last inspection



Photograph 2: Wearing surface over structure (Looking East). Cracks have been sealed since the last inspection





Photograph 3: Sealed map cracking on the Wearing surface at the east approach (Looking South)



Photograph 4: Sealed wide cracks on the wearing surface at the west approach (Looking South)





Photograph 5: Southern closed end of structure with exposed waterproofing (Looking North)



Photograph 6: Exposed waterproofing on the top of deck showing signs of bubbling and deterioration in areas not covered by granular material (Looking North)





Photograph 7: Exposed waterproofing deterioration on north side of structure



Photograph 8: North inlet with exposed waterproofing along the top of deck (Looking South)





Photograph 9: Watercourse, embankments and slope protection at the north inlet of the structure (Looking North)



Photograph 10: North end of barrel (Looking South).

Note: Picture from 2016. Barrel access is deemed Confined Space Entry





Photograph 11: Two vertical cracks at the east barrel wall.

Note: Picture from 2016. Barrel access is deemed Confined Space Entry



Structure Number

| Inventory Data: | | |
|---|---|---|
| Structure Name | Merrick Creek at Eighth Concession Ro | pad Bridge |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Eighth Concession Road | |
| Structure Location | 1.60 km North from County Road 8 | |
| Latitude | 42° 11' 47.1" | Longitude -82° 56' 56.8" |
| Owners | Town of Tecumseh | Heritage Not Consid: X Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Collector Local x |
| MTO District | | Posted Speed Not posted No. of Lanes 2 |
| Old County | | AADT 426 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Non-Rigid Frame | Interchange Number |
| Total Deck Length | 4.2 m | Interchange Structure Number |
| Overall Str. Width | 9.2 m | Min. Vertical Clearance |
| Total Deck Area | 38.6 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 6.3 m | Detour Length Around Bridge 10.0 km |
| Skew Angle | 0.0 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structure 0.2 m |
| Span Lengths | Total = 3.6 (1) = 3.6 | m |
| Historical Data: | | |
| Year Built | 1965 | Year of Last Major Rehab. 2020 |
| | 2022 | |
| Last OSIM Inspection | | Last Evaluation |
| Last Enhanced OSIM I | | Current Load Limit |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / | Description) | |
| 2020 Rehab: Full depth | n concrete deck repairs, concrete overlay | , waterproofing and asphalt, enclosed drain at SE wingwall. |

| Ontario Structure | Inspection | Manual - In | spection Form |
|--------------------------|------------|-------------|---------------|
| | | | |

Structure Number

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Inspector: Monica Sokolski, E.I.T. (Dillon Consulting Limited) Others in Party: Stephen Strachan (Dillon Consulting Limited) Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: x Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x Detailed Coating Condition Survey: x Detailed Timber Investigation: x Dest-Tensioned Strand Investigation: x Underwater Investigation: x Seismic Investigation: x Seismic Investigation: x Seismic Investigation: x Structure Evaluation: x Monitoring Monitoring of Deformations, Settlements and Movements: x Monitoring Crack Widths: Investigation Notes: | Field Inspection Informati | ion: | | | | |
|--|----------------------------|------------------------|---------------------------|--------------|-------------|---------|
| Others in Party: Stephen Strachan (Dillon Consulting Limited) Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: X Non-Destructive Delamination Survey of Asphalt-Covered Deck: X Sunstructive Delamination Survey: X Detailed Coating Condition Survey: X Detailed Timber Investigation: X Survey: X Sunstructive Condition Survey: X Sunstructive: X Sunstruction: X Sunstruction: X Sunstruction: X Sunstruction: X Sunstruction: X Sunstructive Evaluation: X Sunstructive Eva | Date of Inspection: | June 26, 2024 | Type of Inspection | n: x OSIM | Enhanced OS | SIM |
| Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: X Non-Destructure Condition Survey: X Separate Concrete Substructure Post-Tensioned Strand Investigation: X Separate Concrete Substructure Support Concrete Substructure Support Concrete Substructure Support Concrete Substructure Support Condition Survey: X Separate Concrete Substructure Support Condition Survey: X Suppo | Inspector: | Monica Sokolski, E.I.T | Г. (Dillon Consulting Lin | nited) | | |
| Weather: Sunny Temperature: 28.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: X Concrete Substructure Delamination Survey of Asphalt-Covered Deck: X Concrete Substructure Condition Survey: X Detailed Coating Condition Survey: X Detailed Timber Investigation: X Post-Tensioned Strand Investigation: X Underwater Investigation: X Structure Investigation: X Structure Evaluation: X Monitoring Monitoring of Deformations, Settlements and Movements: X Monitoring Grack Widths: X Investigation Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Major rehab completed in 2020 | Others in Party: | Stephen Strachan (Dil | llon Consulting Limited) |) | | |
| Temperature: 28.0 °C Additional Investigations Required: | Access Equipment Used: | Camera, Measuring ta | ape, Measuring wheel, a | and Hammer | | |
| Additional Investigations Required: None | Weather: | Sunny | | | | |
| Material Condition Survey Detailed Deck Condition Survey: | Temperature: | 28.0 °C | | | | |
| Material Condition Survey Detailed Deck Condition Survey: | Additional Investigations | Required: | | | Priority | |
| Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring Of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: Major rehab completed in 2020 | J | | | None | | Urgent |
| Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring Of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: Major rehab completed in 2020 | Material Condition Survey | | | | | |
| Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x | | on Survey: | | Х | | |
| Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Valent Investigation: Seismic Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring Monitoring Operations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: Major rehab completed in 2020 | | | halt-Covered Deck: | Х | | |
| Detailed Timber Investigation: | | | | Х | | |
| Post-Tensioned Strand Investigation: | Detailed Coating Cond | lition Survey: | | Х | | |
| Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: | Detailed Timber Invest | tigation: | | Х | | |
| Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Investigation Recommended Work: Major rehab completed in 2020 | | | | Х | | |
| Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: Overall Comments: Major rehab completed in 2020 | Underwater Investigation: | | | Х | | |
| Structure Evaluation: x Monitoring Monitoring of Deformations, Settlements and Movements: x Monitoring Crack Widths: x Investigation Notes: Monitoring Crack Widths: Moni | | | | Х | | |
| Monitoring Monitoring of Deformations, Settlements and Movements: | | | | Х | | |
| Monitoring of Deformations, Settlements and Movements: | | | | X | | |
| Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: Overall Comments: Major rehab completed in 2020 | ÿ | | | | | |
| Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Major rehab completed in 2020 | | | d Movements: | Х | | |
| Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Major rehab completed in 2020 | | hs: | | Х | | |
| Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: Overall Comments: Major rehab completed in 2020 | Investigation Notes: | | | | | |
| Timing of Recommended Work: Overall Comments: Major Rehab. 1 to 5 years 6 to 10 years Major rehab completed in 2020 | Overall Structure Notes: | | | | | |
| Timing of Recommended Work: Overall Comments: Major rehab completed in 2020 | Recommended Work on St | ructure: None | Maintenance | Minor Rehal | b | Replace |
| Overall Comments: Major rehab completed in 2020 | | | | Major Rehal | b. | |
| Overall Comments: Major rehab completed in 2020 | Timing of Recommended W | Vork: | 1 to 5 years | 6 to 10 year | S | |
| Date of Next Inspection: June 2026 | , | | | | | |
| | Date of Next Inspection: | June 2026 | | | | |

Structure Number

1013

| Element Group: | | | | | | | |
|--|---|---------------------------------|-----------|--|--------------------------------|--------------------------|-----------------------|
| • | Decks | | | Length: | 4.2 | m | |
| Element Name: | Wearing Su | rface | | Width: | 6.3 | m | |
| Location: | | | | Height: | | | |
| Material: | Asphalt | | | Count: | | | |
| Element Type: | | | | Total Quantity | : 26.5 | Sq.m | |
| Environment: | Moderate | | | Limited Inspec | tion | | |
| Protection System: | | | | | | I I | Perform. |
| Condition | Uı | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 19.4 | 7.1 | 0.0 | 0.0 | |
| Comments: Repaved in 2020. | | | | | | | |
| Recommended Work | : | Rehab | Replace | | Maintenance | e Needs: | |
| | | 1-5 years | 6-10 year | s | Urgent | 1 year | 2 year |
| Element Group: | Decks | | | Length: | 4.2 | m | |
| Element Group: | | | | | | m | |
| Licincii Haine. | | | | Width: | 1 92 | m | |
| Location: | Deck Top | | | Width: | 9.2 | m | |
| Location: | • | re concrete | | Height: | 9.2 | m | |
| Material: | Cast-in-place | e concrete | | Height: Count: | | | |
| Material: Element Type: | Cast-in-plac | e concrete | | Height: Count: Total Quantity | : 38.6 | Sq.m | |
| Material: Element Type: Environment: | • | e concrete | | Height: Count: | : 38.6 | | Perform |
| Material: Element Type: Environment: Protection System: | Cast-in-place | | Exc | Height: Count: Total Quantity Limited Inspec | : 38.6 etion | Sq.m | Perform. Deficiencies |
| Material: Element Type: Environment: | Cast-in-place Moderate | e concrete nits each / % / all | Exc. 28.3 | Height: Count: Total Quantity | : 38.6 | Sq.m | Perform. Deficiencies |
| Material: Element Type: Environment: Protection System: Condition | Cast-in-place Moderate | nits | | Height: Count: Total Quantity: Limited Inspec | : 38.6 etion | Sq.m x | |
| Material: Element Type: Environment: Protection System: Condition Data: | Cast-in-place Moderate Use Sq.m / m / 6 | nits | | Height: Count: Total Quantity: Limited Inspec | : 38.6 etion | Sq.m x | |
| Material: Element Type: Environment: Protection System: Condition Data: Comments: | Cast-in-place Moderate Ui Sq.m / m / 6 | nits | | Height: Count: Total Quantity: Limited Inspector Good 10.3 | : 38.6 etion | Sq.m x Poor 0.0 | |
| Material: Element Type: Environment: Protection System: Condition Data: Comments: Concrete overlay in 20 | Cast-in-place Moderate Ui Sq.m / m / 6 | nits each / % / all | 28.3 | Height: Count: Total Quantity: Limited Inspect | : 38.6 etion Fair 0.0 | Sq.m x Poor 0.0 | |

| Element Group: | | | | | | | | |
|---|------------------------------------|--|---------------------|--|---------------------------------------|--|-----------------------|--|
| Liement Group. | Decks | | | Length: | 3.6 | m | | |
| Element Name: | Soffit - Thick | < Slab | | Width: | 9.2 | m | | |
| Location: | | | | Height: | | | | |
| Material: | Cast-in-plac | e concrete | | Count: | | | | |
| Element Type: | | | | Total Quantity | y: 33.1 | Sq.m | | |
| Environment: | Moderate | | | Limited Inspe | ection | | | |
| Protection System: | | | | | | | Perform. | |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / e | each / % / all | 3.2 | 29.7 | 0.0 | 0.3 | | |
| Comments: Concrete repair in 2020 |). Light delam | ination at wes | st end (0.6 x | 0.5 m). | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenanc | e Needs: | | |
| | | 1-5 years | 6-10 year | 'S | Urgent | 1 year | 2 year | |
| Element Group: | Sidewalks/C | urbs | | Length: Var. m | | | | |
| • | | Curbs | | | | | | |
| Element Name: | Curbs |) | | Width: | | | | |
| Location: | East/West R | | | Height: | 0.3 | 0.3 m | | |
| Material: | Cast-in-plac | | | - | _ | | | |
| | 1 | e concrete | | Count: | 2 | | | |
| Element Type: | | e concrete | | Total Quantity | y: 9.3 | Sq.m | | |
| Environment: | Moderate | e concrete | | | y: 9.3 | | | |
| Environment: Protection System: | | | | Total Quantity | y: 9.3 | Sq.m | Perform. | |
| Environment: Protection System: Condition | Ur | nits | Exc. | Total Quantity Limited Inspe | y: 9.3 ection | Sq.m Poor | Perform. Deficiencies | |
| Environment: Protection System: Condition Data: | Ur | | Exc. 3.4 | Total Quantity | y: 9.3 | Sq.m | | |
| Environment: Protection System: Condition | Ur Sq.m / m / e | nits each / % / all | 3.4 | Total Quantity Limited Inspe | 9.3 ection Fair 0.1 | Sq.m Poor 0.1 | | |
| Environment: Protection System: Condition Data: Comments: | Ur Sq.m / m / e in 2020. W C | nits each / % / all | 3.4 | Total Quantity Limited Inspe | 9.3 ection Fair 0.1 | Poor 0.1 | | |
| Environment: Protection System: Condition Data: Comments: E Curb: reconstructed | Ur Sq.m / m / e in 2020. W C | nits each / % / all urb: light sca | 3.4 ling and fou | Total Quantity Limited Inspe Good 5.7 r (4) light spalls | y: 9.3 ection Fair 0.1 were observe | Poor 0.1 | | |

| EL 10 | | | | | | | | |
|--|--|--|---------------------|--|-------------------------------------|-----------------|-----------------------|--|
| Element Group: | Abutments | | | Length: | 9.2 | 9.2 m | | |
| Element Name: | Abutment W | /alls | | Width: | | | | |
| Location: | North/South | 1 | | Height: | 2.1 | m | | |
| Material: | Cast-in-plac | e concrete | | Count: | 2 | | | |
| Element Type: | | | | Total Quantity: | 35.0 | Sq.m | | |
| Environment: | Moderate | | | Limited Inspec | tion | | | |
| Protection System: | | | | | | !! | Perform. | |
| Condition | Uı | nits | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / e | each / % / all | 0.0 | 35.0 | 0.0 | 0.0 | | |
| Comments: Light scaling observed | on both walls | i. | | | | | | |
| Recommended Work | | Rehab | Replace | | Maintenance | e Needs: | | |
| | | 1-5 years | 6-10 year | | Urgent | 1 year | 2 year | |
| | | | | | | | | |
| Flement Group | Abutments | | | I ength: | 4 2 | m | | |
| Element Group: | Abutments Wingwalls | | | Length: | 4.2 | m | | |
| | Abutments Wingwalls | | | Width: | | | | |
| Element Name: | | ce concrete | | | 2.8 | | | |
| Element Name: Location: | Wingwalls | ce concrete | | Width: Height: | 2.8 | | | |
| Element Name: Location: Material: | Wingwalls | ce concrete | | Width: Height: Count: | 2.8 4 47.0 | m | | |
| Element Name: Location: Material: Element Type: | Wingwalls Cast-in-place | ce concrete | | Width: Height: Count: Total Quantity: | 2.8 4 47.0 | m | Perform. | |
| Element Name: Location: Material: Element Type: Environment: | Wingwalls Cast-in-place Moderate | ce concrete | Exc. | Width: Height: Count: Total Quantity: | 2.8 4 47.0 | m | Perform. Deficiencies | |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Wingwalls Cast-in-place Moderate Ui | | Exc. 0.0 | Width: Height: Count: Total Quantity: Limited Inspec | 2.8 4 47.0 | m Sq.m | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Wingwalls Cast-in-place Moderate Ui Sq.m / m / e | nits each / % / all | 0.0 | Width: Height: Count: Total Quantity: Limited Inspec | 2.8 4 47.0 tion | m Sq.m Poor 0.0 | Deficiencies | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: SE Wingwall: One (1) | Wingwalls Cast-in-place Moderate Ui Sq.m / m / e | nits each / % / all | 0.0 | Width: Height: Count: Total Quantity: Limited Inspector Good 47.0 Medium crack v | 2.8 4 47.0 tion | m Sq.m Poor 0.0 | Deficiencies | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: SE Wingwall: One (1) wall. | Wingwalls Cast-in-place Moderate Ui Sq.m / m / e | nits each / % / all ming through | 0.0 the wingwall | Width: Height: Count: Total Quantity: Limited Inspector Good 47.0 Medium crack v | 2.8 47.0 tion Fair 0.0 vas observed | m Sq.m Poor 0.0 | Deficiencies | |

| Element Group: | Embankmer | nts & Streams | 3 | Length: | | | |
|---|---------------------------|--|-------------|--|-------------|-----------|-----------------------|
| Element Name: | Streams and | d Waterways | | Width: | | | |
| Location: | | | | Height: | | | |
| Material: | | | | Count: | | | |
| Element Type: | | | | Total Quantity: | all | | |
| Environment: | | | | Limited Inspec | tion | | |
| Protection System: | | | | | | · · · · | Perform. |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m/m/e | ach / % / all | 1 | 0 | 0 | 0 | |
| Comments: Debris observed in water | erway. (Block | kage at west | end 8 m pas | t structure) | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | Needs: | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | 2 year |
| | | | | | | | |
| Element Group: | Embankmer | nts & Streams | | Length: | | | |
| Element Group: | | nts & Streams | 3 | Length: | | | |
| Element Group: Element Name: Location: | Embankmer | nts | 3 | Width: | | | |
| Element Name: | | nts | 3 | Width: Height: | 4 | | |
| Element Name: Location: Material: | Embankmer | nts | 3 | Width: Height: Count: | 4: 4 | each | |
| Element Name: Location: | Embankmer | nts | 5 | Width: Height: Count: Total Quantity: | : 4 | each | |
| Element Name: Location: Material: Element Type: Environment: | Embankmer | nts | 3 | Width: Height: Count: | : 4 | each | Perform. |
| Element Name: Location: Material: Element Type: | Embankmer All Four Qua | nts | Exc. | Width: Height: Count: Total Quantity: | : 4 | each | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Embankmer All Four Qua | nts adrants nits | | Width: Height: Count: Total Quantity: Limited Inspec | tion 4 | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Embankmer All Four Qua | nts adrants nits | Exc. | Width: Height: Count: Total Quantity: Limited Inspec | etion Fair | Poor | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: | Embankmer All Four Qua | nts adrants nits | Exc. | Width: Height: Count: Total Quantity: Limited Inspec | etion Fair | Poor 0 | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Embankmer All Four Qua | nts adrants nits each / % / all | Exc. | Width: Height: Count: Total Quantity: Limited Inspec | Fair 0 | Poor 0 | |

| Element Group: | Embankments & Streams | | | | Length: | | | | | |
|---|---|---------------|-----------------------------|----------------------|---|--------------|--------------|-----------|--|--------------------------|
| Element Name: | Slope protection | | | | Width: | | | | | |
| Location: | NE / NW / SW Embankments | | | | Height: | | | | | |
| Material: | Hand Laid Riprap | | | | Count: | : 3 | | | | |
| Element Type: | | | | | Total Quantity | ity: 3 each | | | | |
| Environment: | | | | | Limited Inspection | | | | | |
| Protection System: | | | | | | | • | • | | Perform. |
| Condition | Ur | nits | | Exc. | Good | | Fair | Poor | | Deficiencies |
| Data: | Sq.m / m / e | ach / ° | % / all | 3 | 0 | | 0 0 | | | |
| Comments: | T | | | Danta | | | | | | |
| Recommended Work: | | _ | hab | Replace | | ₩-, | intenance | | | 1- |
| | | 1-5 | years | 6-10 year | 5 | Н | Urgent | 1 year | | 2 year |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Element Group: | Signs | | | | Length: | | | | | |
| Element Group: Element Name: | Signs Signs | | | | Length: Width: | | | | | |
| • | | Wing | walls | | | | | | | |
| Element Name: | Signs | Wings | walls | | Width: | | 4 | | | |
| Element Name: Location: | Signs | | | | Width: Height: | /: | | each | | |
| Element Name: Location: Material: | Signs NW and SE | | | | Width: Height: Count: | | 4 | each | | |
| Element Name: Location: Material: Element Type: | Signs NW and SE | | | | Width: Height: Count: Total Quantity | | 4 | each | | Perform. |
| Element Name: Location: Material: Element Type: Environment: | Signs NW and SE Hazard Mark | | | Exc. | Width: Height: Count: Total Quantity | | 4 | each | | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Signs NW and SE Hazard Mark | ker Sig | gns | Exc. | Width: Height: Count: Total Quantity Limited Inspec | | 4 n | | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Signs NW and SE Hazard Marl Ur Sq.m / m / e | ker Sig | gns % / all | 2 | Width: Height: Count: Total Quantity Limited Inspec | ctio | n Fair 0 | Poor | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Signs NW and SE Hazard Marl Ur Sq.m / m / e | ker Sig | gns % / all ers in 20 | 2 | Width: Height: Count: Total Quantity Limited Inspec | ctio | n Fair 0 | Poor 0 | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Object markers added to | Signs NW and SE Hazard Marl Ur Sq.m / m / e | nits each / G | gns % / all ers in 20 | 2 020. (light in | Width: Height: Count: Total Quantity Limited Inspector Good 2 npact damage to | ctio o SE | Fair 0 sign) | Poor 0 | | |

| Element Group: | Approaches | | Length: | 6.0 | 6.0 m | | | | |
|---|----------------------|---------------|--------------------|-----------------------|-------------|-------------------|--------|--------------|--|
| Element Name: | Wearing Sur | face | Width: | 6.3 | 6.3 m | | | | |
| Location: | | | Height: | | | | | | |
| Material: | Asphalt | | Count: 2 | | | | | | |
| Element Type: | | | | Total Quantity | 75.6 | 75.6 Sq.m | | | |
| Environment: | Moderate | | Limited Inspection | | | | | | |
| Protection System: | | | | | | | | Perform. | |
| Condition | Un | its | Exc. | Good | Fair | | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ach / % / all | 55.4 | 19.2 | 1.0 | | 0.0 | | |
| Comments: Asphalt extends 8 m past the form and fill grooves in either direction, transitioning back to a tar and chip wearing surface. Narrow crack at SE corner in line with end of curb. (0.5 x 2 m) | | | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | aintenance Needs: | | | |
| | | 1-5 years | 6-10 year | 's | Urgent | | 1 year | 2 year | |
| | | | | | | | | | |



