



THE MUNICIPALITY OF CENTRAL MANITOULIN

REQUEST FOR PROPOSALS 03-2026

FOR: Beaver Road East and West Bridges - Engineering Consulting Services for Design process.

Sealed BIDS clearly marked as to contents will be received until:

DEADLINE: THURSDAY July 30, 2026 AT 2:00 PM EDT

ROSE SLEE, MUNICIPAL COORDINATOR – Special Projects
THE MUNICIPALITY OF CENTRAL MANITOULIN
6020 HWY 542, P.O. BOX 420
MINDEMOYA, ON P0P 1S0

LATE TENDERS WILL NOT BE ACCEPTED
ELECTRONICALLY TRANSMITTED SUBMISSIONS (E-MAIL ONLY) WILL BE ACCEPTED.

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DEFINITIONS & INTERPRETATIONS

The following definitions apply to the interpretation of the Bid Documents:

1. **“Addenda or Addendum”** means such further additions, deletions, modifications, or other changes to any Bid Documents.
2. **“Bid Documents”** means collectively all the documents comprising the Call for Bids, namely Part I to IV and appendices, inclusive.
3. **“Bid or Bid Form”** means the Bid in the form prescribed by these Bid Documents and completed and submitted by a Proponent(s) in response to and in compliance with the Call for Bids and the Bid Documents and for the purpose of entering into the Project with the Owner in the event of award.
4. **“Certificate of Approval” or “C of A”** means, for the purposes of this RFP, the governing document for the Landfill Transfer Station issued by the Ministry of the Environment, Conservation and Parks – alternatively known as ECA.
5. **“Contract Administrator”** means the person, partnership, or Corporation designated by the Owner to be the Owner’s representative for the purposes of this contract.
6. **“Call for Proposals”** means the Call for Proposals on the terms and conditions set forth in the Bid Documents.
7. **“Closing Time”** means the time specified in Part I Sections 1.0 and 3.0, by which all Proposal submissions shall be received and stamped by the Owner.
8. **“Contract”** means the agreement in writing governing the Supply and Services, which has been executed by the Owner and successful Proponent following acceptance by the Owner of the successful Proposal submission. It shall be based upon this proposal, with any agreed upon amendments.
9. **“Council”** means the elected Council for the Municipality of Central Manitoulin.
10. **“Environmental Compliance Approval” or “ECA”** means, the governing document for the operation of any entity that may discharge a contaminant into the atmosphere, for the purposes of this document, the Active Landfill Site, and is issued by the Ministry of the Environment, Conservation and Parks – formerly known as C of A.
11. **“Evaluation Team”** means a team consisting of members of Municipal staff and, where considered appropriate by the Municipality in the exercise of an absolute discretion, Independent Consultants, who will perform the evaluation of each of the Proposals and make such reports and recommendations to the award of this RFP as they consider appropriate.

12. **“Mandatory Requirements”** means those requirements described in Parts I through IV inclusive, which shall be fully satisfied in order for any Tender to be considered by the Owner as a qualified Bid.
13. **“Owner, Municipality and Corporation”** mean The Municipality of Central Manitoulin, as the case may be, and as identified in the Call for Proposals, and Proposal Documents and for the purpose of the award and execution and performance of the Project shall mean the entity awarding the Project.
14. **“Sub-Contractor”** means a legal entity approved by the Owner undertaking the execution of a part of the Work pursuant to an agreement with the Proponent and includes both “brokers” and “subcontractors”.
15. **“Proponent(s), Bidder(s), and Contractor(s)”** means the successful Proponent to whom the Project is awarded and undertaking the execution of the Project.
16. **“Successful Bidder (s)/ Proponent(s)/ Contractor(s)”** means the Proponent/Contractor/Bidder whose RFP submission is/are accepted and who has/have agreed to supply the Goods and/or Services as outlined herein.
17. **“Supply”** means to supply the necessary tools, material, equipment, and product to satisfy the Tender requirements.
18. **“Total Contract Price”** means the fully inclusive, all-in total Contract price, constituting the sum of all costs quoted by a Proponent in its Proposal with respect to the Work,
 - (i) including the purchase price for all materials, labour costs, service costs, costs for temporary structures and facilities, utility costs, warranty costs, life cycle costs, operating, and disposal costs; but
 - (ii) excluding any options or alternatives requested in the Contract Documents that the Municipality elects not to purchase; and,
 - (iii) excluding Harmonized Sales Tax (HST) or other applicable sales taxes, imposed under the Laws of Ontario and the Laws of Canada applicable therein;
19. **“Work”** means Work/service performed to meet a demand to comply with the conditions of the Project, delivery dates, specifications, and technical assistance.
20. Where the words “must”, “shall”, “will” or “mandatory appear in this RFT, the clause is to be considered as a mandatory requirement. “May” used in this document denotes permissive.