Photograph 1: South approach (Looking North)



Photograph 2: North approach (Looking South)





Photograph 3: Wearing surface over the structure (Looking West)



Photograph 4: Curb and wingwall at southwest quadrant of structure





Photograph 5: Reconstructed curb on east side of structure



Photograph 6: East elevation





Photograph 7: West elevation



Photograph 8: Typical condition of CSP outlet through the southeast wingwall





Photograph 9: South abutment wall and wall drains



Photograph 10: Typical condition of culvert barrel (Looking West)





Photograph 11: Soffit patch repair completed in 2019 (Looking Southwest)



Photograph 12: Typical condition of wall drains in culvert barrel with wet staining and efflorescence





Photograph 13: Watercourse on east side of structure, and slope protection rip-rap (Looking North)



Photograph 14: Watercourse on west side of structure (Looking West)



| uctu | | |
|------|--|--|
| | | |
| | | |

| Inventory Data: | | |
|--|--------------------------------------|---|
| Structure Name | Townline Road Drain at Sixth Concess | sion Road Culvert |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Sixth Concession Road (Holden Road) | |
| Structure Location | At intersection with County Road 8 | |
| Latitude | 42° 11' 0.3" | Longitude -82° 59' 1.1" |
| Owners | Town of Tecumseh | Heritage Not Consid: x Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Collector Local X |
| MTO District | | Posted Speed 60 No. of Lanes 2 |
| Old County | | AADT 500 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Non-Rigid Frame | Interchange Number |
| Total Deck Length | 4.2 m | Interchange Structure Number |
| Overall Str. Width | 15.3 m | Min. Vertical Clearance |
| Total Deck Area | 64.3 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 8.5 m | Detour Length Around Bridge 10.6 km |
| Skew Angle | 0.0 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structure 0.6 m |
| Span Lengths | Total = 3.7 (1) = 3.7; | m |
| | | |
| Historical Data: | | |
| Year Built | 1955 | Year of Last Major Rehab. 2019 |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM I | nspection | Current Load Limit 5.0 |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / | Description) | |
| 2019 Rehab: Remove new CIP corner strip, w | | tent (E/W), install new precast block retaining walls adjacent to |

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|--------------------------|------------|-------------|----------------|
| | | | |

| Scheduled Improvements: | |
|--------------------------|----------------------|
| Regional Priority Number | Programmed Work Year |
| Nature of Program Work: | |
| | |
| | |
| | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Ontario Structure Inspection Manual - Inspection Form

Structure Number

| Inspector: | Field Inspection Information | tion: | | | | |
|--|------------------------------|-------------------------|------------------------|---------------|-------------|--|
| Others in Party: Stephen Strachan (Dillon Consulting Limited) Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: x Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x Non-Destructive Delamination Survey: x Detailed Timber Investigation: x Detailed Timber Investigation: x Post-Tensioned Strand Investigation: x Fatigue Investigation: x Structure Evaluation: x Monitoring Monitoring of Deformations, Settlements and Movements: x Monitoring Grack Widths: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Rehabilitated in 2019. | Date of Inspection: | June 26, 2024 | Type of Inspection | x OSIM | Enhanced OS | SIM |
| Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: X Sunny Non-Destructive Delamination Survey of Asphalt-Covered Deck: X Sunny Detailed Timber Investigation: X Sunny Detailed Survey: X Sunny More The Sunny Survey: X Sunny Su | Inspector: | Monica Sokolski, E.I.T. | (Dillon Consulting Lim | ited) | | |
| Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: X Sunny Non-Destructive Delamination Survey of Asphalt-Covered Deck: X Sunny Detailed Timber Investigation: X Sunny Detailed Survey: X Sunny More The Sunny Survey: X Sunny Su | Others in Party: | Stephen Strachan (Dille | on Consulting Limited) | | | |
| Weather: Sunny Temperature: 28.0 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: X Non-Destructive Delamination Survey of Asphalt-Covered Deck: X Concrete Substructure Condition Survey: X Detailed Coating Condition Survey: X Detailed Timber Investigation: X Total Concrete Substructure Condition Survey: X Detailed Timber Investigation: X Total Concrete Substructure Condition Survey: X Total Concrete Substructure Concrete Substructure Survey: X Total Concrete Substructure Survey: X Total Concrete Substructure Evaluation: X Total Concrete Substructure Evaluat | | , | , | | | |
| Temperature: 28.0 °C | Access Equipment Used: | Camera, Measuring tap | be, Measuring wheel, a | ind Hammer | | |
| Additional Investigations Required: None | Weather: | Sunny | | | | |
| Material Condition Survey Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Va Underwater Investigation: Fatigue Investigation: Structure Evaluation: Monitoring Monitoring Monitoring Of Deformations, Settlements and Movements: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Major Rehab. Replace Major Rehab. Timing of Recommended Work: Overall Comments: Rehabilitated in 2019. | Temperature: | 28.0 °C | | | | |
| Material Condition Survey Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Va Underwater Investigation: Fatigue Investigation: Structure Evaluation: Monitoring Monitoring Monitoring Of Deformations, Settlements and Movements: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Major Rehab. Replace Major Rehab. Timing of Recommended Work: Overall Comments: Rehabilitated in 2019. | Additional Investigations | Poguirod | | | Driority | |
| Material Condition Survey Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Sitructure Evaluation: Monitoring Monitoring Monitoring of Deformations, Settlements and Movements: Investigation Notes: We maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: Rehabilitated in 2019. | Additional investigations | requireu. | | None | • | Urgent |
| Detailed Deck Condition Survey: | | | | | | <u>, </u> |
| Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Seismic Investigation: Seismic Investigation: Monitoring Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Major Rehab. Replace Major Rehab. Timing of Recommended Work: Rehabilitated in 2019. | Material Condition Survey | | | | | |
| Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: X Underwater Investigation: Fatigue Investigation: Seismic Investigation: Seismic Investigation: X Structure Evaluation: Monitoring Monitoring Monitoring of Deformations, Settlements and Movements: X Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: | Detailed Deck Conditi | on Survey: | | Х | | |
| Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Major Rehab. Timing of Recommended Work: I to 5 years 6 to 10 years Overall Comments: | Non-Destructive Dela | mination Survey of Aspl | nalt-Covered Deck: | Х | | |
| Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Seismic Investigation: WA Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Rehabilitated in 2019. | Concrete Substructur | e Condition Survey: | | Х | | |
| Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: I to 5 years Overall Comments: Rehabilitated in 2019. | Detailed Coating Con | dition Survey: | | Х | | |
| Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: It to 5 years Overall Comments: Rehabilitated in 2019. | Detailed Timber Inves | stigation: | | Х | | |
| Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: Major Rehab. Timing of Recommended Work: Timing of Recommended Work: Rehabilitated in 2019. | | | | Х | | |
| Fatigue Investigation: Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years Overall Comments: Rehabilitated in 2019. | | | | Х | | |
| Seismic Investigation: Structure Evaluation: Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Major Rehab. Timing of Recommended Work: Timing of Recommended Work: Rehabilitated in 2019. | | | | Х | | |
| Structure Evaluation: x Monitoring Monitoring of Deformations, Settlements and Movements: x Monitoring Crack Widths: x Investigation Notes: Major Rehab. Replace Major Rehab. Major Rehab. Replace Major Rehab. Replace Major Rehab. Rehabilitated in 2019. Rehabilitated in 2019. | , | | | Х | | |
| Monitoring Monitoring of Deformations, Settlements and Movements: Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: Recommended Work on Structure: Mone Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years Overall Comments: Rehabilitated in 2019. | | | | Х | | |
| Monitoring of Deformations, Settlements and Movements: | | | | Į. | | |
| Monitoring Crack Widths: Investigation Notes: Overall Structure Notes: | | ations. Settlements and | Movements: | Х | | |
| Overall Structure Notes: Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: Rehabilitated in 2019. | | | | | | |
| Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years Overall Comments: Rehabilitated in 2019. | | | | • | | |
| Recommended Work on Structure: None Maintenance Minor Rehab. Replace Major Rehab. Timing of Recommended Work: 1 to 5 years 6 to 10 years Overall Comments: | O and H Others to as Niction | | | | | |
| Timing of Recommended Work: Overall Comments: Application of Rehab. It to 5 years 6 to 10 years Rehabilitated in 2019. | | | | | | |
| Timing of Recommended Work: Overall Comments: Rehabilitated in 2019. | Recommended Work on S | tructure: None | Maintenance | Minor Rehab |). <u> </u> | Replace |
| Overall Comments: Rehabilitated in 2019. | | | Major Rehab | | | |
| Overall Comments: Rehabilitated in 2019. | Timing of Recommended \ | Nork: | 1 to 5 years | 6 to 10 years | <u> </u> | |
| | | | | | | |
| Date of Next Increasion. June 2026 | | | | | | |
| Date of Next Inspection: June 2026 | Date of Next Inspection: | June 2026 | | | | |

| Element Group: | Decks | | Length: | | 4.2 | m | | | |
|-------------------------------|-------------------|----------------|-----------|---------------|-------|-----------|----------|--------|--------------|
| Element Name: | Wearing Su | ırface | Width: | | 8.5 | | | | |
| Location: | | | | | | | | | |
| Material: | Asphalt | | Count: | | | | | | |
| Element Type: | | | | | | 35.7 | Sc | μ.m | |
| Environment: | Moderate | | | Limited Inspe | ectio | on | | | |
| Protection System: | stem: | | | | | | Perform. | | |
| Condition | | Units | Exc. | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / | each / % / all | 11.9 | | 0.0 | | | | |
| Comments: Repaved in 2019. | | | | | | | | | |
| Recommended Wor | k: | Rehab | Replace | | Ma | aintenanc | e N | leeds: | |
| | | 1-5 years | 6-10 year | rs | | Urgent | | 1 year | 2 year |
| | | | | | | | | | |
| Element Group: | Decks | | | Length: | | 3.7 | m | | |
| | I | <u> </u> | | | | | | | · |

| Element Group: | Decks | | Length: | 3.7 | m | |
|--------------------|----------------------------------|------|---------------|-------|--------------|----------|
| Element Name: | Deck Top | | Width: | 15.5 | m | |
| Location: | | | Height: | | | |
| Material: | Cast-in-place concrete | | Count: | | | |
| Element Type: | | | | | Sq.m | |
| Environment: | Benign | | Limited Inspe | ction | x | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 45.9 | 11.5 0.0 0.0 | | | |

Comments:

Reinforced conrete overlay completed in 2019. Deck ends reconstructed with new concrete headwalls.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

| Element Group: | Decks | | | Length: | 3.7 r | n | | |
|--------------------------|-------------------------------------|---------------------------------|---------------|--------------------|-----------------|-----------|--------------|--|
| Element Name: | Soffit | | | Width: | 15.5 r | n | | |
| Location: | | | | Height: | | | | |
| Material: | Cast-in-place | concrete | | Count: | | | | |
| Element Type: | | | | Total Quantity | 57.4 9 | Sq.m | | |
| Environment: | Benign | | | Limited Inspec | tion | | | |
| Protection System: | | | | | | | Perform. | |
| Condition | L | Jnits | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all 6. | | | 50.9 | 0.0 | 0.0 0.0 | | |
| Comments: | • | | | | · | | | |
| Soffit Patch repairs con | npleted in 2019 | Narrow transv | erse crack ir | n new portion of v | vest end (1.5 x | (0.5 m). | | |
| | | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | | | |
| | | 1-5 years | 6-10 year | 'S | Urgent | 1 year | 2 year | |
| | | | <u> </u> | | | | | |
| | | | | | | | | |
| | | | | <u> </u> | | | | |

| Element Group: | Culverts | Length: | 3.7 | m | | | |
|--------------------|----------------------------------|------------------------|-----------------|-------|-------|--------------|----------|
| Element Name: | Inlet/Outlet Components - Hea | adwalls | Width: | 0.3 | m | | |
| Location: | Headwalls | | Height: | 0.2 | 0.2 m | | |
| Material: | Cast-in-place concrete | Cast-in-place concrete | | | | | |
| Element Type: | | | Total Quantity: | | Sq. | m | |
| Environment: | Moderate | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | Good | Fair | | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 2.5 | 1.2 | 0.0 | | 0.0 | |

Comments:

Constructed in 2019. One narrow crack at the centreline of the top face of both head walls and into fascia was observed. Light map cracking observed (0.5 x span)

| Recommended Work: | Rehab | Replace | Maintenance Needs: | | | | |
|-------------------|-----------|------------|--------------------|--|--------|--|--|
| | 1-5 years | 6-10 years | Urgent 1 year | | 2 year | | |
| | | | | | | | |
| | | | | | | | |

| Element Group: | Abutments | Abutments | | Length: | | 15.5 m | | | |
|--|--------------------------------------|--------------------|--------------------|-----------|----------------|--------------|------------------|--------|--------------|
| Element Name: | Abutment W | /alls | S | | Width: | | | | |
| Location: | North/South | Ab | utments | | Height: | | 2.1 m | 1 | |
| Material: | Cast-in-plac | ес | oncrete | | Count: | | 2 | | |
| Element Type: | | | | | Total Quantity | / : | 65.1 Sq.m | | |
| Environment: | Moderate | | | | Limited Inspe | cti | on | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | | Units Exc. Good Fa | | Fair | Poor | Deficiencies | | | |
| Data: | Sq.m / m / each / % / all 0.0 | | 64.6 | | 0.5 | 0.0 | | | |
| Light honeycomb throu Medium vertical crack a portion of SW+SE wall) | at interface of | | | | | | | | ng in new |
| Recommended Work: | commended Work: | | Rehab | Replace | | M | intenance Needs: | | |
| | | | 1-5 years | 6-10 year | 'S | | Urgent | 1 year | 2 year |
| Element Group: | Embankmer | nte | & Strooms | | Length: | | | | |
| Element Name: | Streams and | | | | Width: | | | | |
| Location: | Otroanis and | u v v | atorways | | Height: | | | | |
| Material: | | | | | Count: | | 1 | | |
| Element Type: | | | | | Total Quantity | / : | 1 a | II | |
| Environment: | | | | | Limited Inspe | cti | on | | |
| Protection System: | | | | | | | • | • | Perform. |
| Condition | | Uni | ts | Exc. | Good | | Fair | Poor | Deficiencies |
| Data: | Sq.m/m/e | each | n / % / all | 1 | 0 | | 0 | 0 | |
| Comments: | | | | | | | | | |
| Recommended Work: | | I | Rehab | Replace | | M | aintenance | Needs: | |
| 1 | | | | | | | | | |

6-10 years

Urgent

1 year

2 year

1-5 years

| Element Group: | Embankme | nts & Streams | | Length: | | | | |
|---|--|---|---------------|--|----------------|-----------|------------------|----------------------|
| Element Name: | Embankme | nts | | Width: | | | | |
| Location: | All Four Qu | adrants | | Height: | | | | |
| Material: | | | | Count: | | 4 | | |
| Element Type: | | | | Total Quantity: 4 | | 4 ea | ach | |
| Environment: | | | | Limited Insp | I Inspection | | | |
| Protection System: | | | | | | | | Perform. |
| Condition | | Units | Exc. | Good | Fair | Fair Poor | | Deficiencie |
| Data: | Sq.m / m / 6 | each / % / all | 4 | 0 | 0 | | 0 | |
| 2019: New HDPE pipe South embankments | are steep due | to proximity of C | R-8. Vegetati | on overgrowth a | around rip-rap |). | | rners. |
| Recommended Work: | | Rehab | Replace | | Maintenan | ce l | | |
| | 1-5 years | | 6-10 yea | ars Urgent | | | 1 year | 2 year |
| | | r o youro | | | | | | |
| Flement Group: | Embankme | | | | | | ı you | |
| Element Group: | | nts & Streams | | Length: | | | ı you | |
| · | Embankme Slope Prote All Four Qu | nts & Streams | | Length: | | | , r you | 1 2 7000 |
| Element Name: | Slope Prote | nts & Streams | | Length: | | 4 | , r your | 12 yes. |
| Element Name: Location: | Slope Prote | nts & Streams ection adrants | | Length: Width: Height: | | 4 4 S | | 12 700. |
| Element Name: Location: Material: Element Type: | Slope Prote All Four Qu | nts & Streams ection adrants | | Length: Width: Height: Count: | y: | • | | |
| Element Name: Location: Material: Element Type: Environment: | Slope Prote All Four Qu | nts & Streams ection adrants | | Length: Width: Height: Count: Total Quanti | y: | • | | |
| Element Name: Location: Material: Element Type: Environment: | Slope Prote All Four Qu | nts & Streams ection adrants | Exc. | Length: Width: Height: Count: Total Quanti | y: | • | | Perform. |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Slope Prote All Four Qu Hand-laid ri | nts & Streams ection adrants p rap | | Length: Width: Height: Count: Total Quantit | y: ection | • | q.m | Perform. |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Slope Prote All Four Qu Hand-laid ri | nts & Streams ection adrants p rap Units | Exc. | Length: Width: Height: Count: Total Quantit Limited Insp | y: ection | • | q.m Poor | Perform. |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: | Slope Prote All Four Qu Hand-laid ri Sq.m / m / e | nts & Streams ection adrants p rap Units | Exc. | Length: Width: Height: Count: Total Quantit Limited Insp | y: ection | 4 S | q.m Poor 0 | Perform. Deficiencie |

| Element Group: | Retaining Wa | Retaining Walls | | Length: | 1.5 | m | |
|---|--|---|-----------|--|---------------------------|---------------|-----------------------|
| Element Name: | Walls | | | Width: | | | |
| Location: | 4 Quadrants | | | Height: | 2.3 | m | |
| Material: | Precast block | k | | Count: | 4 | | |
| Element Type: | | | | Total Quantity: | 13.8 | Sq.m | |
| Environment: | Moderate | | | | Limited Inspection | | |
| Protection System: | | | | | | l l | Perform. |
| Condition | ι | Jnits | Exc. | Good Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all 9.2 | | 4.6 | 0.0 | 0.0 | | |
| Comments: Light scaling on top fac | ce of precast b | locks was obse | rved. | | | | |
| Recommended Work: | | Rehab | Replace | Maintenanc | | e Needs: | |
| | 1-5 years | | 6-10 yea | | Urgent | 1 year | 2 year |
| | | | | | | | |
| Flement Group: | Annroaches | | | l ength: | 6.0 | m | |
| Element Group: | Approaches Wearing surf | face | | Length: | 6.0 | | |
| Element Name: | Wearing surf | | | Width: | 6.0 8.5 | | |
| Element Name: Location: | Wearing surf | | | Width: Height: | 8.5 | m | |
| Element Name: Location: Material: | Wearing surf | | | Width: Height: Count: | 8.5 | m | |
| Element Name: Location: | Wearing surf North/South Asphalt | | | Width: Height: Count: Total Quantity: | 8.5 2 102.0 | m | |
| Element Name: Location: Material: Element Type: Environment: | Wearing surf | | | Width: Height: Count: | 8.5 2 102.0 | m | Perform. |
| Element Name: Location: Material: Element Type: | Wearing surf North/South Asphalt Moderate | | Exc. | Width: Height: Count: Total Quantity: Limited Inspec | 8.5 2 102.0 | m | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Wearing surf North/South Asphalt Moderate | Approaches Jnits | Exc. 68.0 | Width: Height: Count: Total Quantity: | 8.5 2 102.0 | Sq.m | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Wearing surf North/South Asphalt Moderate | Approaches Jnits ach / % / all | 68.0 | Width: Height: Count: Total Quantity: Limited Inspec | 8.5 2 102.0 tion Fair | Sq.m | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Wearing surf North/South Asphalt Moderate L Sq.m / m / easion of shoulde | Approaches Jnits ach / % / all | 68.0 | Width: Height: Count: Total Quantity: Limited Inspector Good 34.0 RNER) | 8.5 2 102.0 tion Fair | Sq.m Poor 0.0 | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Repaved in 2019. Eros | Wearing surf North/South Asphalt Moderate L Sq.m / m / easion of shoulde | Approaches Units ach / % / all r in westbound | 68.0 | Width: Height: Count: Total Quantity: Limited Inspec Good 34.0 RNER) | 8.5 2 102.0 tion Fair 0.0 | Sq.m Poor 0.0 | |



Photograph 1: North approach (Looking South)



Photograph 2: Wearing surface at north approach (Looking South)





Photograph 3: Wearing surface over the structure (Looking East)



Photograph 4: West elevation (Looking Northeast)





Photograph 5: East elevation (Looking Northwest)



Photograph 6: Typical condition culvert barrel





Photograph 7: Typical condition of fascia (west end shown)



Photograph 8: Typical condition of deck soffit (East end shown)





Photograph 9: Abutment wall and deck soffit inside the structure



Photograph 10: Concrete patch in soffit near north abutment





Photograph 11: Typical Precast block retaining walls, rip rap and sub drains at embankments



Photograph 12: Watercourse east of structure





Photograph 13: Watercourse west of structure



Ontario Structure Inspection Manual - Inspection Form

Structure Number

| Inventory Data: | | |
|---|---|---|
| Structure Name | Merrick Creek Drain at Sixth Concession | on Road Culvert |
| Main Hwy/Road # | On X Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Sixth Concession Road (Holden Road) | |
| Structure Location | 0.25 km North from County Road 8 | |
| Latitude | 42° 11' 9.8" | Longitude -82° 59′ 0.4" |
| Owners | Town of Tecumseh | Heritage Not Consid: x Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Local x |
| MTO District | | Posted Speed 60 No. of Lanes 2 |
| Old County | | AADT 500 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Rigid Frame | Interchange Number |
| Total Deck Length | 6.3 m | Interchange Structure Number |
| Overall Str. Width | 15.0 m | Min. Vertical Clearance m |
| Total Deck Area | 94.5 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 6.5 m | Detour Length Around Bridge 10.6 km |
| Skew Angle | 0.0 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structure < 0.3 m |
| Span Lengths | Total = 5.5 (1) = 5.5; | m |
| Historical Data: | | |
| | 0007 | W. 40. W. 51.1 |
| Year Built | 2007 | Year of Last Major Rehab. |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Ir | nspection | Current Load Limit 5.0 |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / I | Description) | |
| Bridge replaced in 2007 | 7 | |

| Ontario | Structure | Inspection | Manual - | Inspection | Form |
|---------|-----------|------------|----------|------------|-------------|
| • | • | | | | . • |

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |
| | | |
| | | |
| | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Ontario Structure Inspection Manual - Inspection Form

Structure Number

| 1015 |
|------|
|------|

| Date of Inspection: June 26, 2024 Type of Inspection: x OSIM Enhanced OSIM Inspector: Monica Sokolski, E.I.T. (Dillon Consulting Limited) Others in Party: Stephen Strachan (Dillon Consulting Limited) Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: x Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x Detailed Coating Condition Survey: x Detailed Timber Investigation: x Post-Tensioned Strand Investigation: x Underwater Investigation: x Seismic Investigation: x Seismic Investigation: x Structure Evaluation: x | Field Inspection Information | tion: | | | | |
|--|------------------------------|---------------------------|-------------------------|---------------|--------------|----------|
| Inspector: Monica Sokolski, E.I.T. (Dillon Consulting Limited) Others in Party: Stephen Strachan (Dillon Consulting Limited) Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: x Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x Detailed Coating Condition Survey: x Detailed Timber Investigation: x Post-Tensioned Strand Investigation: x Underwater Investigation: x Seismic Investigation: x Seismic Investigation: x Seismic Investigation: x Structure Evaluation: x | Date of Inspection: | lune 26, 2024 | Type of Inspection: | Tylosim I I | Enhanced OS | NA |
| Others in Party: Stephen Strachan (Dillon Consulting Limited) Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: x Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x Detailed Coating Condition Survey: x Detailed Timber Investigation: x Detailed Timber Investigation: x Underwater Investigation: x Fatigue Investigation: x Seismic Investigation: x Structure Evaluation: x | Date of mapection. | June 20, 2024 | Type of mapection. | X OSIM | Lillanced Oc | 711VI |
| Access Equipment Used: Camera, Measuring tape, Measuring wheel, and Hammer Weather: Sunny Temperature: 28 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: x Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x Detailed Coating Condition Survey: x Detailed Timber Investigation: x Post-Tensioned Strand Investigation: x Underwater Investigation: x Seismic Investigation: x Seismic Investigation: x Structure Evaluation: x | Inspector: | Monica Sokolski, E.I.T. (| Dillon Consulting Limit | ted) | | |
| Weather: Sunny Temperature: 28 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: x Non-Destructive Delamination Survey of Asphalt-Covered Deck: x Concrete Substructure Condition Survey: x Detailed Coating Condition Survey: x Detailed Timber Investigation: x Post-Tensioned Strand Investigation: x Underwater Investigation: x Seismic Investigation: x Seismic Investigation: x Structure Evaluation: x | Others in Party: | Stephen Strachan (Dillor | n Consulting Limited) | | | |
| Temperature: 28 °C Additional Investigations Required: Priority None Normal Urgent Material Condition Survey Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: X Seismic Investigation: X Structure Evaluation: X | Access Equipment Used: | Camera, Measuring tape | e, Measuring wheel, ar | nd Hammer | | |
| Additional Investigations Required: Material Condition Survey | Weather: | Sunny | | | | |
| Material Condition Survey Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: Normal Urgent X V X V A V A V A V A V A V A V A V A V A V A V A V Seismic Investigation: X Structure Evaluation: V A V A V A V A V A V A V A V A V A V A V A V A V A V A V Structure Evaluation: V A V A V A V A V A V A V A V A V A V A V A V A V A V Structure Evaluation: V A V A V A V A V A V A V A V A V A V A V A V A V A V A V A V A V A Structure Evaluation: V A V | Temperature: | 28 °C | | | | |
| Material Condition Survey Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: Normal Urgent X V X V A V A V A V A V A V A V A V A V A V A V A V Seismic Investigation: X Structure Evaluation: V A V A V A V A V A V A V A V A V A V A V A V A V A V A V Structure Evaluation: V A V A V A V A V A V A V A V A V A V A V A V A V A V Structure Evaluation: V A V A V A V A V A V A V A V A V A V A V A V A V A V A V A V A V A Structure Evaluation: V A V | Additional Investigations | Doguirod | | _ | Driority | |
| Material Condition Survey Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: | Additional investigations | s Requirea: | | None | | Lirgent |
| Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: X X Structure Evaluation: X X X X X X X X X X X X X | | | | None | Nomai | Loideir |
| Detailed Deck Condition Survey: Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: X X Structure Evaluation: X X X X X X X X X X X X X | Material Condition Survey | | | | | |
| Non-Destructive Delamination Survey of Asphalt-Covered Deck: Concrete Substructure Condition Survey: Detailed Coating Condition Survey: Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: X X X Structure Evaluation: X X X X X X X X X X X X X | | ion Survev: | | Х | | Τ |
| Concrete Substructure Condition Survey: X Detailed Coating Condition Survey: X Detailed Timber Investigation: X Post-Tensioned Strand Investigation: X Underwater Investigation: X Fatigue Investigation: X Seismic Investigation: X Structure Evaluation: X | | | alt-Covered Deck: | Х | | |
| Detailed Coating Condition Survey: X Detailed Timber Investigation: X Post-Tensioned Strand Investigation: X Underwater Investigation: X Fatigue Investigation: X Seismic Investigation: X Structure Evaluation: X | | | | х | | |
| Detailed Timber Investigation: Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: X X X Structure Evaluation: X X X X X X X X X X X X X | | - | | Х | | |
| Post-Tensioned Strand Investigation: Underwater Investigation: Fatigue Investigation: Seismic Investigation: Structure Evaluation: X X X Structure Evaluation: X X | | • | | х | | |
| Underwater Investigation: Fatigue Investigation: Seismic Investigation: X Structure Evaluation: X X X | | | | х | | |
| Fatigue Investigation: X Seismic Investigation: X Structure Evaluation: X | | <u> </u> | | Х | | |
| Seismic Investigation: X Structure Evaluation: X | | | | Х | | |
| Structure Evaluation: x | | | | Х | | |
| | | | | Х | | |
| Monitoring | | | | | | |
| Monitoring of Deformations, Settlements and Movements: | | ations. Settlements and N | Novements: | Х | | |
| Monitoring Crack Widths: | | | | | | |
| Investigation Notes: | | | | • | | |
| | | | | | | |
| Overall Structure Notes: | Overall Structure Notes: | | | | | |
| Recommended Work on Structure: None x Maintenance Minor Rehab. Replace | Recommended Work on S | Structure: None | x Maintenance | Minor Rehab | ١. | Replace |
| Major Rehab. | | | | Major Rehab | | |
| Timing of Recommended Work: x 1 to 5 years 6 to 10 years | Timing of Recommended | Work: | x 1 to 5 years | 6 to 10 years | . | |
| Overall Comments: Severe erosion was observed at SE shoulder. Maintenance: route and seal | | | | | | and seal |
| (or repavement program), remove debris from water course and stabilize / repair embankments. | | (or repavement | nt program), remove d | | | |
| Date of Next Inspection: June 2026 | Date of Next Inspection: | June 2026 | | | | |

| Element Group: | Decks | | Length: | 6.3 | m | | |
|--------------------|----------------------------------|------|----------------|------|------|---|--------------|
| Element Name: | Wearing surface | | Width: | 6.5 | m | | |
| Location: | | | Height: | | | | |
| Material: | Asphalt | | Count: | | | | |
| Element Type: | | | Total Quantity | 41.0 | Sq.m | | |
| Environment: | Moderate | | Limited Inspec | tion | | | |
| Protection System: | | | | | • | | Perform. |
| Condition | Units | Exc. | Good | Fair | Pod | r | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 0.0 | 25.0 | 16.0 |) | |

Comments:

localized wearing surface deterioration at the structure limits. Very severe alligator cracking starting at N&S aproaches and extending toward midspan. Medium to severe edge cracking along E&W edges of pavement.

| Recommended Work: | Rehab | F | Replace | Ma | aintenand | ce N | leeds: | | |
|-------------------|-----------|---|------------|----|----------------------|------|-------------|-------|------------|
| | 1-5 years | 6 | 6-10 years | | Urgent | Х | 1 year | | 2 year |
| | | | | | earing surf aled. | ace | cracks shou | ld be | routed and |

| Element Group: | Culverts | Culverts L | | | m | |
|--------------------|----------------------------------|------------|--------------------|----------------------|------|--------------|
| Element Name: | Barrels - Soffit W | | Width: | 15.0 | m | |
| Location: | | | Height: | | | |
| Material: | Cast-in-place concrete | Count: | | | | |
| Element Type: | | 1 | | Total Quantity: 82.5 | | |
| Environment: | Benign | | Limited Inspection | | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 26.4 | 56.0 | 0.1 | 0.0 | |

Comments:

Light honeycombing was observed at the west end (0.3x0.1m)

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | |
| | | | | |

| Perform. |
|------------------------|
| Poor Deficiencie |
| 1.8 |
| |
| er flow observed below |
| s: |
| 1 |
| s: |
| s: |
| s: |
| |

| Element Group: | Culverts | Length: | 5.5 | m | | | |
|--------------------|----------------------------------|--------------------------------------|--------------------|------|---|------|--------------|
| Element Name: | Inlet/Outlet Components | | Width: | | | | |
| Location: | East/West Headwalls | East/West Headwalls | | | m | | |
| Material: | Cast-in-place concrete | Count: | 2 | | | | |
| Element Type: | Reinforced concrete | Total Quantity: | Quantity: 6.6 Sq.m | | | | |
| Environment: | Moderate | | Limited Inspect | tion | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | Sq.m / m / each / % / all 0.0 | | | | 0.0 | |
| Comments: | | | | | • | | • |

| Recommended Work: | Rehab | Replace | M | aintenance | N | leeds: | |
|-------------------|-----------|------------|---|------------|---|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | | 1 year | 2 year |
| | | | | | | | |
| | | | | | | | |

| Element Group: | Culverts | | | Length: | | 3.5 | m | | | | |
|--|---------------------|---------------------|-------|------------------|--|----------------------|---------------|-------|-----------------|--|--------------------------|
| Element Name: | Inlet/Outlet (| Components - Wi | ing | walls | Width: | | 0.3 m | | | | |
| Location: | North/South | | | | Height: | | 3.8 m | | | | |
| Material: | Cast-in-plac | e concrete | | | Count: | | 4 | | | | |
| Element Type: | | | | | Total Quantity: | | 53.2 | Sq.r | n | | |
| Environment: | Moderate | | | | Limited Inspec | tion | | | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | | Units | | Exc. | Good | Fa | ir | | Poor | | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | | 0.0 | 48.2 | 4.5 | , | | 0.5 | | |
| Comments: NW: Hairline crack with SW: Hairline crack with | | | | | | | | | | | |
| Recommended Work: | | Rehab | | Replace | | Mainte | nance | Ne | eds: | | |
| | | 1-5 years | | 6-10 years | S | Urge | ent | 1 | year | | 2 year |
| | | | | | | | | | | | |
| Element Group: | Embankmer | nts & Streams | | | Length: | | | | | | |
| Element Group: Element Name: | | nts & Streams | | | Length: | | | | | | |
| • | | | | | | | | | | | |
| Element Name: | | | | | Width: | | 2 | | | | |
| Element Name: Location: | | | | | Width: Height: | | 2 2 | all | | | |
| Element Name: Location: Material: | | | | | Width: Height: Count: | | | all | | | |
| Element Name: Location: Material: Element Type: | | | | | Width: Height: Count: Total Quantity: | | | all | | | Perform. |
| Element Name: Location: Material: Element Type: Environment: | Streams and | | | Exc. | Width: Height: Count: Total Quantity: | | 2 | all | Poor | | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Streams and | d Waterways Units | | Exc. | Width: Height: Count: Total Quantity: Limited Inspec | tion | 2 | all | Poor 1 | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Streams and | Units | er V | 0 | Width: Height: Count: Total Quantity: Limited Inspec | Fa 1 | 2 r | | 1 | | Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Streams and | Units | er vo | 0 | Width: Height: Count: Total Quantity: Limited Inspec Good 0 at inlet end. Wate | Fa 1 | ir bbserv | red f | 1 lowing thr | | Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Debris build up in the w | Streams and | Units ach / % / all | er V | 0 egatation a | Width: Height: Count: Total Quantity: Limited Inspec Good 0 at inlet end. Wate | Fai 1 er was d | 2 ir bbserv | red f | 1 lowing thr | | Deficiencies |

| Element Group: | Embankments & Streams | | | Length: | | | |
|---|--|-------------------------------|------------------------|--|---------------|--------------------------|-----------------------|
| Element Name: | Embankmen | its | | Width: | | | |
| Location: | | | | Height: | | | |
| Material: | | | | Count: | 6 | | |
| Element Type: | | | | Total Quantity | : 6 | each | |
| Environment: | | | | Limited Inspec | ction | | |
| Protection System: | | | | | | | Perform. |
| Condition | ı | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 0.0 | 0.0 | 4.0 | 2.0 | |
| Comments: Additional embankmen SW: Steep slope with f | | | ners. SE : Seve | ere erosion of the | e shoulder at | structure corn | er. |
| Recommended Work: | | Rehab | Replace | | Maintenance | e Needs: | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | x 2 year |
| Element Group: | Embankmer | its & Streams | | Length: | | | |
| Element Name: | | | | Width: | | | |
| | Slope protection | | | Wiatii. | | | |
| n ocation. | All Four Oua | drants | | Height: | | | |
| Location: Material: | All Four Qua | drants | | Height: | Δ | | |
| Material: | | | | Count: | 4 | each | |
| Material: Element Type: | All Four Qua | | | Count: Total Quantity | : 4 | each | |
| Material: Element Type: Environment: | | | | Count: | : 4 | each | Perform. |
| Material: Element Type: Environment: Protection System: | Hand laid rip | | Exc. | Count: Total Quantity | : 4 | each | Perform. Deficiencies |
| Material: Element Type: Environment: | Hand laid rip | orap Units | Exc. | Count: Total Quantity Limited Inspec | : 4 | | |
| Material: Element Type: Environment: Protection System: Condition Data: Comments: NW and SW: Unstable | Hand laid rip U Sq.m / m / ea / steep rip-rap | Units ach / % / all | 0 | Count: Total Quantity Limited Inspec | Fair 2 | Poor 0 | |
| Material: Element Type: Environment: Protection System: Condition Data: Comments: | Hand laid rip U Sq.m / m / ea / steep rip-rap | Jnits ach / % / all D. Rehab | 0 Replace | Count: Total Quantity Limited Inspec | Fair 2 | Poor 0 | Deficiencies |
| Material: Element Type: Environment: Protection System: Condition Data: Comments: NW and SW: Unstable | Hand laid rip U Sq.m / m / ea / steep rip-rap | Units ach / % / all | 0 | Count: Total Quantity Limited Inspec | Fair 2 | Poor 0 Pe Needs: 1 year | |

1015

| Element Group: | Signs | | | | Length: | | | | | | |
|--|---------------------|--------------------|------|--------------|-----------------------|-------|-----------------------|-----|---------------|--------|--------------|
| Element Name: | Signs | | | | Width: | | | | | | |
| Location: | | | | | Height: | | | | | | |
| Material: | | | | Count: | | 4 | | | | | |
| Element Type: | | | | | Total Quantity | : | 4 | ea | ch | | |
| Environment: | | | | | Limited Inspec | ctic | on | | | | |
| Protection System: | | | | | | | | | | \Box | Perform. |
| Condition | | Units | | Exc. | Good | | Fair | | Poor | 1 | Deficiencies |
| Data: | Sq.m/m/e | each / % / all | | 0 | 0 | | 4 | | 0 | | |
| Comments: | J | | | | • | | u u | | | | |
| Object markers at 4 cor | ners. Northw | vest sign had sigr | าร | of impact d | amage and was | ha | rd to see f | on | n road. | | |
| Recommended Work: | | Rehab | | Replace | | Ма | aintenance | e N | eeds: | \Box | |
| | | 1-5 years | | 6-10 year | S | | Urgent | | 1 year | | 2 year |
| | | | | | | | | | | | |
| Element Group: | Approaches | | | | Length: | | 6.0 | m | | | |
| Element Name: | Wearing Su | ırface | | | Width: | 6.5 m | | | | | |
| Location: | North/South | n Approaches | | | Height: | | | | | | |
| Material: | Asphalt (Ta | r and Chip) | | | Count: | 2 | | | | | |
| Element Type: | | | | | Total Quantity | •• | 78.0 | Sq | ı.m | | |
| Environment: | Moderate | | | | Limited Inspec | ctic | on | | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | | Units | | Exc. | Good | | Fair | | Poor | [| Deficiencies |
| Data: | Sq.m / m / 6 | each / % / all | | 0.0 | 10.0 | | 43.0 | | 25.0 | | |
| Comments: N: Severe alligator and structure edge and extens: S: Severe alligator crace | ending into th | ie approach weai | ring | g surface (6 | 3.2x1.5m) | | | | J | ing | at the |
| Recommended Work: | | Rehab | | Replace | | Ma | aintenance | e N | eeds: | | |
| | | 1-5 years | | 6-10 year | S | | Urgent | Х | 1 year | T | 2 year |
| | | | • | | | | earing surfa aled. | се | cracks should | d be | routed and |



Photograph 1: South approach (Looking North)



Photograph 2: North approach (Looking South)





Photograph 3: Cracking of asphalt pavement at interface of deck and south approach (Looking East)



Photograph 4: Edge cracking of wearing surface at north approach (Looking North)





Photograph 5: Severe erosion of the shoulder at the southeast embankment



Photograph 6: East elevation (Looking South)





Photograph 7: West elevation (Looking East)



Photograph 8: Typical condition of culvert barrel





Photograph 9: South abutment wall near west extent of structure, HDPE outlet with corrosion staining beneath (Looking South)



Photograph 10: North-west wing wall with efflorescent-stained vertical crack





Photograph 11: Watercourse on west side of structure (Looking West)



Photograph 12: Watercourse on east side of structure (Looking East)





Photograph 13: North-east embankment (Looking North)