PART I – GENERAL TERMS AND CONDITIONS

1.0 GENERAL PROJECT SCOPE

The Municipality of Central Manitoulin is requesting proposals for Engineer consulting services from qualified firms to perform all studies and design required to repair or replace the Beaver Road East Bridge and Beaver Road West Bridge in accordance with all applicable Municipal, Provincial, and Federal regulations. Please review PART II for the detailed background and project scope.

2.0 INQUIRIES

DEADLINE FOR QUESTIONS: THURSDAY, July 16, 2026 @ 2:00 PM.

Any and all inquiries concerning this RFP must be submitted in writing to the following Municipal representative (the “**Contact Person**”):

Rose Slee
Municipal Coordinator – Special Projects
rslee@centralmanitoulin.ca | 1-705-377-5726

Information that is offered by or obtained from sources other than the Contact Person, including any other representative of the Municipality, is not official, may be inaccurate, and may not be relied on in any way by any Bidder.

No verbal agreement or conversation made or had at any time with an officer, agent or employee of the Municipality shall affect or modify any terms of obligations stated herein or deemed to be any representation or warranty of the Municipality.

Bidders shall submit requests for clarifications, questions and inquiries to the Contact Person in writing before the deadline (the “**Deadline for Questions**”).

Responses will be posted on the Municipality of Central Manitoulin’s Website at the following address: <https://www.centralmanitoulin.ca/our-government/bids-and-tenders/>

3.0 SCHEDULE OF EVENTS

RFP Issue Date -----June 23, 2026
Mandatory Site visit & Registration of Intent to Bid ----- Thursday July 9, 2026, 11:00 a.m,
and 2:00 p.m.
Deadline for Inquiries ----- Thursday, July 16, 2026, 2 p.m.
RFP DEADLINE ----- Thursday, July 30, 2026, 2:00 p.m.
Council Award of Contract ----- Thursday, August 13, 2026, 7:00 p.m.
Presentation of Design Proposal Options to Council ----- Date TBD

4.0 DELIVERY OF PROPOSALS

Proposals will be accepted via electronic or hard copy submission as follows:

Electronic:

Secured Quotes will be received via Electronic Submission (email) to The Municipality of Central Manitoulin until **2:00pm, local time on Thursday, July 30, 2026**. The submission deadline is the time that the submission is received and not sent by the sender. Confirmation of receipt can be requested by calling the Municipal Office at 705-377-5726. Submissions shall be emailed to rslee@centralmanitoulin.ca with subject line: "RFP 03-2026 BEAVER ROAD EAST AND WEST BRIDGES - ENGINEERING CONSULTING SERVICES FOR DESIGN PROCESS".

*The access key to open the secured electronic submission will be supplied to the Municipality of Central Manitoulin at 2:15 pm, local time on Thursday, July 30, 2026. Confirmation of receipt can be requested by calling the Municipal Office at 705-377-5726. Submissions shall be emailed to rslee@centralmanitoulin.ca with subject line: "RFP 03-2026 BEAVER ROAD EAST AND WEST BRIDGES - ENGINEERING CONSULTING SERVICES FOR DESIGN PROCESS"

The date and time recorded by the Municipality upon submission of a Bid will take precedence over any machine-initiated date and time information on Bids or revisions.

CLOSING LOCATION:

Municipality of Central Manitoulin, Municipal Complex
The Municipality of Central Manitoulin
6020 Hwy 542, Mindemoya, ON P0P 1S0

There will be no public tender opening. In place of a public opening, bidders will be provided with a summary of bids within three (3) working days of the bid opening.

5.0 REGISTRATION OF BIDDERS

Each proponent who intends to submit a proposal shall register their intent to bid, no later than Thursday, July 9, 2026, 4:30 p.m. and shall attend the mandatory site visit on the same date. Registration can be made by contacting the Municipal Coordinator at rslee@centralmanitoulin.ca.

6.0 ANTICIPATED CONTRACT SCHEDULE

The anticipated date for award of the contract to the successful bidder is July 30, 2026, with services to begin as soon as possible, following contract award. This is a high priority project for the Municipality due to the impact that the current bridge closure has on local residents. The completion of the full project life-cycle including any necessary studies and design processes must be completed no later than December 31, 2026.