Photograph 14: Watercourse and south-west embankment with debris impeding flow



| Inventory Data: | | |
|--|--|---|
| Structure Name | Collins Drain at Outer Drive Culvert | |
| Main Hwy/Road # | Outer Dr. On Under x | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Outer Drive | |
| Structure Location | At transition from Outer Drive connector | or (North of Talbot Road) to Outer Drive |
| Latitude | 42° 13' 58.7" | Longitude -82° 59' 3.8" |
| Owners | Town of Tecumseh | Heritage Not Consid: x Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Collector x Local |
| MTO District | | Posted Speed 50 No. of Lanes 3 |
| Old County | | AADT 3152 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Concrete Frame (Rigid/Non-Rigid) | Interchange Number |
| Total Deck Length | 3.6 m | Interchange Structure Number |
| Overall Str. Width | 40.4 m | Min. Vertical Clearance m |
| Total Deck Area | 145.8 sq. m | Special Transit Truck X Routes: School Bicycle |
| Roadway Width | 23.6 m | Detour Length Around Bridge 4.2 km |
| Skew Angle | 20.0 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structure 1.1 m |
| Span Lengths | Total = 3.1 (1) = 3.1; | m |
| Historical Date: | | |
| Historical Data: | | |
| Year Built | 1975 | Year of Last Major Rehab. 2005 |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Ir | nspection | Current Load Limit 5.0 |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | etion | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / I | Description) | |
| Repaired and extended | in 2005 for the Hwy #3 and Hwy 401 im | nprovements including jacketing of footings. |

| Ontario | Structure | Inspection | Manual - | Inspection | Form |
|----------|-----------|------------|-----------|-------------|---------|
| Unitario | Ju detale | mapechon | mailuai - | III3pection | 1 01111 |

| Scheduled Improvements: | |
|--------------------------|----------------------|
| Regional Priority Number | Programmed Work Year |
| Nature of Program Work: | |
| | |
| | |
| | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| Field Inspection Informati | on: | | | | |
|--|-----------------------|--|----------------|-------------|---------|
| Date of Inspection: | June 26, 2024 | Type of Inspectio | n: x OSIM | Enhanced OS | 3IM |
| Inspector: | Monica Sokolski, E.I. | T. (Dillon Consulting Li | mited) | | |
| Others in Party: | Stephen Strachan (D | illon Consulting Limited | 1) | | |
| Access Equipment Used: | Camera, Measuring t | ape, Measuring wheel, | and Hammer | | |
| Weather: | Sunny | | | | |
| Temperature: | 28.0 °C | | | | |
| Additional Investigations | Required: | | | Priority | |
| | | | None | Normal | Urgent |
| Material Condition Survey | | | | | |
| Detailed Deck Condition | on Survey: | | Х | | |
| Non-Destructive Delan | | phalt-Covered Deck: | Х | | |
| Concrete Substructure | | • | Х | | 1 |
| Detailed Coating Cond | | | Х | | |
| Detailed Timber Invest | | | Х | | 1 |
| Post-Tensioned Strand | - | | Х | | 1 |
| Underwater Investigation: | <u> </u> | | Х | | |
| Fatigue Investigation: | | | Х | | |
| Seismic Investigation: | | | Х | | |
| Structure Evaluation: | | | Х | | |
| Monitoring | | | | | _ |
| Monitoring of Deforma | tions, Settlements an | d Movements: | | | |
| Monitoring Crack Widt | hs: | | | Х | |
| Investigation Notes: Cracks at the deck soffit sh | all be moniotored for | degredation. | | | |
| Overall Structure Notes: | | | | | |
| Recommended Work on St | ructure: None | Maintenance | Minor Rehal | o | Replace |
| | | | x Major Rehal | Ο. | |
| Timing of Recommended W | /ork: | 1 to 5 years | x 6 to 10 year | S | |
| Overall Comments: | concrete p | nded rehabilitation worl atch repairs and crack of guidrail posts. | • | | |
| Date of Next Inspection: | June 2026 | <u> </u> | | | |
| = and content mopeoutern | 1000 2020 | | | | |

Element Data

| Element Group: | Decks | | | | Length: | | 3.6 | m | 1 | |
|--|---------------------|-----------------|-----|----------|--------------------|------------|-------------|-----|--------------|---------------|
| Element Name: | Wearing sur | face | | | Width: | | 23.6 | m | 1 | |
| Location: | Top of Deck | | | | Height: | | | | | |
| Material: | Asphalt | sphalt | | | | | | | | |
| Element Type: | | 7 | | | | / : | 85.0 Sq.m | | | |
| Environment: | Moderate | Moderate I | | | | cti | on | | | |
| Protection System: | | | | | | | | | • | Perform. |
| Condition | | Units Exc. | | | Good | | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | | 51.0 | 33.0 | | 0.0 | | 1.0 | |
| Comments: | | | | | • | • | | | | • |
| Road repaved in recent sealed (4x0.25m). | years. Sever | e transverse cr | ack | between | right turn merge l | an | e and nortl | hb | ound through | lane has been |
| Recommended Work: | | x Rehab | | Replace | | M | aintenanc | e l | Needs: | |
| | | 1-5 years | х | 6-10 yea | rs | | Urgent | | 1 year | 2 year |
| Replace deck waterpro | ofing in 6-10 y | years. | , | - | | | | | _ | - |

| Element Group: | Barriers | | Length: | 55.0 | m | |
|--------------------|----------------------------------|-------|-----------------|------|------|--------------|
| Element Name: | Railing System | | Width: | | | |
| Location: | West Road Edge | | Height: | | | |
| Material: | Steel | | Count: | | | |
| Element Type: | Single Rail (Steel Beam, and | Post) | Total Quantity: | 55.0 | m | |
| Environment: | Moderate | | Limited Inspec | tion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 55.0 | 7.0 | 0.0 | |
| | | | | | | |

Comments:

Light impact damage at south approach at the turn.

| Recommended Work: | Rehab | Replace | | Maintenance | | | |
|-------------------|-------------|------------|---------------|-------------|--|--|--------|
| | 1-5 years | 6-10 years | Urgent 1 year | | | | 2 year |
| | | _ | | | | | _ |
| | | | | | | | |

| Element Group: | Barriers | | | Length: | | | |
|--|--|---|-----------------|---|--------------------------------|------------------|-----------------------|
| Element Name: | Posts | | | Width: | | | |
| Location: | West Road I | Edge | | Height: | | | |
| Material: | Steel | | | Count: | 27 | | |
| Element Type: | | | | Total Quantity | : 27 | each | |
| Environment: | Moderate | | | Limited Inspec | tion | | |
| Protection System: | | | | - | | | Perform. |
| Condition | ı | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | ach / % / all | 0 | 27 | 0 | 0 | |
| Comments: | | | • | - | | | • |
| Eight (8) wood posts wi used. | th wood offse | ts, fifteen (15) s | teel posts with | n wood offsets, a | nd four (4) st | eel posts and pl | astic offsets are |
| Recommended Work: | | Rehab | Replace | | Maintenance | e Needs: | |
| | | 1-5 years | 6-10 year | 'S | Urgent | 1 year | 2 year |
| | | | | | | | |
| Flement Group: | Rarriere | | | I ength: | 75.0 | m | |
| Element Group: | Barriers | am. | | Length: | 75.0 | m | |
| Element Name: | Railing Syste | | | Width: | 75.0 | m | |
| Element Name: Location: | Railing Syste East Road E | | | Width: Height: | 75.0 | m | |
| Element Name: Location: Material: | Railing Syste East Road E Steel | dge | d Post) | Width: Height: Count: | | | |
| Element Name: Location: Material: Element Type: | Railing Syste East Road E Steel Single Rail (| | d Post) | Width: Height: Count: Total Quantity | : 75.0 | | |
| Element Name: Location: Material: Element Type: Environment: | Railing Syste East Road E Steel | dge | d Post) | Width: Height: Count: | : 75.0 | | Perform. |
| Element Name: Location: Material: Element Type: | Railing Syste East Road E Steel Single Rail (Moderate | dge | d Post) | Width: Height: Count: Total Quantity | : 75.0 | | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Railing Syste East Road E Steel Single Rail (Moderate | dge Steel Beam, and Units | Exc. | Width: Height: Count: Total Quantity Limited Inspec | : 75.0 | m | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Railing Syste East Road E Steel Single Rail (Moderate | dge Steel Beam, and Units | , | Width: Height: Count: Total Quantity Limited Inspec | : 75.0 ction | m Poor | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: | Railing Syste East Road E Steel Single Rail (Moderate | dge Steel Beam, and Units ach / % / all | Exc. | Width: Height: Count: Total Quantity Limited Inspec | : 75.0 ction | m Poor | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Railing Syste East Road E Steel Single Rail (Moderate | dge Steel Beam, and Units ach / % / all | Exc. 0.0 | Width: Height: Count: Total Quantity Limited Inspectors Good 75.0 | : 75.0 ction | Poor 0.0 | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Light impact damage at | Railing Syste East Road E Steel Single Rail (Moderate | Steel Beam, and Units ach / % / all | Exc. | Width: Height: Count: Total Quantity Limited Inspec | : 75.0 etion Fair 9.0 | Poor 0.0 | |

Repair elements in poor condition.

Element Data

| Element Group: | Barriers | | | Length: | | | |
|--|---------------|-----------------|-----------|----------------|---------------|----------|--------------|
| Element Name: | Posts | | | Width: | | | |
| Location: | East Road E | dge | | Height: | | | |
| Material: | Var. | | | Count: | 39 | | |
| Element Type: | | | | Total Quantity | / : 39 | each | |
| Environment: | Moderate | | | Limited Inspe | ction | | |
| Protection System: | | | | | | | Perform. |
| Condition | | Jnits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / e | ach / % / all | 0 | 34 | 4 | 1 | |
| Comments: Eight (8) wood posts wi offsets are used. NE Co were observed in the w | orner: One (1 |) wood post was | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenanc | e Needs: | |
| | | 1-5 years | 6-10 year | rs | x Urgent | 1 year | 2 year |

| Element Group: | Culverts | | Length: | 3.1 | m | |
|--------------------|----------------------------------|-----------------|---------------|-------|--------------|----------|
| Element Name: | Barrels - Soffit - New Section | | Width: | Var. | m | |
| Location: | East/West Ends | | Height: | | | |
| Material: | Cast-in-place concrete | | Count: | | | |
| Element Type: | Rigid R.C frame | Rigid R.C frame | | | Sq.m | |
| Environment: | Moderate | | Limited Inspe | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 0.0 | 68.2 | 0.0 | 0.0 | |

Comments:

Structure was extended by 22.0 m **E End**: 14.3m and; **W End**: 7.7m.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|-----------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | · · · · · |
| | | | | |

Element Data

| Element Group: | Culverts | | | | Length: | | 3.1 | m | | | |
|---|----------------------|-----------------------|------|-----------|---------------|------------|------------|-----|--------|----------|--------------|
| Element Name: | Barrels - Soff | t - Original Sec | tior | า | Width: | | 18.5 | m | | | |
| Location: | Intermediate | section | | | Height: | | | | | | |
| Material: | Cast-in-place | ast-in-place concrete | | | | | | | | | |
| Element Type: | Non-Rigid R.0 | Non-Rigid R.C frame | | | | / : | 57.4 | S | q.m | | |
| Environment: | Moderate | | | | Limited Inspe | cti | on | | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | U | Units Exc. | | | Good | | Fair | | Poor | [| Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | | 0.0 | 24.7 | | 21.8 | | 10.9 | | |
| Comments: Two (2) wide and (5) M previous works. W End | | | | | | | | | • | vere | sealed in |
| Recommended Work: | > | Rehab | | Replace | | М | aintenance | e N | leeds: | | |
| | | 1-5 years | х | 6-10 year | 'S | | Urgent | | 1 year | | 2 year |
| Monitor cracks. Concre | te repair in 6-1 | 0 years | | • | | | <u>.</u> | | • | <u>'</u> | • |

| Element Group: | Culverts | | Length: | 40.5 | m | |
|--------------------|----------------------------------|------|----------------------------|-------|--------------|----------|
| Element Name: | Barrels - Vertical Walls | | Width: | | | |
| Location: | North/South | | Height: 2.0 m | | | |
| Material: | Cast-in-place concrete | | Count: | 2 | | |
| Element Type: | Reinforced concrete | | Total Quantity: 162.0 Sq.m | | | |
| Environment: | Benign | | Limited Inspec | ction | х | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 38.9 | 119.1 | 2.0 | 2.0 | |

Comments:

Light scaling and light scour throughout, 2 wide cracks (injected) observed in wall. One (1) wide vertical crack was observed in the new footing jacket (0.8x0.25m). **N Wall:** Light delamination and 2 medium vertical cracks through jacketing observed.

| Recommended Work: | Х | Rehab | | Replace | Main | ntenance | Needs: | |
|------------------------------------|----|---------------|---|------------|------|----------|--------|--------|
| | | 1-5 years | х | 6-10 years | Ur | rgent | 1 year | 2 year |
| Monitor cracks. Concrete maintenan | се | in 6-10 years | | - | | - | | - |

Fair

0

Good

4

Poor

0

1016

Perform.

Deficiencies

Element Data

| Element Group: | Embankmer | nts & Streams | | Length: | | | | |
|--|---------------|----------------|---------------|--------------------|------------|------|------------------------------|--------------|
| Element Name: | Streams and | d Waterways | | Width: | | | | |
| Location: | | | | Height: | | | | |
| Material: | | | | Count: | 1 | | | |
| Element Type: | | | | Total Quantity | : 1 | all | | |
| Environment: | | | | Limited Inspec | | | | |
| Protection System: | | | | | | | | Perform. |
| Condition | | Units | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / e | each / % / all | 0 | 0 | 1 | | 0 | |
| Debris and overgrowth Recommended Work: | of vegetation | was observed i | n the waterwa | у. | Maintenanc | e Ne | eeds: | |
| | | 1-5 years | 6-10 year | 'S | Urgent | χ | 1 year | 2 year |
| | | | | | | | and complete he waterway. | regular |
| Element Group: | Embankmer | nts & Streams | | Length: | | | | |
| Element Name: | Embankmer | nts | | Width: | | | | |
| Location: | All Four Qua | adrants | | Height: | | | | |
| Material: | | | | Count: | 4 | ļ | | |
| Element Type: | | | | | : 4 | eac | :h | |
| Environment: | | | | Limited Inspection | | | • | · |

Comments:

Protection System:

Condition

Data:

Steep embankments. W End: 1.0m Dia. and 0.6m Dia. CSP drain into the embankment.

Units

Sq.m / m / each / % / all

| 6-10 years | Urgent | 1 vear | 2 year |
|------------|--------|--------|--------|
| | - 3 | . you. | 2 year |
| | | 1 your | z year |
| | | | |
| | | | |

Exc.

Element Data

| Element Group: | Embankments & | Streams | | Length: | | | | |
|---|------------------------------------|-----------------|-----------|--|------------|--------------|--------|--|
| Element Name: | Slope protection | | | Width: | | | | |
| Location: | All Four Quadrant | its | | Height: | | | | |
| Material: | | | | Count: | 4 | 4 | | |
| Element Type: | Hand laid Rip-Rap | р | | Total Quantity | r: 4 | each | | |
| Environment: | | | | Limited Inspec | ction | | | |
| Protection System: | | | | | | Perform. | | |
| Condition | Units Exc. | | Good | Fair | Poor | Deficiencies | | |
| Data: | Sq.m / m / each / % / all 0 | | 4 | 0 | 0 | | | |
| Comments: | -1 - | | • | | 1 | • | * | |
| Vegetation overgrowth. | • | | | | | | | |
| | | | Danlasa | | Maintenanc | o Noods: | | |
| Recommended Work: | : Re | ehab | Replace | | wantenanc | e Necus. | | |
| Recommended Work: | | enab 5 years | 6-10 year | rs | Urgent | 1 year | 2 year | |
| | 1 | | | | 1 | | 2 year | |
| Element Group: | Signs | | | Length: | 1 | | 2 year | |
| Element Group: | 1 | | | Length: Width: | 1 | | 2 year | |
| Element Group: Element Name: Location: | Signs Signs | | | Length: | 1 | 1 year | 2 year | |
| Element Group: Element Name: Location: Material: | Signs Signs | | | Length: Width: Height: | Urgent | 1 year | 2 year | |
| Element Group: Element Name: Location: Material: Element Type: | Signs Signs All four corners | | | Length: Width: Height: Count: Total Quantity | Urgent 3 | 1 year | 2 year | |
| Element Group: Element Name: Location: Material: Element Type: Environment: | Signs Signs All four corners | | | Length: Width: Height: Count: | Urgent 3 | 1 year | 2 year | |
| Element Group: Element Name: | Signs Signs All four corners | 5 years | | Length: Width: Height: Count: Total Quantity | Urgent 3 | 1 year | | |

Two (2) hazard marker signs and one (1) yield sign were observed to be in good condition. **NE and SE Corners**: no marker signs present.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|---------------------|--------|
| | 1-5 years | 6-10 years | Urgent x 1 year | 2 year |
| | | • | Add object markers. | • |
| | | | | |

Element Data

| Element Group: | Approaches | Approaches | | | m | |
|--------------------|--|----------------------|-----------------|------|------|--------------|
| Element Name: | Wearing surface | Wearing surface | | | m | |
| Location: | North/South Approach | North/South Approach | | | | |
| Material: | Asphalt | Asphalt | | | | |
| Element Type: | | Total Quantity: | 283.2 | Sq.m | | |
| Environment: | Moderate | | Limited Inspect | ion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all 169.9 | | 109.3 | 0.0 | 4.0 | |
| Comments: | | | | | | |

Road repaved in recent years. Severe transverse crack between right turn merge lane and northbound through lane on both approaches has been sealed (6x0.25m). Medium pot hole at end of south approach (0.3 x 0.3 m)

| Recommended Work: | Rehab | Replace | Maintenance | e Needs: | |
|-------------------|-----------|------------|-------------|----------|--------|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year |
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 ye |
| | | | | | |
| | | | | | |



Photograph 1: South Approach (Looking Southwest)



Photograph 2: North approach (Looking Northeast)





Photograph 3: South approach (Looking East)



Photograph 4: Centreline of the road wearing surface approximately at mid span of the structure





Photograph 5: E.B.L wearing surface (Looking Northeast)



Photograph 6: Pavement joint between the deck and approach wearing surfaces (Looking Northeast)





Photograph 7: Wearing surface over the structure (Looking Northwest)



Photograph 8: Settled, rotated post of railing system at the northeast quadrant of structure (Looking Northeast)





Photograph 9: Missing hazard marker sign at northeast quadrant of structure (Looking Southwest)



Photograph 10: East elevation (Looking North)





Photograph 11: Culvert barrel, showing the non-rigid original section of the culvert with jacketed footings, as well as the new rigid frame section extension (Looking Northwest)



Photograph 12: Typical delamination, and epoxy injected cracks with staining along soffit within the original section of the culvert





Photograph 13: Typical stained medium to wide cracks throughout the soffit (Looking Northwest)



Photograph 14: Cracks extending from the culvert soffit to the abutments





Photograph 15: Watercourse at west extent of culvert (Looking West)



Photograph 16: Watercourse at east extent of structure (Looking Southeast)



Structure Number

| 1 | Λ21 | |
|---|------------|--|
| | | |

| Inventory Data: | | | | | | | |
|--|--|---|--|--|--|--|--|
| Structure Name | Pike Creek at Twelfth Concession Roa | d Culvert | | | | | |
| Main Hwy/Road # | On x Under | Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other | | | | | |
| Hwy/Road Name | Twelfth Concession Road (closed to tra | Twelfth Concession Road (closed to traffic - walking path) | | | | | |
| Structure Location | Pike Creek at Twelfth Concession Roa | Pike Creek at Twelfth Concession Road (South of Baseline Road in Pike Creek Park) | | | | | |
| Latitude | 42° 15' 1.4" | Longitude -82° 52' 58.7" | | | | | |
| Owners | Town of Tecumseh | Heritage Not Consid: Cons/not App. List/n.d. Designation Desig./not list Desig & List | | | | | |
| MTO region | | Road Class: Freeway Arterial Local x | | | | | |
| MTO District | | Posted Speed N/A No. of Lanes 1 | | | | | |
| Old County | | AADT 0 % Trucks | | | | | |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence | | | | | |
| Structure Type | Corrugated Steel Pipe Arch | Interchange Number | | | | | |
| Total Deck Length | 6.5 m | Interchange Structure Number | | | | | |
| Overall Str. Width | 11.8 m | Min. Vertical Clearance | | | | | |
| Total Deck Area | 76.7 sq. m | Special Transit Truck Routes: School Bicycle | | | | | |
| Roadway Width | 3.7 m | Detour Length Around Bridge N/A km | | | | | |
| Skew Angle | 0.0 Degrees | Direction of Structure N/S | | | | | |
| No. of Spans | 1.0 | Fill on Structure 0.6 m | | | | | |
| Span Lengths | Total = 6.5 (1) = 6.5; | m | | | | | |
| Historical Data: | | | | | | | |
| Year Built | 1965 | Year of Last Major Rehab. | | | | | |
| Last OSIM Inspection | 2022 | Last Evaluation | | | | | |
| Last Enhanced OSIM Ir | nspection | Current Load Limit | | | | | |
| Enhanced Access Equi (ladder, boat, lift, etc.) | | Load Limit By-Law # | | | | | |
| Last Underwater Inspec | ction | By-Law Expiry Date | | | | | |
| Last Condition Survey | | | | | | | |
| Rehab History: (Date / | Description) | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| Ontario | Structure | Inspection | Manual - | Inspection | Form |
|---------|-----------|------------|----------|------------|-------------|
| • | • | | | | . • |

Structure Number

| Scheduled Improvements: | | | |
|--------------------------|---|----------------------|---|
| Regional Priority Number | | Programmed Work Year | |
| Nature of Program Work: | | | - |
| | | | |
| | | | |
| | | | |
| | _ | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| 1 | ∩21 | |
|-----|------|--|
| - 1 | UZ I | |

| Field Inspection Informat | tion: | | | | | |
|--|--------------|-----------------|--|--|----------|---------------|
| Date of Inspection: | June 27, 2 | 2024 | Type of Inspection | n: x OSIM | Enhanced | OSIM |
| Inspector: | Monica So | okolski, E.I.T. | . (Dillon Consulting Lir | mited) | | |
| Others in Party: | Stephen S | Strachan (Dill | on Consulting Limited | l) | | |
| Access Equipment Used: | Camera, N | Measuring tap | pe, Measuring wheel, | and Hammer | | |
| Weather: | ther: Sunny | | | | | |
| Temperature: 28.0 °C | | | | | | |
| | <u>I</u> | | | | | |
| Additional Investigations | Required | : | | | Priority | |
| | | | | None | Normal | Urgent |
| Material Condition Survey | | | | | | |
| Detailed Deck Conditi | on Survey: | | | Х | | |
| Non-Destructive Delamination Survey of Asphalt-Covered Deck: | | | | Х | | |
| Concrete Substructure Condition Survey: | | | | Х | | |
| Detailed Coating Con | | | | Х | | |
| Detailed Timber Inves | | - , | | Х | | |
| Post-Tensioned Stran | | ation: | | Х | | |
| Underwater Investigation: | | | | Х | | |
| Fatigue Investigation: | | | | Х | | |
| Seismic Investigation: | | | | Х | | |
| Structure Evaluation: | | | | Х | | |
| Monitoring | | | | • | • | • |
| Monitoring of Deforma | ations, Sett | lements and | Movements: | | Х | |
| Monitoring Crack Wid | | | | Х | | |
| Investigation Notes: Monitor the deformation of | the CSPA | section. | | | | |
| Overall Structure Notes: | | | | | | |
| Recommended Work on S | tructure: | None | x Maintenance | Minor Re | hab. | Replace |
| | | <u> </u> | _ | Major Re | hab. | _ |
| Timing of Recommended Work: x 1 to 5 years 6 to 10 years | | | | | | |
| Overall Comments: | | Maintenance | observed along faste e: improve the erosion ments and install obje | eners at top of C n protection at the | CSPA. | f the culvert |
| Date of Next Inspection: | | June 2026 | and motali obje | Jot markoro. | | |
| שמוב טו ואפאנ ווואףפטנוטוו. | June 2026 | | | | | |

Element Data

| Element Group: | Decks | | Length: | 6.5 | i m | |
|-------------------------------------|----------------------------------|----------------------|------------------|---------------|----------|--------------|
| Element Name: | Wearing surface | | Width: | 3.7 | ' m | |
| Location: | | | Height: | | | |
| Material: | Compacted granular | Compacted granular (| | | | |
| Element Type: | | . 3 | | | Sq.m | |
| Environment: | Severe | | | | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 24.0 | 0.0 | 0.0 | |
| Comments: It was observed that a | n extra 300mm of fill was ac | ded to the ori | ginal 300mm (new | v cover = 600 | 0 mm). | |
| Recommended Work | : Rehab | Replace | · | Maintenanc | e Needs: | |
| Neccommended Work | | | | | | |

| Element Group: | Culverts | Length: | 6.5 | m | | |
|--------------------|----------------------------------|-------------|----------------|-------|------|--------------|
| Element Name: | Barrels | Barrels W | | | m | |
| Location: | | Height: | 3.5 | m | | |
| Material: | Corrugated steel | Count: | 1 | | | |
| Element Type: | Pipe Arch | Pipe Arch 1 | | 180.0 | Sq.m | |
| Environment: | Moderate | | Limited Inspec | tion | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units Exc. | | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 163.0 | 12.0 | 5.0 | |

Comments

Medium deformation was observed along fasteners at top of CSPA. Bolts are missing in a few locations. Light corrosion was observed above spring line.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | |
|-------------------|-----------|------------|--------------------|----------|
| | 1-5 years | 6-10 years | Urgent 1 year | 2 year |
| | | | | <u>,</u> |
| | | | | |
| | | | | |

| Element Group: | Embankmen | Embankments & Streams | | | | | | |
|-------------------------|---------------|-----------------------|-----------|----------------|------------|-------|--------|--------------|
| Element Name: | Streams and | Waterways | | Width: | | | | |
| Location: | | Н | | Height: | | | | |
| Material: | | C | | Count: | 2 | | | |
| Element Type: | | | | Total Quantity | : 2 | 2 all | | |
| Environment: | | | | Limited Inspec | ction | | | |
| Protection System: | | | | | | • | | Perform. |
| Condition | U | Jnits | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / e | ach / % / all | 0 | 0 | 2 | | 0 | |
| Comments: | | | | | | • | | |
| Signs of erosion of dov | vnstream bank | s. | | | | | | |
| | | | | | | | | |
| Recommended Work | : | Rehab | Replace | | Maintenanc | e N | Needs: | |
| | | 1-5 years | 6-10 year | °S | Urgent | | 1 year | x 2 year |
| | <u> </u> | | | | | | • | |
| | | | | | | | | |
| | | | | | l . | | | |

| Element Group: | Embankments & Streams | Embankments & Streams | | | | |
|---------------------|----------------------------------|-----------------------|-------------------|------|------|--------------|
| Element Name: | Embankments | Embankments | | | | |
| Location: | ŀ | | Height: | | | |
| Material: | C | | Count: 5 | | | |
| Element Type: | Т | | Total Quantity: | 5 | each | |
| Environment: | | | Limited Inspect | ion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 0 | 5 | 0 | |
| Comments: | | | | | | |
| Steep embankments v | with signs of erosion. Large co | ncrete piece | es at each corner | | | |
| | | | | | | |

| Recommended Work: | Rehab | Replace | М | aintenanc | e N | leeds: | | | |
|-------------------|-----------|------------|----|-------------|-----|-----------|------|-----|----------|
| | 1-5 years | 6-10 years | | Urgent | | 1 year | | х | 2 year |
| | | | CI | lear debris | an | d Improve | eros | ion | control. |

| Element Group: | Signs | Signs | | | | | | | | |
|--|----------------|------------------|----------------|-----------------------|-------|-------------|----|--------------|-------|--------------|
| Element Name: | Signs | Signs | | | | | | | | |
| Location: | | I | | | | | | | | |
| Material: | | | | Count: | | 0 | | | | |
| Element Type: | | | | Total Quantit | y: | 0 € | ea | ch | | |
| Environment: | | | | Limited Inspe | ectio | on | | | | |
| Protection System: | | | | | | | | | | Perform. |
| Condition | L | Jnits | Exc. | Good | | Fair | | Poor | [| Deficiencies |
| Data: | Sq.m / m / e | ach / % / all | 0 | 0 | | 0 | | 0 | | |
| Comments: No sign present. Object equipment. | t marker signs | s should be inst | alled as the p | oath is still utilize | ed b | y maintenar | nc | e vehicles a | nd fa | ırm |
| Recommended Work: | | Rehab | Replace | | Ma | aintenance | N | leeds: | | |
| | | 1-5 years | 6-10 year | rs | Х | Urgent | | 1 year | | 2 year |
| | <u>-</u> | | | | Ins | stall signs | | | , | |



Photograph 1: North approach (Looking North)



Photograph 2: South approach (Looking South)





Photograph 3: Looking west from top of culvert



Photograph 4: East elevation





Photograph 5: West elevation



Photograph 6: Culvert barrel (Looking West)





Photograph 7: Typical condition along spring line



Photograph 8: North spring line (Looking West)





Photograph 9: Medium deformation in culvert barrel



Photograph 10: Typical condition of culvert barrel soffit





Photograph 11: Watercourse inlet at east end of structure (Looking South)



Photograph 12: Watercourse outlet at west end of structure (Looking Northwest)



| _ | | | |
|------|--------|-------|-----|
| C+r. | ucture | Nium | hor |
| JUL | JCLUIE | Nulli | nei |

| Inventory Data: | | |
|---|-------------------------------------|---|
| Structure Name | Townline Road Drain at Eighth Conce | ssion Road Bridge |
| Main Hwy/Road # | On > | x Crossing Navig. Water Non-Navig. x Ped. Type: Rail Road Other |
| Hwy/Road Name | Eighth Concession Road | |
| Structure Location | At intersection with County Road 8 | |
| Latitude | 42° 10' 56.3" | Longitude -82° 57' 0.4" |
| Owners | Town of Tecumseh | Heritage Not Consid: x Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Local x |
| MTO District | | Posted Speed Not Posted No. of Lanes 2 |
| Old County | | AADT 426 % Trucks |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Corrugated Steel Pipe Arch | Interchange Number |
| Total Deck Length | 3.1 m | Interchange Structure Number |
| Overall Str. Width | 25.5 m | Min. Vertical Clearance m |
| Total Deck Area | 79.1 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | 11.0 m | Detour Length Around Bridge 9.3 km |
| Skew Angle | 0.0 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structure 0.6 m |
| Span Lengths | Total = 3.1 (1) = 3.1; | m |
| Historical Data: | | |
| | 2242 | W |
| Year Built | 2012 | Year of Last Major Rehab. |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Ir | | Current Load Limit |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / | Description) | |
| | | |
| | | |
| | | |

| Ontario | Structure | Inspection | Manual - | Inspection | Form |
|---------|-----------|------------|----------|------------|-------------|
| • | • | | | | . • |

Structure Number

| Scheduled Improvements: | | | |
|--------------------------|---|----------------------|---|
| Regional Priority Number | | Programmed Work Year | |
| Nature of Program Work: | | | - |
| | | | |
| | | | |
| | | | |
| | _ | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

Structure Number

| 7 | $\overline{}$ | 7 | 4 | |
|---|---------------|-----|----|--|
| 7 | () | () | 11 | |

| Field Inspection Informati | ion: | | | | | | | |
|------------------------------|--------------|----------------|------------|---------------------|---------------|-----------|--------------|----------|
| Date of Inspection: | June 26, 2 | 2024 | Тур | e of Inspection: | x OSIM | En | hanced OS | IM |
| Inspector: | Monica So | kolski, E.I.T. | . (Dillon | Consulting Limit | ed) | | | |
| Others in Party: | Stephen S | (Dillon Cons | sulting I | Limited) | | | | |
| Access Equipment Used: | Camera, N | leasuring tap | pe, Mea | asuring wheel, an | d Hammer | | | |
| Weather: | Sunny | | | | | | | |
| Temperature: | 28.0 °C | | | | | | | |
| | | | | | | | | |
| Additional Investigations | Required | : | | | | | Priority | |
| | | | | | None | Э | Normal | Urgent |
| Material Condition Survey | | | | | | | | |
| Detailed Deck Condition | on Survey: | | | | Х | | | |
| Non-Destructive Delar | | | halt-Co | vered Deck: | Х | | | |
| Concrete Substructure | | | | | Х | | | |
| Detailed Coating Cond | dition Surve | ey: | | | Х | | | |
| Detailed Timber Invest | | - | | | Х | | | |
| Post-Tensioned Strand | | ation: | | | Х | | | |
| Underwater Investigation: | | <u> </u> | | | Х | | | |
| Fatigue Investigation: | | | | | Х | | | |
| Seismic Investigation: | | | | | Х | | | |
| Structure Evaluation: | | | | | Х | | | |
| Monitoring | | | | | | <u> </u> | | |
| Monitoring of Deforma | tions Sett | lements and | Mover | nents: | | | Х | |
| Monitoring Crack Widt | | lements and | MOVEII | ients. | х | | | |
| Investigation Notes: | 113. | | | | ^ | | | |
| Deformations and settleme | nt of the C | SP section s | should t | pe monitored. | | | | |
| Ownell Otherstone Neters | | | | | | | | |
| Overall Structure Notes: | | | | | | | | |
| Recommended Work on St | ructure: | None | x Mai | intenance | Minor R | ehab. | Х | Replace |
| | | | | | Major R | ehab. | | |
| Timing of Recommended V | Vork: | | 1 tc | 5 years | x 6 to 10 y | /ears | | |
| Overall Comments: | | Wearing surf | | ndition over culv | | | ounding asp | halt on |
| | | | | sion. Asphalt resu | | | | |
| | | reconstruction | on proje | ect or with culvert | replaceme | nt. Spall | ing of grout | around |
| | | | | et and outlet sho | | | | |
| | | | | ır vegetation duri | | | | |
| | | Deformation | ne ehoul | ld be monitored, | in order to c | latarmin | a if ranlaca | mont is |
| | | | | years. Headwalls | | | | |
| | | | | eterioration progr | | ing want | 3 3 Tould be | Topiacca |
| Date of Next Inspection: | | June 2026 | -3.5 11 00 | c.o.ioiation progi | | | | |
| שענט טו וזיסאנ וווסטסטנוטוו. | | JULIU ZUZU | | | | | | |

Structure Number

2001

Element Data

| Decks | | | | Length: | | 3.1 | m | 1 | |
|---------------------|---|--|---|--|---|---|--|---|---|
| Wearing surf | ace | | | Width: | | 11.0 | m | 1 | |
| Top of Deck | | | | Height: | | | | | |
| Asphalt | | | | Count: | | | | | |
| | | | | Total Quantity | / : | 34.1 | S | q.m | |
| Moderate | | | | Limited Inspe | cti | on | | | |
| | | | | | | | | • | Perform. |
| Un | its | | Exc. | Good | | Fair | | Poor | Deficiencies |
| Sq.m / m / e | ach / % / all | | 0.0 | 28.6 | | 5.0 | | 0.5 | |
| acking with pi | eces of asph | nalt | t broken of | f was observed | (2 | .5x2m) | | | |
| | Rehab | х | Replace | | M | laintenance | e l | Needs: | |
| | | | | | | | | | |
| | Wearing surf Top of Deck Asphalt Moderate Un Sq.m / m / ea | Wearing surface Top of Deck Asphalt Moderate Units Sq.m / m / each / % / all eacking with pieces of asph | Wearing surface Top of Deck Asphalt Moderate Units Sq.m / m / each / % / all acking with pieces of asphalt | Wearing surface Top of Deck Asphalt Moderate Units Exc. Sq.m / m / each / % / all 0.0 acking with pieces of asphalt broken of | Wearing surface Top of Deck Asphalt Count: Total Quantity Moderate Units Exc. Good Sq.m / m / each / % / all Cacking with pieces of asphalt broken off was observed | Wearing surface Top of Deck Asphalt Count: Total Quantity: Moderate Units Exc. Good Sq.m / m / each / % / all acking with pieces of asphalt broken off was observed (2) | Wearing surface Top of Deck Asphalt Count: Total Quantity: 34.1 Moderate Limited Inspection Units Exc. Good Fair Sq.m / m / each / % / all 0.0 28.6 5.0 Facking with pieces of asphalt broken off was observed (2.5x2m) | Wearing surface Top of Deck Asphalt Count: Total Quantity: 34.1 S Moderate Limited Inspection Units Exc. Good Fair Sq.m / m / each / % / all acking with pieces of asphalt broken off was observed (2.5x2m) | Wearing surface Top of Deck Asphalt Count: Total Quantity: 34.1 Sq.m Moderate Limited Inspection Units Exc. Good Fair Poor Sq.m / m / each / % / all 0.0 28.6 5.0 0.5 |

| Element Group: | Culverts | | Length: | 25.5 | m | |
|--------------------|----------------------------------|-----------------|----------------|------|------|--------------|
| Element Name: | Barrels | Width: | 3.1 | m | | |
| Location: | | | Height: | 1.8 | m | |
| Material: | Corrugated steel | | Count: | 1 | | |
| Element Type: | Pipe Arch | Total Quantity: | 200.0 | Sq.m | | |
| Environment: | Benign | | Limited Inspec | tion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 175.0 | 15.0 | 10.0 | |

Comments:

Transverse culvert joints distorted and leaking, medium corrosion at springline, and severe corrosion below outlet pipes in barrel walls. Apparent sagging in top of culvert under roadway.

| Recommended Work: | Rehab | Х | Replace | Maintenance Needs: | | | |
|--|-----------|-----|---------------------|--------------------|--------------|----------|----------|
| | 1-5 years | Х | 6-10 years | | Urgent | 1 year | x 2 year |
| Based on joint deformations, corrosic should be accounted for in 6-10 year | | ing | culvert replacement | М | onitor defor | mations. | |

Element Data

| Element Group: | Culverts | | Length: | 8.7 | m | | |
|--------------------|----------------------------------|---------------------------|----------------|-------|---|-----|--------------|
| Element Name: | Inlet Component | Inlet Component | | | m | | |
| Location: | West Inlet | | Height: | | | | |
| Material: | | | Count: | 1 | | | |
| Element Type: | Pre-cast concrete blocks | Total Quantity: 20.9 Sq.m | | | | | |
| Environment: | Moderate | | Limited Inspec | ction | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Р | oor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 14.9 | 3.5 | 2 | 2.5 | |

Comments:

Headwalls were backfileld incorrectly (filled with bricks). Very severe spalling was observed above the CSP inlet and has progressed. Separation of units and cracking of grout, appear to be rotating (in plan view). South block full depth crack. Erosion behind headwall.

| Recommended Work: | Rehab | х | Replace | Ма | aintenance | Needs: | |
|--------------------------------------|-----------|---|------------|----|-----------------------|-------------|-----------|
| | 1-5 years | х | 6-10 years | Х | Urgent | 1 year | 2 year |
| Replace headwall and retaining walls | | | | | out void spa d CSP | ice between | headwalls |

| Element Group: | Culverts | | Length: | 8.7 | m | |
|--------------------|----------------------------------|-----------------------|----------------|------|------|--------------|
| Element Name: | Outlet Component | Outlet Component | | | m | |
| Location: | East Outlet | | Height: | ht: | | |
| Material: | | | Count: | 1 | | |
| Element Type: | Pre-cast concrete blocks | Total Quantity | : 20.9 | | | |
| Environment: | Moderate | | Limited Inspec | tion | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 14.9 | 3.5 | 2.5 | |

Comments:

Headwalls were not backfileld correctly, void space is filled with bricks. Very Severe spalling of grout and mortar with loss of stone was observed from the CSP outlet and has progressed. Joint separation of units and cracking of grout.

| Recommended Work: | Rehab | х | Replace | N | laintenance | | |
|--------------------------------------|-----------|---|------------|---|-------------------------|------------|-----------|
| | 1-5 years | Х | 6-10 years | х | Urgent | 1 year | 2 year |
| Replace headwall and retaining walls | 3 | | • | | rout void spa nd CSP | ce between | headwalls |

Structure Number

2001

| Element Group: | Embankmen | nts & Streams | ; | Length: | | | |
|--|--|--|------------|--|-------------------|--------|-----------------------|
| Element Name: | Streams and | d Waterways | | Width: | | | |
| Location: | | | | Height: | | | |
| Material: | | | | Count: | 1 | | |
| Element Type: | | | | Total Quantity: | 1 | all | |
| Environment: | | | | Limited Inspec | tion | | |
| Protection System: | | | | | | | Perform. |
| Condition | Ur | nits | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 0 | 1 | 0 | 0 | |
| Comments: | Ţ | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | | |
| | | 1-5 years | 6-10 years | S | Urgent | 1 year | 2 year |
| | | | | | | | |
| | | _ | | | | | |
| Element Group: | Embankmen | nts & Streams | | Length: | | | |
| Element Group: Element Name: | Embankmen Embankmen | | } | Length: | | | |
| | | nts | 3 | | | | |
| Element Name: | Embankmen | nts | 3 | Width: | 4 | | |
| Element Name: Location: | Embankmen | nts | ; | Width: Height: | | each | |
| Element Name: Location: Material: | Embankmen | nts | 3 | Width: Height: Count: | 4 | | |
| Element Name: Location: Material: Element Type: | Embankmen | nts | 3 | Width: Height: Count: Total Quantity: | 4 | | Perform. |
| Element Name: Location: Material: Element Type: Environment: | Embankmen All Four Qua | nts | Exc. | Width: Height: Count: Total Quantity: | 4 | | Perform. Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Embankmen All Four Qua | nts adrants nits | | Width: Height: Count: Total Quantity: Limited Inspec | 4 tion | each | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Embankmen All Four Qua Un Sq.m / m / ea | nts adrants nits ach / % / all | Exc. | Width: Height: Count: Total Quantity: Limited Inspec Good 0 | tion Fair 4 | Poor 0 | Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Steep vegetated embar | Embankmen All Four Qua Un Sq.m / m / ea | nts adrants nits ach / % / all | Exc. | Width: Height: Count: Total Quantity: Limited Inspec Good 0 at each corner. S | tion Fair 4 | Poor 0 | Deficiencies |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Steep vegetated embar 8 roadway. | Embankmen All Four Qua Un Sq.m / m / ea | nts adrants nits ach / % / all rip-rap erosio | Exc. 0 | Width: Height: Count: Total Quantity: Limited Inspec Good 0 at each corner. S | Fair 4 SE embankm | Poor 0 | Deficiencies |

Structure Number

2001

| Element Group: | Embankment | s & Streams | | Length: | | | |
|------------------------|---------------|---------------------|------------|-----------------------|--------------|---------------|--------------|
| Element Name: | Slope Protect | ion | | Width: | | | |
| Location: | All Four Quad | Irants | | Height: | | | |
| Material: | | | | Count: | 4 | | |
| Element Type: | | | | Total Quantity | : 4 | each | |
| Environment: | | | | Limited Inspec | tion | | |
| Protection System: | | | | | | | Perform. |
| Condition | Unit | S | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / ea | ch / % / all | 0 | 4 | 0 | 0 | |
| Comments: | | · | | | | · | |
| Vegetation overgrowth. | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenanc | e Needs: | |
| | | 1-5 years | 6-10 years | S | Urgent | x 1 year | 2 year |
| | | | | | Clear vegeta | tion as requi | red. |
| | | | | | | | |
| | | | | | | | |
| Element Group: | Signs | | | Length: | | | |
| Element Name: | Signs | | | Width: | | | |

| Element Group: | Signs | | Length: | | | | |
|--------------------------|---------------------------|------|------------------|------|----|------|--------------|
| Element Name: | Signs | | Width: | | | | |
| Location: | | | Height: | | | | |
| Material: | | | Count: | 1 | | | |
| Element Type: | Stop Sign | | Total Quantity: | 1 | ea | ach | |
| Environment: | | | Limited Inspecti | on | | | |
| Protection System: | | | | | 1 | | Perform. |
| Condition | Units | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 1 | 0 | | 0 | |
| Comments: | | | | | | | • |
| Sign located at the inte | ersection at wood post. | | | | | | |

| Recommended Work: | Rehab | Replace | M | aintenanc | | | | | | | |
|-------------------|-----------|------------|----|-----------------------------------|-----|----------|----------------|--------|--|--|--|
| | 1-5 years | 6-10 years | | Urgent | Х | 1 year | | 2 year | | | |
| | | - | In | Install object markers to improve | | | | rove | | | |
| | | | rc | adside saf | ety | at south | south corners. | | | | |

Structure Number

2001

Element Data

| Element Group: | Length: | 6.0 | m | | | |
|--------------------|----------------------------------|----------------------------|-------|------|------|--------------|
| Element Name: | Wearing Surface | Width: | 11.0 | m | | |
| Location: | North/South Approaches | Height: | | | | |
| Material: | Asphalt | Count: 2 | | | | |
| Element Type: | | Total Quantity: 132.0 Sq.m | | | | |
| Environment: | Moderate | Limited Inspec | ction | | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 49.0 | 78.0 | 5.0 | |

Comments:

S: Medium to wide edge and alligator cracking, sealed. Settlement and erosion at SE corner.

| Recommended Work: | Х | Rehab Replace Mair | | | | aintenance Needs: | | | | |
|--|---|--------------------|---|------------|--|-------------------|--|--------|--------|--|
| | | 1-5 years | х | 6-10 years | | Urgent | | 1 year | 2 year | |
| Wearing surface condition over culvert is typical of surrounding asphalt on CR8 & 8th Concession.reconstruction project. | | | | | | | | | | |

N: Medium to severe edge cracking and medium transverse joint crack extending entire road width, sealed .



Photograph 1: North approach



Photograph 2: Wearing surface at south approach (Looking East)





Photograph 3: Alligator cracking of wearing surface at southeast quadrant (Looking West)



Photograph 4: East elevation with excessive vegetation (Looking North)





Photograph 5: West elevation with excessive vegetation (Looking North)



Photograph 6: Headwall joint with severe spalling of grout, signs of precast wall unit movement (typ.)



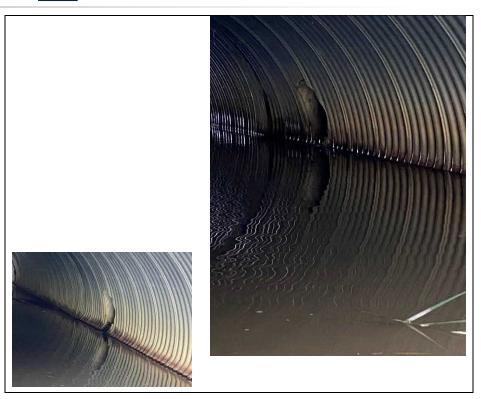


Photograph 7: Typical condition of the culvert barrel



Photograph 8: Typical transverse joint deformation and light to medium corrosion along the waterline





Photograph 9: Severe corrosion below outlet pipe in culvert wall



Photograph 10: Waterway, embankments and vegetation (Looking East)





Photograph 11: Waterway, embankments and vegetation (Looking West)



| Inventory Data: | | |
|--|--|--|
| Structure Name | Lakewood Park Pedestrian Bridge | |
| Main Hwy/Road # | On Under | Crossing Navig. Water Non-Navig. Ped. X Type: Rail Road Other |
| Hwy/Road Name | Manning Road (County Road 19) / Little | le River Blvd. |
| Structure Location | Lakewood Park over Lakewood Park 0 | Channel |
| Latitude | 42° 19' 18.948" N | Longitude 82° 52' 3.252" W |
| Owners | Town of Tecumseh | Heritage Not Consid: Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Collector Local |
| MTO District | | Posted Speed n/a No. of Lanes n/a |
| Old County | | AADT n/a % Trucks n/a |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Bowstring Pratt Truss | Interchange Number |
| Total Deck Length | 23.8 m | Interchange Structure Number |
| Overall Str. Width | 3.7 m | Min. Vertical Clearance m |
| Total Deck Area | 88.1 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | N/A m | Detour Length Around Bridge N/A km |
| Skew Angle | 0 Degrees | Direction of Structure E/W |
| No. of Spans | 1.0 | Fill on Structure 0 m |
| Span Lengths | Total = 23.8 (1) = 23.8 | m |
| Historical Date: | | |
| Historical Data: | | |
| Year Built | 2016 | Year of Last Major Rehab. |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Ir | nspection | Current Load Limit 8100.0 kg |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / I | Description) | |
| | | |
| | | |
| | | |

| Ontario Structure Insp | ection Manual - Inspection Form | Structure Number | | | | | |
|--------------------------|---------------------------------|----------------------|--|--|--|--|--|
| Scheduled Improvement | ents: | | | | | | |
| Regional Priority Number | ег | Programmed Work Year | | | | | |
| Nature of Program Worl | K: | | | | | | |
| Appraisal Indices: | | Comments | | | | | |
| Fatigue | 0.00 | | | | | | |
| Seismic | 0.00 | | | | | | |
| Scour | 0.00 | | | | | | |
| Flood | 0.00 | | | | | | |
| Geometrics | 0.00 | | | | | | |
| Barrier | 0.00 | | | | | | |

0.00

0.00

Curb

Load Capacity

| | _ | | | | |
|---------|-----------|------------|----------|------------|------|
| Ontario | Structura | Inspection | Manual - | Inspection | Form |
| | | | | | |

Structure Number

| 1 |
|---|
|---|

| Field inspection informa | ition: | | | | |
|---------------------------|-----------------------|-----------------------------|----------|-------------|-------------|
| Date of Inspection: | June 27, 2024 | Type of Inspection: | x OSIM | Enhanced OS | SIM |
| Inspector: | Monica Sokolski, E.I | T. (Dillon Consulting Limit | ed) | | |
| Others in Party: | Stephen S. (Dillon C | onsulting Limited) | | | |
| Access Equipment Used: | Camera, Measuring | tape, Measuring wheel, an | d Hammer | | |
| Weather: | Sunny | | | | |
| Temperature: | 28 °C | | | | |
| Additional Investigation | s Required: | | | Priority | |
| rtaattional invooligation | o resquirou. | | None | Normal | Urgent |
| | | | | • | |
| Material Condition Survey | | | | | |
| Detailed Deck Condit | • | | Х | | |
| | • | sphalt-Covered Deck: | Х | | |
| Concrete Substructur | | | Х | | |
| Detailed Coating Cor | · | | | Х | |
| Detailed Timber Inve | 3 | | X | | |
| Post-Tensioned Stra | nd Investigation: | | X | | |
| Underwater Investigation: | | | Х | | |
| Fatigue Investigation: | | | Х | | |
| Seismic Investigation: | | | Х | | |
| Structure Evaluation: | | | X | | |
| Monitoring | | | | 1 | 1 |
| <u> </u> | ations, Settlements a | nd Movements: | Х | | |
| Monitoring Crack Wid | dths: | | Х | | |
| Investigation Notes | | | | | |

Investigation Notes:

The recommendation for a Detailed Coating Condition Survey to should be confirmed during the next inspection.

| Overall Structure Notes: | | | | |
|--------------------------------|----------------|---|-------------------------|----------------|
| Recommended Work on Structure: | None | Minor Rehab. | Major Rehab. | x Replace |
| Timing of Recommended Work: | | 1 to 5 years | x 6 to 10 years | |
| Overall Comments: | observed to ha | ystem for the floor systen ave failed and the corros tions are recommended If in six to ten years. | ion of those members ha | as progressed. |
| Date of Next Inspection: | June 2026 | | | |

Structure Number

| • | | |
|---|--|--|
| | | |
| | | |

| Element Group: | Decks | | | | Length: | 23.5 | m | | |
|--|--------------------------------|----------------|---------|----------------|-----------------|---------------|------------|---------|---------------|
| Element Name: | Deck top | Deck top | | | | 3.0 | m | | |
| Location: | Top of Deck | Top of Deck | | | Height: | | | | |
| Material: | Wood Plank | Wood Planks | | | Count: | | | | |
| Element Type: | | | | Total Quantity | y : 70.5 | 70.5 Sq.m | | | |
| Environment: | Moderate | | | Limited Inspe | ction | | | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | Units | | | Exc. | Good | Fair | Poor | | Deficiencies |
| Data: | Sq.m / m / 6 | each / % / all | | 32.9 | 27.6 | 10.0 | 0 | .0 | |
| Comments: Light surface rust on al tripping hazard. Mediur | | • | | | | with the conc | rete and | could b | e a potential |
| Recommended Work: | Recommended Work: Rehab x Repl | | Replace | | Maintenanc | e Needs | : : | | |
| | | 1-5 years | Х | 6-10 yea | irs | x Urgent | 1 yea | ar | 2 year |
| | | | | - | | Re-fasten th | reshold p | olates. | |

| Element Group: | Barriers | | | | Length: | | | | | | |
|--------------------|-------------------|----------------|---|----------------------|---------|----|------------|-----|--------|---|--------------|
| Element Name: | Posts | Posts | | | Width: | | | | | | |
| Location: | North/South edges | | | Height: | | | | | | | |
| Material: | Steel | | | Count: | | 22 | 22 | | | | |
| Element Type: | | | | Total Quantit | y: | 22 | 22 each | | | | |
| Environment: | Benign | | | Limited Inspection | | | | | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | | Units | | Exc. | Good | | Fair | | Poor | [| Deficiencies |
| Data: | Sq.m / m / c | each / % / all | | 15 | 7 | | 0 | | 0 | | |
| Comments: | | | | | | | | | | | |
| Recommended Work: | | Rehab | Х | Replace | | N | laintenanc | e N | leeds: | | |
| | | 1-5 years | x | 6-10 year | s | | Urgent | | 1 year | | 2 year |

Structure Number

1

Element Data

| Element Group: | Barriers L | | | | Length: | | 23.5 | | | |
|--------------------|---------------------|---------------|---|-----------------------|----------------|--------|-----------|--------|--|--------------|
| Element Name: | Hand Railings | | | | Width: | | | | | |
| Location: | North/South edges | | | Height: | | | | | | |
| Material: | Steel | Steel | | | Count: | | 2.0 | | | |
| Element Type: | | | | Total Quantity | / : | 47.0 m | | | | |
| Environment: | Benign | | | | Limited Inspec | ctio | n | | | |
| Protection System: | | | | | | | | | | Perform. |
| Condition | | Units | | Exc. | Good | | Fair | Poor | | Peficiencies |
| Data: | Sq.m / m / e | ach / % / all | | 32.0 | 15.0 | | 0.0 | | | |
| Comments: | | | | | | | | | | |
| Recommended Work: | | Rehab | Х | Replace | | Ma | intenance | Needs: | | |
| | | 1-5 years | х | 6-10 years | S | | Urgent | 1 year | | 2 year |
| | | | | | | | | | | |

| Element Group: | Beams/MLE's | | Length: | 3.5 | m | |
|--------------------|----------------------------------|----------------|-----------------|-------|------|--------------|
| Element Name: | Floor Beams | Width: | 51 | mm | | |
| Location: | | Height: | 152 | mm | | |
| Material: | Steel | Count: | 12 | | | |
| Element Type: | HSS 152 x 51 x 6.4 | Total Quantity | / : 17.1 | Sq.m | | |
| Environment: | Moderate | | Limited Inspe | ction | | |
| Protection System: | | | | | | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0.0 | 12.1 | 5.0 | 0.0 | |

Comments:

Light corrosion observed througout all faces of floor beams with a higher concetration on the bottom and at weld connections to stringers and wind bracing. Section loss should be confirmed in areas of coating failure.

| Recommended Work: | Rehab | х | Replace | N | laintenanc | | |
|-------------------|--------------|---|------------|---|-------------|--------|--------|
| | 1-5 years | х | 6-10 years | | Urgent | 1 year | 2 year |
| | _ | | _ | | | | _ |
| | | | | | | | |

Structure Number

| Element Group: | Beams/MLE | E's | | | Length: | 2.4 | 4 n | <u> </u> | | | |
|---|---|---|---|-----------|--|----------------------------|------------------------|----------------------------------|--|--|--|
| Element Name: | Stringer | | | | Width: | 5 | 1 n | nm | | | |
| Location: | | | | | Height: | 15 | 2 n | 2 mm | | | |
| Material: | Steel | | | | Count: | 1 | | | | | |
| Element Type: | HSS 152 x | 51 x 6.4 | | | Total Quantity | / : 10 | 0 е | ach | | | |
| Environment: | Moderate | | | | Limited Inspe | ction | | | | | |
| Protection System: | | | | | | | | | Perform. | | |
| Condition | | Units | | Exc. | Good | Fair | | Poor | Deficiencie | | |
| Data: | Sq.m / m / c | each / % / all | | 0 | 50 | 40 | | 10 | | | |
| Recommended Work: Rehab x Replace | | | | | Maintenan | | | Needs: | | | |
| | | | | | | | | | | | |
| Recommended Work | | | | | | | | | | | |
| | 1-5 years x 6-10 years Urgent 1 year | | | | | | 1 vear | 2 year | | | |
| | | | | | | | | | | | |
| Element Group: | Trusses/Arc | ches | | | Length: | 23 | 5 n | | | | |
| • | | | | | Length: | | 5 n | 1 | | | |
| Element Name: | Trusses/Ard Top Chords North/South | 3 | | | Width: | 15 | | n nm | | | |
| Element Name: Location: | Top Chords | 3 | | | | 15 | 2 n | n nm | | | |
| Element Name: Location: Material: | Top Chords North/South | s n Edges | | | Width: Height: | 15 15 | 2 n 2 n 2 | n nm | | | |
| Element Name: Location: Material: Element Type: | Top Chords North/South Steel | s n Edges | | | Width: Height: Count: | 15 15 7: 28 | 2 n 2 n 2 | n nm nm | | | |
| Element Name: Location: Material: Element Type: Environment: | Top Chords North/South Steel HSS 152 x | n Edges | | | Width: Height: Count: Total Quantity | 15 15 7: 28 | 2 n 2 n 2 | n nm nm | Perform. | | |
| Element Name: Location: Material: Element Type: Environment: | Top Chords North/South Steel HSS 152 x | n Edges | | Exc. | Width: Height: Count: Total Quantity | 15 15 7: 28 | 2 n 2 n 2 | n nm nm | Perform. Deficiencie | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: | Top Chords North/South Steel HSS 152 x Benign | 152 x 6.4 | | Exc. 19.4 | Width: Height: Count: Total Quantity Limited Inspe | 15 15 7: 28 ction | 2 n 2 n 2 | n nm nm Sq.m | | | |
| Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Top Chords North/South Steel HSS 152 x Benign | n Edges 152 x 6.4 Units each / % / all | | | Width: Height: Count: Total Quantity Limited Inspe | /: 28 ction Fair | 2 n 2 n 2 | n nm nm Gq.m | | | |
| Material: Element Type: Environment: Protection System: Condition | Top Chords North/South Steel HSS 152 x Benign Sq.m / m / 6 | n Edges 152 x 6.4 Units each / % / all | x | | Width: Height: Count: Total Quantity Limited Inspe | /: 28 ction Fair | 2 m 2 m 2 6 S | nnm nm Sq.m Poor 0.0 | | | |

Structure Number

1

| Element Group: | Trusses/Arch | russes/Arches | | | | 23.5 | 23.5 m | | | |
|--------------------------------------|--|-----------------|------|----------|----------------|-----------------|--------------|----------|--|--|
| Element Name: | Bottom Chor | ds | | | Width: | 152 | mm | | | |
| Location: | North/South | Edges | | | Height: | 152 | mm | | | |
| Material: | Steel | | | | Count: | 2 | | | | |
| Element Type: | HSS 152 x 1 | 52 x 6.4 | | | Total Quantity | <i>r</i> : 28.6 | Sq.m | | | |
| Environment: | rironment: Moderate Limited Inspection | | | | | | | | | |
| rotection System: | | | | | | | | Perform. | | |
| Condition | | | Exc. | Good | Fair | Poor | Deficiencies | | | |
| Data: | Sq.m / m / e | ach / % / all | | 13.3 | 15.3 | 0.0 | 0.0 | | | |
| Comments: Light corrossion at cen | itre of north ch | ord on bottom f | ace. | _ | | | | | | |
| Recommended Work | : | Rehab | х | Replace | | Maintenance | e Needs: | | | |
| | 1-5 years | | х | 6-10 yea | rs | Urgent | 1 year | 2 year | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Element Group: | Trusses/Arcl | hes | | | Length: | Va | ries | m | |
|--------------------|---------------------|-------------------|-----------|---------|---------|--------------------|--------|--------|--------------|
| Element Name: | Verticals | | | | Width: | | 51 | mm | |
| Location: | North/South | lorth/South Edges | | | Height: | | 76 | mm | |
| Material: | Steel | teel | | | | | 24 | | |
| Element Type: | HSS 76x51x | HSS 76x51x4.8 | | | | ': ´ | 10.5 | Sq.m | |
| Environment: | Moderate | oderate | | | | Limited Inspection | | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | | Units | | Exc. | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / e | ach / % / all | | 4.9 | 5.6 | 0.0 | | | |
| Comments: | | | | | | | | | |
| Recommended Work: | | Rehab | Х | Replace | | Mainten | ance | Needs: | |
| | 1-5 years × 6-10 y | | 6-10 year | S | Urgen | t | 1 year | 2 year | |

Structure Number

1

Element Data

| Element Group: | Trusses/Arches | | | Length: | Varies | m | | | |
|--------------------|----------------------------------|----------------|-----------------------|---------|-------------|----------|--------------|--|--|
| Element Name: | Diagonals | | | Width: | 51 | mm | | | |
| Location: | North/South Edges | | | Height: | 51 | mm | | | |
| Material: | Steel | | | Count: | 16 | | | | |
| Element Type: | HSS 51x51x4.8 | | Total Quantity | : 10.0 | Sq.m | | | | |
| Environment: | Moderate | Limited Inspec | ction | | | | | | |
| Protection System: | | | | | | | | | |
| Condition | Units | | Exc. | Good | Fair | Poor | Deficiencies | | |
| Data: | Sq.m / m / each / % / all | 4.7 | 5.3 | 0.0 | 0.0 | | | | |
| Recommended Work: | Rehab | 1,, | Panlaga | | Maintenanc | n Noodo | | | |
| Recommended work: | Renab | Х | Replace | | waintenance | e Neeas: | | | |
| | 1-5 years | Х | 6-10 year | S | Urgent | 1 year | 2 year | | |
| | | | | | | | | | |
| Element Group: | Bracing | | | Length: | 4.1 | m | | | |

| Element Group: | Bracing | | Length: | 4.1 | m | | |
|--------------------|----------------------------------|-------------------------|--------------------|------|----|------|--------------|
| Element Name: | Wind Bracing | Width: | 51 | m | | | |
| Location: | Undeside of Deck | Height: | 51 | m | | | |
| Material: | Steel | Count: | 10 | | | | |
| Element Type: | HSS 51 x 51 x 4.8 | Total Quantity: 10 each | | | ch | | |
| Environment: | Moderate | | Limited Inspection | | | | |
| Protection System: | | | | | | | Perform. |
| Condition | Units Exc. | | Good | Fair | | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 6 | 4 | | 0 | |

Comments:

Light to medium corrosion was observed at weld locations. Section loss should be confirmed in areas of coating failure.

| Recommended Work: | | Rehab | х | Replace | M | aintenance l | | |
|-------------------|------------------------|-------|------------|---------------|---|--------------|--------|----|
| | 1-5 years × 6-10 years | | 6-10 years | Urgent 1 year | | 1 year | 2 year | |
| | | • | | - | | | _ | =' |
| | | | | | | | | |

Structure Number

1

| Element Group: | Coating | | | Length: | | | | | |
|--|--|-------------------|-----------------|--------------------|---------------|--------|---------------|-----------------|--|
| Element Name: | Railings | | | Width: | | m | | | |
| Location: | North/South | Edges | | Height: | | m | | | |
| Material: | | | | Count: | | | | | |
| Element Type: | | | | Total Quantity | y: 47. | 0 m | | | |
| Environment: | Moderate | | | Limited Inspe | ction | | | | |
| Protection System: | | | | | | | | Perform. | |
| Condition | | Units | Exc. | Good | Fair | | Deficiencies | | |
| Data: | Sq.m / m / e | each / % / all | 0 | 36 | 11.0 | | 0 | | |
| Comments: | | | • | 1 | | | | 1 | |
| Localized damage and | corrosion ob | served on severa | I railing picke | ets. | | | | | |
| Recommended Work: | | ce N | eeds: | | | | | | |
| | Recommended Work:RehabxReplace1-5 yearsx6-10 yea | | | | | | 1 year | 2 year | |
| | | | | | Urgent | | | , | |
| | | | | | | | | | |
| | | | | | | | | | |
| Element Group: | Coating | | | Length: | | | | | |
| Element Name: | Floor Beam | s and Stringers | | Width: | Width: m | | | | |
| Location: | Undeside of | f Deck | | Height: | | m | | | |
| Material: | | | | Count: | | | | | |
| Element Type: | | | | Total Quantity | y: 11 | 6 m2 | 2 | | |
| Environment: | Moderate | | | Limited Inspe | ction | | | | |
| Protection System: | | | | | | | | Perform. | |
| Condition | | Units | Exc. | Good | Fair | | Poor | Deficiencies | |
| Data: | Sq.m / m / c | each / % / all | 0 | 0 | 30.0 | | 86 | | |
| Comments: | | | * | • | • | - | | • | |
| The coating system was to be in poor condition t | | have failed. Floo | or beam coat | ing generally fair | to poor cond | dition | . Stringer co | oating observed | |
| Recommended Work: | | Rehab | x Replace | | Maintenand | | | | |
| | | 1-5 years | x 6-10 year | | | 1 year | 2 year | | |
| | | | | | Urgent | | J | 1 , , | |
| | | | | | 1 | | | | |

Structure Number

Element Data

| Element Group: | Coating | | | Length: | | | | | | | |
|--|---------------------|---------------|---|----------------|----------------|--------------|------|---------------|-------------|--|--|
| Element Name: | Truss Memb | ers | | | Width: | | m | | | | |
| Location: | North/South | Edges | | | Height: | m | | | | | |
| Material: | | | | | | | | | | | |
| Element Type: | | | | | Total Quantity | r: 77.7 | m | 2 | | | |
| Environment: | Moderate | | | Limited Inspec | ction | | | | | | |
| Protection System: | ction System: | | | | | | | Perform. | | | |
| Condition | Units Exc. | | | Good | Fair | | Poor | Deficiencies | | | |
| Data: | Sq.m / m / e | ach / % / all | | 0 | 57.7 | 20 | 20 0 | | | | |
| Comments: | • | | | | | | | | | | |
| Coating on Truss memb (Powder coating) is non | | | | | | e bottom cho | ord. | The coating s | system used | | |
| Recommended Work: | | Rehab | Х | Replace | | Maintenand | e N | leeds: | | | |
| | | 1-5 years | Х | 6-10 year | 'S | Urgent | | 1 year | 2 year | | |
| | | | | | | | | | | | |

| Element Group: | Coating | | Length: | | | | |
|--------------------|----------------------------------|---|----------------|-----------|------|--------------|--|
| Element Name: | Wind Bracing | | Width: | | m | | |
| Location: | Undeside of Deck | | Height: | Height: m | | | |
| Material: | | | Count: | | | | |
| Element Type: | | | | | m2 | | |
| Environment: | Moderate | | Limited Inspec | ction | | | |
| Protection System: | | | | | | Perform. | |
| Condition | Units Exc | | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 0 | 4.5 | 2 | 1 | | |

Comments:

The coating system was observed to have failed. Wind Bracing coating generally in fair condition, except at weld locations it was observed to be in poor condition.

| Recommended Work: | | Rehab | х | Replace | M | aintenance | N | leeds: | |
|-------------------|------------------------|-------|------------|---------------|---|------------|--------|--------|---|
| | 1-5 years x 6-10 years | | 6-10 years | Urgent 1 year | | 1 year | 2 year | | |
| | | | | - | | | | • | - |
| | | | | | | | | | |

Structure Number

1

| Element Group: | Foundations | | | Length: | | | | |
|--------------------|------------------------|----------------|-----------|----------------|--------------|--------------------|--------------|--|
| Element Name: | Reinforced c | oncrete caison | | Width: | 1.2 | 1.2 m | | |
| Location: | East/West E | East/West Ends | | | 2.5 | m | | |
| Material: | Cast-in-place concrete | | | Count: | 4 | | | |
| Element Type: | | | | Total Quantity | <i>r</i> : 4 | each | | |
| Environment: | Moderate | | | Limited Inspec | ction | x | | |
| Protection System: | | | | | | | Perform. | |
| Condition | ı | Jnits | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / ea | ach / % / all | 0 4 0 0 | | | | | |
| Comments: | | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenanc | Maintenance Needs: | | |
| | | 1-5 years | 6-10 year | rs | Urgent | 1 year | 2 year | |
| | | | | | | | | |

| Element Type: Total Qualification Environment: Limited In Protection System: Condition Units Exc. Good Data: Sq.m / m / each / % / all 0 1 Comments: Comments: 0 0 1 | | Poor 0 | Perform. Deficiencies |
|--|------------------------------|--------|-----------------------|
| Material: Count: Element Type: Total Qual Environment: Limited In Protection System: Condition Units Exc. Good Data: Sq.m / m / each / % / all 0 1 Comments: Comments: 0 0 1 | pection Fair | Poor | |
| Element Type: Total Qualification Environment: Limited In Protection System: Condition Units Exc. Good Data: Sq.m / m / each / % / all 0 1 Comments: Comments: 0 0 1 | pection Fair | Poor | |
| Environment: Limited In Protection System: Condition Units Exc. Good Data: Sq.m / m / each / % / all 0 1 Comments: Comments: 0 0 1 | pection Fair | Poor | |
| Condition Units Exc. Good Data: Sq.m / m / each / % / all 0 1 | Fair | | |
| Condition Units Exc. Good Data: Sq.m / m / each / % / all 0 1 Comments: | | | Perform. Deficiencies |
| Data: Sq.m / m / each / % / all 0 1 Comments: | | | Deficiencies |
| Comments: | 0 | 0 | |
| | | | |
| Stagnant water, no flow. | | | |
| | | | |
| Recommended Work: Rehab Replace | B Replace Maintenance Needs: | | |
| 1-5 years 6-10 years | Urgent | 1 year | 2 year |
| | | | |

Structure Number

1

| Element Group: | Embankme | ents & Streams | | Length: | | | |
|--|-------------------------|-----------------------------------|-------------|---|--------------|--------------|---|
| Element Name: | Embankme | ents | | Width: | | | |
| Location: | All Four Qu | ıadrants | | Height: | | | |
| Material: | | | | Count: | 2 | | |
| Element Type: | | | | Total Quanti | ty: 2 | each | |
| Environment: | Moderate | | | Limited Insp | ection | | |
| Protection System: | | | | | | | Perform. |
| Condition | | Units | Exc. | Good | Fair | Poor | Deficiencie |
| Data: | Sq.m / m / | each / % / all | 2 | 0 | 0 | 0 | |
| Recommended Work | : | Rehab | Replace | | Maintenance | Needs: | |
| | | | | | | | |
| necommended work | | 1-5 years | 6-10 yea | ırs | Urgent | 1 year | 2 year |
| | Truck contract | | 6-10 yea | | Urgent | 1 year | 2 year |
| Element Group: | | ents & Streams | 6-10 yea | Length: | Urgent | 1 year | 2 year |
| Element Group: Element Name: | Embankme Slope prote | ents & Streams | []6-10 yea | Length: Width: | Urgent | 1 year | 2 year |
| Element Group: Element Name: Location: | | ents & Streams | 6-10 yea | Length: Width: Height: | | 1 year | 2 year |
| Element Group: Element Name: Location: Material: | Slope prote | ents & Streams | []6-10 yea | Length: Width: Height: Count: | 2 | | 2 year |
| Element Group: Element Name: Location: Material: Element Type: | | ents & Streams | []6-10 yea | Length: Width: Height: Count: Total Quanti | 2 ty: 2 | 1 year | 2 year |
| Element Group: Element Name: Location: Material: Element Type: Environment: | Slope prote | ents & Streams | []6-10 yea | Length: Width: Height: Count: | 2 ty: 2 | | |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: | Slope prote | ents & Streams | | Length: Width: Height: Count: Total Quanti Limited Insp | ty: 2 ection | each | Perform. |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Slope prote | ents & Streams ection iprap Units | Exc. 2 | Length: Width: Height: Count: Total Quanti | 2 ty: 2 | | |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: | Slope prote | ents & Streams ection iprap | Exc. | Length: Width: Height: Count: Total Quanti Limited Insp | ty: 2 ection | each Poor | Perform. |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: | Slope prote | ents & Streams ection iprap Units | Exc. | Length: Width: Height: Count: Total Quanti Limited Insp | ty: 2 ection | each Poor | Perform. |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: | Hand laid r | ents & Streams ection iprap Units | Exc. | Length: Width: Height: Count: Total Quanti Limited Insp | ty: 2 ection | each Poor 0 | Perform. |

Structure Number

|--|

| Element Group: | Approaches | | | Length: | | 3.7 ו | m | 8. | 1 m | | |
|--|----------------------|---------------|------------|------------|-----------------|--------|--------------------|----|--------------|-----|------------------|
| Element Name: | Approach Slabs | | | Width: | | 3.0 m | | | | | |
| Location: | East/West Approach | | | Height: | | 0.25 ı | m | | | | |
| Material: | Cast-in-place | concrete | | | Count: | | 2 | | | | |
| Element Type: | | | | | Total Quantity | y: | 35.4 \$ | Sq | .m | | |
| Environment: | Moderate | | | | Limited Inspe | ctio | on | | | | |
| Protection System: | | | | | | | | | | | Perform. |
| Condition | ι | Inits | | Exc. | Good | | Fair | | Poor | [| Deficiencies |
| Data: | Sq.m / m / ea | nch / % / all | | 16.5 | 18.9 | | 0.0 | | 0.0 | | |
| Comments: | | | | | | | | | | | |
| Narrow crack at north w Approach: 3.0m x 8.1n | | | ore | board bety | ween east appro | oacl | n and deck | en | d has fallen | out | of gap. E |
| Recommended Work: | | Rehab | | Replace | | M | laintenance Needs: | | | | |
| | | 1-5 years | 6-10 years | | S | | Urgent | | 1 year | | 2 year |
| | | | | | | | | | | | |



Photograph 1: North elevation



Photograph 2: West approach slab (Looking East)





Photograph 3: Top of Deck (Looking East)



Photograph 4: Top chord, railing system, truss verticals and diagonals (Looking Northeast)





Photograph 5: Top chord, railing system, truss verticals and diagonals (Looking Southeast)



Photograph 6: Typical condition of railing (Looking North)





Photograph 7: Coating damage to north railing



Photograph 8: Underside of deck (Looking West)





Photograph 9: Typical severe corrosion at stringer to floor beam weld locations



Photograph 10: Typical coating failure and light to medium corrosion throughout all stringers





Photograph 11: Typical severe corrosion on several stringer members



Photograph 12: Perforation observed on one stringer member





Photograph 13: Typical corrosion and coating failure of all members in the floor system



Photograph 14: Typical reinforced concrete caisson and embankment





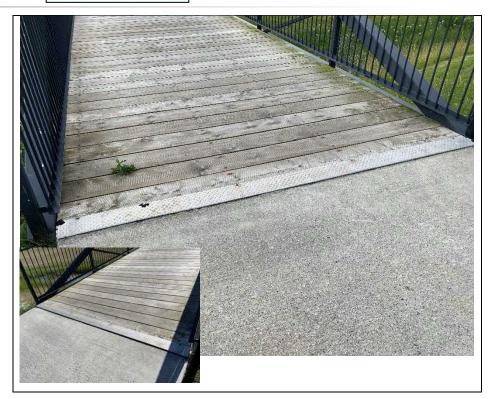


Photograph 15: Bridge ID found at northeast quadrant of structure



Photograph 16: Threshold plate at east approach





Photograph 17: Loose Threshold plate at west approach



| er | 2 |
|----|---|
| | |

| Inventory Data: | | |
|---|---------------------------------|---|
| Structure Name | Malden Road Pedestrian Bridge | |
| Main Hwy/Road # | On Under | Crossing Navig. Water Non-Navig. Ped. x Type: Rail Road Other |
| Hwy/Road Name | Malden Road | |
| Structure Location | Over Pike Creek | |
| Latitude | 42° 12' 46.368" N | Longitude 82° 53′ 5.28″ W |
| Owners | Town of Tecumseh | Heritage Not Consid: Cons/not App. List/n.d. Designation Desig./not list Desig & List |
| MTO region | | Road Class: Freeway Arterial Local Local |
| MTO District | | Posted Speed n/a No. of Lanes n/a |
| Old County | | AADT n/a % Trucks n/a |
| Geographic Twp. | Tecumseh (form. Sandwich South) | Inspection Route Sequence |
| Structure Type | Pratt Truss | Interchange Number |
| Total Deck Length | 12.2 m | Interchange Structure Number |
| Overall Str. Width | 2.68 m | Min. Vertical Clearance m |
| Total Deck Area | 32.7 sq. m | Special Transit Truck Routes: School Bicycle |
| Roadway Width | N/A m | Detour Length Around Bridge N/A km |
| Skew Angle | 0 Degrees | Direction of Structure N/S |
| No. of Spans | 1.0 | Fill on Structure 0 m |
| Span Lengths | Total = 12.2 (1) = 12.2 | m |
| Historical Data: | | |
| | 2045 | V (1 M) P1 |
| Year Built | 2015 | Year of Last Major Rehab. |
| Last OSIM Inspection | 2022 | Last Evaluation |
| Last Enhanced OSIM Ir | | Current Load Limit N/A |
| Enhanced Access Equi (ladder, boat, lift, etc.) | pment | Load Limit By-Law # |
| Last Underwater Inspec | ction | By-Law Expiry Date |
| Last Condition Survey | | |
| Rehab History: (Date / I | Description) | |
| | | |
| | | |
| | | |

| Ontario | Structure | Inspection | Manual | - Inc | nection | Form |
|----------|-----------|------------|--------|--------|---------|--------|
| Unitario | Structure | mspection | Manuai | - 1112 | pection | LOHIII |

| 2 |
|---|
| 2 |

| Scheduled Improvements: | | |
|--------------------------|----------------------|--|
| Regional Priority Number | Programmed Work Year | |
| Nature of Program Work: | | |

| Appraisal Indices: | | Comments |
|--------------------|------|----------|
| Fatigue | 0.00 | |
| Seismic | 0.00 | |
| Scour | 0.00 | |
| Flood | 0.00 | |
| Geometrics | 0.00 | |
| Barrier | 0.00 | |
| Curb | 0.00 | |
| Load Capacity | 0.00 | |

| 05405 | Ctrications | Inanastian | Manual | Inanastian | E = === |
|---------|-------------|------------|--------------|------------|---------|
| Untario | Structure | mspection | iviai iuai - | Inspection | FOITH |

| Field Inspection Informa | tion: | | | | |
|---|-------------------------|----------------------------|--------------|-------------|---------|
| Date of Inspection: | June 27, 2024 | Type of Inspection: | x OSIM | Enhanced OS | SIM |
| Inspector: | Monica Sokolski, E.I. | Г. (Dillon Consulting Limi | ted) | | |
| Others in Party: | Stephen Strachan (Di | llon Consulting Limited) | | | |
| Access Equipment Used: | Camera, Measuring ta | ape, Measuring wheel, a | nd Hammer | | |
| Weather: | Sunny | | | | |
| Temperature: | 28.0 °C | | | | |
| | | | | | |
| Additional Investigations | s Required: | | | Priority | |
| | | | None | Normal | Urgent |
| Material Candition Company | | | | | |
| Material Condition Survey Detailed Deck Condit | on Curvoy | | X | T | |
| | mination Survey of As | ohalt-Covered Deck | X | | |
| Concrete Substructur | | Dilait-Covered Deck | X | | |
| Detailed Coating Con | | | X | | |
| Detailed Timber Inves | · | | X | | |
| Post-Tensioned Strar | • | | X | | |
| Underwater Investigation | ia mvooligation | | Х | | |
| Fatigue Investigation | | | Х | | |
| Seismic Investigation | | | Х | | |
| Structure Evaluation | | | х | | |
| Monitoring | | | • | • | I. |
| <u> </u> | ations, Settlements and | d Movements | х | | |
| Monitoring Crack Wid | | | | Х | |
| Investigation Notes: | | | - | • | 1 |
| Monitoring cracking and s | olits in wooden deck pl | anks. | | | |
| | | | | | |
| Overall Structure Notes: | | | | | |
| Recommended Work on S | Structure: x None | Minor Rehab. | Major Rehal | b. | Replace |
| Timing of Recommended | Work: | 1 to 5 years | 6 to 10 year | S | |
| Overall Comments: | | | , , , , , | | |
| Date of Next Inspection: | June 2026 | | | | |
| Date of Next Hopection. | Julic 2020 | | | | |

Structure Number

2

Element Data

| Element Group: | Decks | | | Length: | 12.2 | m | |
|-------------------------------------|-----------------------|--------------|------------|-----------------------|-------------|----------|--------------|
| Element Name: | Deck top | | | Width: | 2.7 | m | |
| Location: | Top of Deck | | | Height: | | | |
| Material: | Wood Planks | | | Count: | | | |
| Element Type: | | | | Total Quantity | : 32.9 | Sq.m | |
| Environment: | Moderate | | | Limited Inspec | ction | | |
| Protection System: | | | | | | | Perform. |
| Condition | Unit | S | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / eac | ch / % / all | 13.2 | 10.2 | 6.0 | 3.5 | |
| Comments: Medium to severe crack | king and splittin | g of 22 woo | od planks. | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | e Needs: | |
| | | 1-5 years | 6-10 year | S | Urgent | 1 year | 2 year |
| | | | | | | | |

| Element Group: | Barriers | | Length: | 12.2 | m | |
|--------------------|---------------------------|--------|--------------------|------|------|--------------|
| Element Name: | Hand Railings | | Width: | | | |
| Location: | East/West edges | | Height: | | | |
| Material: | Steel | Count: | 2 | | | |
| Element Type: | | | Total Quantity | 24.4 | m | |
| Environment: | Moderate | | Limited Inspection | | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 9.8 | 14.6 | 0.0 | 0.0 | |

Comments:

Small areas of light surface rust.

| Recommended Work: | Rehab | Replace | M | laintenanc | | |
|-------------------|-----------|------------|---|------------|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | 1 year | 2 year |
| | | | | | | |
| | | | | | | |

Structure Number

2

Element Data

| Element Group: | Barriers | | | Length: | | 12.2 | m | | | |
|---------------------------------------|----------------------|----------------|------------|-----------------------|------------|-----------|-----|--------|----|-------------|
| Element Name: | Safety Railin | g | | Width: | | | | | | |
| Location: | East/West e | dges | | Height: | | | | | | |
| Material: | Weathered Steel | | | Count: | | 12.0 | | | | |
| Element Type: | | | | Total Quantity | / : | 146.4 | m | | | |
| Environment: | Moderate | | | Limited Inspe | ctio | า | | | | |
| Protection System: | | | | | | | • | | I | Perform. |
| Condition | Un | its | Exc. | Good | | Fair | | Poor | De | eficiencies |
| Data: | Sq.m / m / ea | ach / % / all | 58.6 | 87.8 | | 0.0 | | 0.0 | | |
| Comments: Light corrosion at thres | nold plates at | safety railing | interface. | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Ма | intenance | e N | leeds: | | |
| | | 1-5 years | 6-10 year | S | Į | Jrgent | | 1 year | 2 | 2 year |
| | | | | | | | | - | | |

| Element Group: | Beams/MLE's | | Length: | 2.7 | m | |
|--------------------|----------------------------------|--------------------|--------------------|--------|------|--------------|
| Element Name: | Floor Beams | | Width: | 51 | mm | |
| Location: | | Height: | 152 | mm | | |
| Material: | Weathered Steel | Count: | 11 | | | |
| Element Type: | HSS 152 x 51 x 4.8 | HSS 152 x 51 x 4.8 | | : 12.1 | Sq.m | |
| Environment: | Moderate | | Limited Inspection | | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 4.8 | 7.3 | 0.0 | 0.0 | |

Comments:

Weathering Steel is in good condition.

| Recommended Work: | Rehab | Replace | Ma | Maintenance Needs: | | | |
|-------------------|-----------|------------|----|--------------------|---|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | | 1 year | 2 year |
| | • | | | • | - | • | • |
| | | | | | | | |

Structure Number

2

Element Data

| Element Group: | Beams/MLE's | | | Length: | | 1.20 | m | | |
|------------------------|--------------------|---------|------------|----------------|-------|----------|-------|----|--------------|
| Element Name: | Stringer | | | Width: | | 51 | mm | | |
| Location: | | | | Height: | | 102 mm | | | |
| Material: | Steel | | | Count: | | 7 | | | |
| Element Type: | HSS 102 x 51 x 4.8 | | | Total Quantity | y: | 70 each | | | |
| Environment: | Moderate | | | Limited Inspe | ction | 1 | | | |
| Protection System: | | | | | | | | | Perform. |
| Condition | Units | | Exc. | Good | | Fair | Poo | r | Deficiencies |
| Data: | Sq.m/m/each/9 | % / all | 28 | 42 | | 0 | 0 | | |
| Comments: | | | | | | | | | |
| Weathering Steel is in | good condition. | | | | | | | | |
| Recommended Work: | Ref | hab | Replace | | Mai | ntenance | Needs | : | |
| | 1-5 | years | 6-10 years | | l | Jrgent | 1 yea | ır | 2 year |
| | | | | | | | | | |
| | | | | | | | | | |

| Element Group: | Trusses/Arches | Length: | 12.2 | m | | | |
|--------------------|----------------------------------|-------------------|----------------|--------------------|-------|--------------|--|
| Element Name: | Top Chords | | Width: | 51 | 51 mm | | |
| Location: | East/West Edges | Height: | 76 | mm | | | |
| Material: | Steel | Count: | 2 | | | | |
| Element Type: | HSS 76 x 51 x 4.8 | HSS 76 x 51 x 4.8 | | : 6.2 | Sq.m | | |
| Environment: | Benign | | Limited Inspec | Limited Inspection | | | |
| Protection System: | | | | | • | Perform. | |
| Condition | Units | Exc. | Good Fair Poor | | | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 4.0 | 2.2 | 0.0 | 0.0 | | |

Comments:

Weathering Steel is in good condition.

| Recommended Work: | Rehab | Replace | Maintenance Needs: | | | | |
|-------------------|-----------|------------|--------------------|--------|--|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | | 1 year | 2 year |
| | | • | | | | • | • |
| | | | | | | | |

Structure Number

2

| Element Group: | Trusses/Arches | | Length: | 12.2 | m | | |
|------------------------|----------------------------------|----------------|---------|-------------|--------|--------------|--|
| Element Name: | Bottom Chords | | Width: | 51 | mm | | |
| Location: | East/West Edges | | Height: | 76 | 76 mm | | |
| Material: | Steel | Count: | 2 | | | | |
| Element Type: | HSS 76 x 51 x 4.8 | Total Quantity | : 6.2 | Sq.m | | | |
| Environment: | Moderate | Limited Inspec | ction | | | | |
| Protection System: | | | | | • | Perform. | |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 2.5 | 3.7 | 0.0 | 0.0 | | |
| Comments: | | | | | | | |
| No coating on shoe pla | tes. | | | | | | |
| | | | | | | | |
| Recommended Work: | Rehab | Replace | | Maintenance | Needs: | | |
| | 1-5 years | 6-10 yea | ırs | Urgent | 1 year | 2 year | |
| | <u> </u> | | | | | | |
| | | | | | | | |

| Element Group: | Trusses/Arches | Length: | | 1.6 | m | | |
|--------------------|----------------------------------|----------------------------|--------|--------------------|------|------|--------------|
| Element Name: | Verticals | Width: | | 51 | | | |
| Location: | North/South Edges | Height: | 76 mm | | | | |
| Material: | Steel | Count: | | 22 | | | |
| Element Type: | HSS 76x51x4.8 | Total Quantit | y: | 8.9 | | | |
| Environment: | Moderate | Limited Inspe | ection | l | | | |
| Protection System: | | | | | | • | Perform. |
| Condition | Units | Exc. | Good | | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | n/m/each/%/all 3.6 5.3 0.0 | | 0.0 | 0.0 | | |
| Comments: | | | | • | | | |
| Recommended Work | : Rehab | Replace | | Maintenance Needs: | | | |
| · | | | · | 1 1. | | | 1 1_ |

| Recommended Work: | Rehab | Replace | Ma | | | |
|-------------------|-----------|------------|----|--------|--------|--------|
| | 1-5 years | 6-10 years | | Urgent | 1 year | 2 year |
| · | | · | | | | • |
| | | | | | | |

Structure Number

2

| Element Group: | Trusses/Arches | Length: | 1.9 | 1.9 m | | | |
|--------------------|---------------------------|-----------------------|-------|---------------|------|--------------|--|
| Element Name: | Diagonals | Width: | 51 | mm | | | |
| Location: | North/South Edges | Height: | 51 | 51 mm | | | |
| Material: | Steel | Count: | 20 | 20 | | | |
| Element Type: | HSS 51x51x4.8 | Total Quantity | : 7.8 | 7.8 Sq.m | | | |
| Environment: | Moderate | Limited Inspec | ction | | | | |
| Protection System: | | | | _ | 1 | Perform. | |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies | |
| Data: | Sq.m / m / each / % / all | 3.1 | 4.7 | 0.0 | 0.0 | | |
| Comments: | | | | | | | |
| Recommended Work: | Rehab | Replace | | Maintenance | | | |
| | 1-5 years | 6-10 year | rs | Urgent 1 year | | | |
| | | | | | | | |

| Draeina | | | | | 3.0 m | | | | |
|-------------------|---|---|---|--|---|---|--|--|--|
| Bracing | | | Width: | | 51 m | | | | |
| Undeside of Deck | | | Height: | | 51 m | | | | |
| Steel | | | Count: | | 10 | | | | |
| HSS 51 x 51 x 4.8 | | | Total Quantit | y: | 10 each | | | | |
| Moderate | | | Limited Inspe | pection | | | | | |
| | | | | | | • | • | Perform. | |
| Units | | Exc. | Good | | Fair | | Poor | Deficiencies | |
| Sq.m / m / ea | ach / % / all | h / % / all 4 6 0 | | 0 | | 0 | | | |
| | | | | | | | | | |
| | Rehab | Replace | | | aintenance | | | | |
| | 1-5 years | 6-10 years | | | Urgent | | 1 year | 2 year | |
| | Undeside of Steel HSS 51 x 51 Moderate | Undeside of Deck Steel HSS 51 x 51 x 4.8 Moderate Units Sq.m / m / each / % / all Rehab | Undeside of Deck Steel HSS 51 x 51 x 4.8 Moderate Units Exc. Sq.m / m / each / % / all 4 | Undeside of Deck Steel Count: HSS 51 x 51 x 4.8 Moderate Units Exc. Good Sq.m / m / each / % / all Rehab Replace | Undeside of Deck Height: Steel Count: HSS 51 x 51 x 4.8 Total Quantity: Moderate Limited Inspection Units Exc. Good Sq.m / m / each / % / all 4 6 Rehab Replace M | Undeside of Deck Height: 51 Steel Count: 10 HSS 51 x 51 x 4.8 Total Quantity: 10 Moderate Limited Inspection Units Exc. Good Fair Sq.m / m / each / % / all 4 6 0 Rehab Replace Maintenance | Undeside of Deck Height: 51 m Steel Count: 10 HSS 51 x 51 x 4.8 Total Quantity: 10 ea Moderate Limited Inspection Units Exc. Good Fair Sq.m / m / each / % / all 4 6 0 | Undeside of Deck Height: 51 m Steel Count: 10 HSS 51 x 51 x 4.8 Total Quantity: 10 each Moderate Limited Inspection Units Exc. Good Fair Poor Sq.m / m / each / % / all 4 6 0 0 Rehab Replace Maintenance Needs: | |

Ontario Structure Inspection Manual - Inspection Form

Structure Number

2

Element Data

| Element Group: | Retaining Wa | ılls | | Length: | | 1.5 | | | |
|--------------------------|----------------|---------------------|---------------|--------------------|----------|---------|--------|----|------------|
| Element Name: | Concrete Ret | aining Block | S | Width: | | 0.8 m | | | |
| Location: | North Emban | kment | Height: | | 0.8 m | | | | |
| Material: | Precast conc | Precast concrete | | | | 6 | | | |
| Element Type: | | | | | : | 6 € | each | | |
| Environment: | Moderate | | | Limited Inspec | ction | 2 | х | | |
| Protection System: | | | | | | • | | Р | erform. |
| Condition | Uni | ts | Exc. | Good | Fair | | Poor | De | ficiencies |
| Data: | Sq.m/m/ea | ch / % / all | 1 | 5 | C | 0 0 | | | |
| Comments: | | | | | | | | | |
| Signs of settlement of b | olock adjacent | to bridge (so | outh-most). C | Corrosion staining | g on top | of bloo | cks. | | |
| Recommended Work: | | Rehab | Replace | Maintenance Needs: | | | Needs: | | |
| | | 1-5 years | 6-10 year | rs . | Urg | ent | 1 year | 2 | year |
| | | | | | | | | | |
| | | | | | | | | | |

| Element Group: | Foundations | | Length: | | | |
|--------------------|---------------------------|------------------------|----------------|------|--------|--------------|
| Element Name: | Reinforced concrete caiso | Width: | 0.9 | 9 m | | |
| Location: | North/South Ends | North/South Ends | | | 5 m | |
| Material: | Cast-in-place concrete | Cast-in-place concrete | | | 4 | |
| Element Type: | | | | | 4 each | |
| Environment: | Moderate | | Limited Inspec | tion | х | |
| Protection System: | | | | | * * | Perform. |
| Condition | Units | Exc. | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 2 | 2 | 0 | 0 | |
| Comments: | <u> </u> | | <u> </u> | | • | • |
| | | | | | | |

| Recommended Work: | Rehab | Replace | Maintenance | | |
|-------------------|-----------|------------|-------------|--------|--------|
| | 1-5 years | 6-10 years | Urgent | 1 year | 2 year |
| | 1.0,00.0 | | | . , | |
| | | | | | |

Ontario Structure Inspection Manual - Inspection Form

Structure Number

2

Element Data

| Element Group: | Embankments & Streams | | | Length: | | | | | | |
|--------------------|-----------------------|---------------------|------------|-----------------------|-------------|--------------------|--------------|--|--|--|
| Element Name: | Streams and | Waterways | | Width: | | | | | | |
| Location: | | | | | | | | | | |
| Material: | | | | Count: | 1 | 1 | | | | |
| Element Type: | | | | Total Quantity | : 1 | all | | | | |
| Environment: | | | | Limited Inspec | tion | | | | | |
| Protection System: | | | | | | | Perform. | | | |
| Condition | Uni | ts | Exc. | Good | Fair | Poor | Deficiencies | | | |
| Data: | Sq.m / m / ea | ch / % / all | 0 | 1 | 0 | 0 | | | | |
| Comments: | Comments: | | | | | | | | | |
| Recommended Work: | | Rehab | Replace | | Maintenance | laintenance Needs: | | | | |
| | | 1-5 years | 6-10 years | S | Urgent | 1 year | 2 year | | | |
| | | | | | | | | | | |

| Element Group: | Embankments & Streams | Length: | | | | |
|--------------------|---------------------------|-----------------------|--------------------|------|------|--------------|
| Element Name: | Embankments | Width: | | | | |
| Location: | North/South Embankmen | Height: | | | | |
| Material: | | Count: | 2 | | | |
| Element Type: | | Total Quantity | : 2 | each | | |
| Environment: | Moderate | | Limited Inspection | | | |
| Protection System: | | | | | • | Perform. |
| Condition | Units Exc. | | Good | Fair | Poor | Deficiencies |
| Data: | Sq.m / m / each / % / all | 0 | 1 | 1 | 0 | |

Comments:

N side: 914 mm CSP outlet

S Side: Erosion, steep embankment.

| Recommended Work: | Rehab | Replace | M | aintenanc | | | |
|-------------------|-----------|------------|---|-----------|------|-----|--------|
| | 1-5 years | 6-10 years | | Urgent | 1 ye | ear | 2 year |
| | | | | | | | |
| | | | | | | | |

Ontario Structure Inspection Manual - Inspection Form

Structure Number

2

Element Data

| Element Group: | Embankme | nts & Streams | 6 | Length: | | | | |
|--|---|--|---------------------|--|-------|--------------------------------|-----------------|-----------------------|
| Element Name: | Slope prote | ction | | Width: | | | | |
| Location: | North/South | n Embankmen | nt | Height: | | | | |
| Material: | | | | Count: | | 2 | | |
| Element Type: | Hand laid ri | prap | | Total Quantit | ty: | 2 | each | |
| Environment: | | | | | ectio | on | | |
| Protection System: | | | | | | | <u>'</u> | Perform. |
| Condition | U | nits | Exc. | Good | | Fair | Poor | Deficiencies |
| Data: | Sq.m/m/e | each / % / all | 0 | 0 | | 2 | 0 | |
| | | | | | 1.0 | | | |
| Recommended Work: Rehal | | | Replace 6-10 yea | | IM | aintenance | | 1 10 |
| | | | | rs Urgent | | 1 year | 2 year | |
| | | 1-5 years | | | | | | |
| Element Group: | Approaches | | | Length: | | 3.0 | m | |
| | Approaches | S | | Length: | | 3.0 | | |
| Element Group: | | s Slabs | | _ | | | m | |
| Element Group: Element Name: | Approach S | s Slabs n Approach | | Width: | | 3.0 | m | |
| Element Group: Element Name: Location: | Approach S North/South | s Slabs n Approach | | Width: Height: | ty: | 3.0 0.25 2 | m | |
| Element Group: Element Name: Location: Material: | Approach S North/South | s Slabs n Approach | | Width: Height: Count: | • | 3.0 0.25 2 18.0 | m m | |
| Element Group: Element Name: Location: Material: Element Type: | Approach S North/South Cast-in-place | s Slabs n Approach | | Width: Height: Count: Total Quantit | • | 3.0 0.25 2 18.0 | m m | Perform. |
| Element Group: Element Name: Location: Material: Element Type: Environment: | Approach S North/South Cast-in-place Moderate | s Slabs n Approach | Exc. | Width: Height: Count: Total Quantit | • | 3.0 0.25 2 18.0 | m m | Perform. Deficiencies |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: | Approach S North/South Cast-in-place Moderate | s Slabs n Approach ce concrete | Exc. 7.2 | Width: Height: Count: Total Quantit | • | 3.0 0.25 2 18.0 | m m Sq.m | _ |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition | Approach S North/South Cast-in-place Moderate U Sq.m / m / c | Slabs n Approach ce concrete nits each / % / all | 7.2 | Width: Height: Count: Total Quantit Limited Inspersion Good 10.8 | • | 3.0 0.25 2 18.0 on | m m Sq.m Poor | _ |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: | Approach S North/South Cast-in-place Moderate U Sq.m / m / c | Slabs n Approach ce concrete nits each / % / all | 7.2 | Width: Height: Count: Total Quantit Limited Inspersion Good 10.8 | ectio | 3.0 0.25 2 18.0 on | m Sq.m Poor 0.0 | _ |



Photograph 1: East elevation of structure (Looking Southwest)



Photograph 2: West Elevation (Looking East)





Photograph 3: North approach (Looking South)



Photograph 4: South approach (Looking North)





Photograph 5: Top of Deck (Looking South)



Photograph 6: Top chord, railing system, truss verticals and diagonals (Looking Southeast)





Photograph 7: Top chord, railing system, truss verticals and diagonals (Looking Southwest)



Photograph 8: Typical top chord, railing system, truss verticals and diagonals





Photograph 9: Underside of the deck (Looking South)



Photograph 10: Concrete caissons at north end with void under approach slab





Photograph 11: CSP outlet (Looking North)



Photograph 12: Watercourse downstream (Looking West)



Appendix D

BCI Comparisons



Table D.1: Summary of BCI between 2003 and 2024

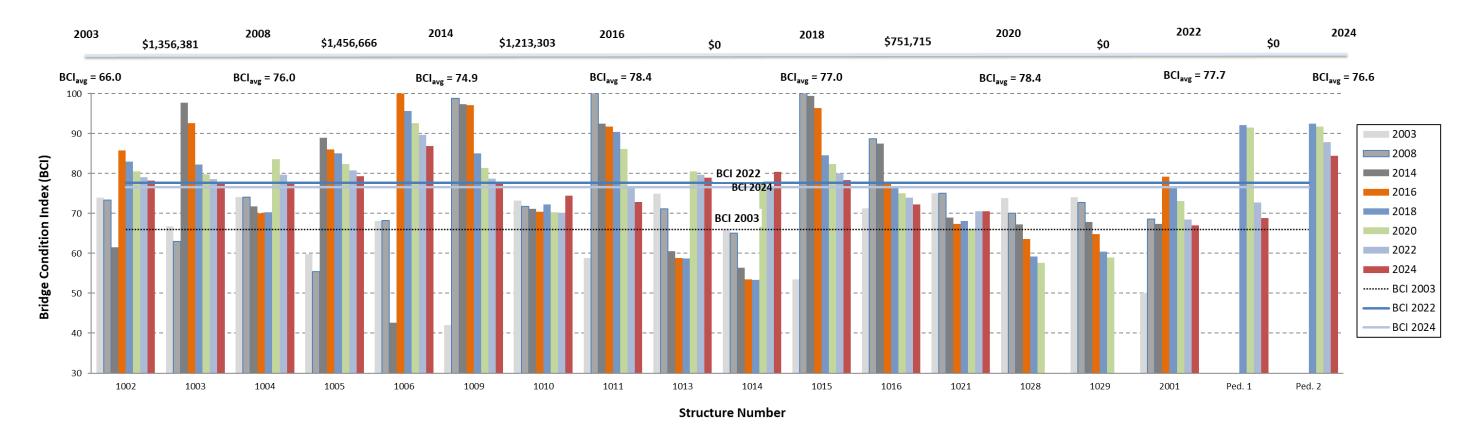
| Structure ID | BCI 2003 | BCI 2008 | BCI 2014 | BCI 2016 | BCI 2018 | BCI 2020 | BCI 2022 | BCI 2024 |
|--------------------|----------|-------------|-------------|--------------|-------------|-------------|----------|----------|
| 1002 | 73.9 | 73.4 | 61.5 | <u>85.8</u> | 83.0 | 80.5 | 79.1 | 78.2 |
| 1003 | 66.8 | 63.0 | <u>97.7</u> | 92.6 | 82.3 | 79.8 | 78.6 | 77.4 |
| 1004 | 74.1 | 74.1 | 71.8 | 70.1 | 70.3 | <u>83.6</u> | 79.7 | 77.8 |
| 1005 | 59.8 | 55.4 | <u>88.9</u> | 86.0 | 85.1 | 82.4 | 80.8 | 79.3 |
| 1006 | 68.1 | 68.2 | 42.6 | <u>100.0</u> | 95.7 | 92.6 | 89.7 | 86.9 |
| 1009 | 42.0 | <u>98.8</u> | 97.4 | 97.1 | 85.0 | 81.4 | 78.7 | 77.6 |
| 1010 | 73.2 | 71.7 | 71.1 | 70.4 | 72.3 | 70.3 | 70.2 | 74.4 |
| 1011 | 58.8 | 100.0 | 92.5 | 91.7 | 90.4 | 86.1 | 76.5 | 72.9 |
| 1013 | 74.9 | 71.2 | 60.6 | 58.8 | 58.7 | <u>80.5</u> | 79.7 | 78.9 |
| 1014 | 65.9 | 65.1 | 56.4 | 53.5 | 53.3 | <u>77.7</u> | 76.9 | 80.4 |
| 1015 | 53.5 | 100.0 | 99.4 | 96.4 | 84.6 | 82.4 | 80.1 | 78.4 |
| 1016 | 71.3 | 88.7 | 87.5 | 77.5 | 76.7 | 75.0 | 73.9 | 72.3 |
| 1021 | 75.0 | 75.0 | 68.9 | 67.4 | 68.1 | 66.2 | 70.6 | 70.6 |
| 2001 | 50.1 | 68.6 | 67.4 | 79.2 | 76.3 | 73.1 | 68.5 | 67.0 |
| 1 | | | | | <u>92.1</u> | 91.5 | 72.7 | 68.8 |
| 2 | | | | | <u>92.5</u> | 91.7 | 87.9 | 84.5 |
| BCI _{avg} | 66.0 | 76.0 | 74.9 | 78.4 | 77.0 | 78.4 | 77.7 | 76.6 |

Notes:

- Structures 1009, 1011 and 1015 were fully replaced in 2007. Structure 1006 was fully replaced in 2015.
- A major rehabilitation of Structures 1003 and 1005 was completed in 2014. The scope of work included: superstructure replacement and concrete patch repairs to the substructure.
- A major rehabilitation of Structure 1002 was completed in 2016. The scope of working included: concrete repairs to deck soffit, abutments and wingwalls, concrete deck overlay.
- A major rehabilitation of Structure 1004 was completed in 2019. The scope of work included: concrete patch repairs, new deck overlay, precast retaining walls, new asphalt and waterproofing.
- A major rehabilitation of Structure 1014 was completed in 2019. The scope of work included: partial full-depth deck replacement, precast retaining walls, new asphalt and waterproofing.
- A major rehabilitation of Structure 1013 was completed in 2020. The scope of work included: concrete patch repairs, full-depth deck repairs, new asphalt and waterproofing.



Town of Tecumseh - BCI Trends





Appendix E

Historic Bridge Spending (2003 – 2024)



Town of Tecumseh - Historic Major Bridge (Rehab./Replacement) Spending (2003 - 2024)