7.0 ERRORS, OMISSIONS AND DISCREPANCIES

No oral interpretation shall be effective to modify any provisions of these RFP Documents. Any modification or clarification shall be written Addendum only issued by the Municipal Coordinator. The Addenda shall form part of the procurement documents. Addenda will be posted on the Municipal website at: www.centralmanitoulin.ca/administration/tender-requests.

The Municipality of Central Manitoulin has made considerable effort to ensure that the information presented herein reflects, with reasonable accuracy, the nature of the goods and/or services requested and its factual components. The information is supplied as a guideline for Bidders and may not be completely accurate, comprehensive, or exhaustive. The Municipality does not make any representation, warranty or guarantee as to the accuracy of the information contained herein. It is the Bidder's responsibility to avail itself of all necessary information to prepare a response to this RFP. Nothing in the RFP is intended to relieve Bidders from forming their own opinions and conclusions with respect to the matters addressed in the RFP. There will be no consideration of any claim, after submission of Proposals, that there is a misunderstanding with respect to the conditions imposed by the RFP or the Contract.

8.0 LIMITATION OF DAMAGES AND PROPONENT'S EXPENSES

The Bidder waives any claim, action or demand, however arising, whether in contract (including fundamental breach or breach of a fundamental term), tort (including negligence) or otherwise, or loss of profits, overhead expenses, liabilities, costs, expenses or other losses or damages incurred, sustained or suffered by themselves or any third party in connection with the acceptance or non-acceptance by the Municipality of any Proposal, any delay in the acceptance of a Proposal, or any other matters connected to the procurement or a subsequent negotiation process. Proponents are solely responsible for their own expenses in preparing a Proposal and for expenses incurred for subsequent negotiations with the Municipality, if any.

9.0 CONFIDENTIALITY AND FREEDOM OF INFORMATION

All Bids submitted to the Owner become the property of the Owner and as such, are subject to the "Municipal Freedom of Information and Protection of Privacy Act."

In addition, certain contractual information must be disclosed to Council and accordingly may become part of the public record.

A Proponent receiving this RFP may not use, disclose, or duplicate it for any purpose other than to prepare a response. The Proponent shall keep the Municipality of Central Manitoulin data confidential and shall not disclose its content to any other party, other than to those internal employees or agents responsible for preparing a submission, without the prior written approval of the Municipality of Central Manitoulin.

Receipt of this RFP does not entitle the Proponent to associate its services with the Municipality of Central Manitoulin in any way, nor represents in any way that the Municipality of Central Manitoulin has employed or endorsed the Proponent's services. Any such association or endorsement being contemplated by the Proponent must receive prior written approval of the Municipality of Central Manitoulin.

The submission of a proposal indicates acceptance by the respondent of all the conditions contained in this Request for Proposals unless clearly and specifically noted in the tender submitted and confirmed in the formal contract between the Municipality of Central Manitoulin and the Proponent. Deviations from the Request for Proposal must be clearly identified in the written submission. Proposals are subject to a formal contract being negotiated, prepared and executed. The Municipality of Central Manitoulin reserves the right to negotiate the terms and conditions of the contract.

All correspondence, documentation and information provided to staff of the Municipality of Central Manitoulin by any proponent in connection with, or arising out of this RFP, and the submission of any Tender will become the property of the Municipality of Central Manitoulin and as such is subject to the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA), and may be released, pursuant to the Act. The Proponent's name at a minimum shall be made public upon request.

In-line with MFIPPA, Proponents are advised to identify in their Proposal material, any scientific, technical, commercial, proprietary or similar confidential information, the disclosure of which could cause them injury. Any information in the Proponents' submissions that is not specifically identified as confidential will be treated as public information. All correspondence, documentation and information provided to the Evaluation Team may be reproduced for the purposes of evaluating the Proponents' submissions to this RFP.

10.0 CONFLICT OF INTEREST, BRIBERY OR FRAUD

Should any prospective Proponent or any of their agents give or offer any gratuity or to attempt to bribe any employee of The Owner, or to commit fraud, the Owner shall be at liberty to cancel the prospective Proponent's submission and to rely upon the Tender Surety submitted for compensation if applicable.

Except as identified in the RFP or as specified in the Contract, the Proponent must certify in its Proposal:

- That no person either natural or body corporate, other than the Proponent, has or will have any interest or share in this tender or in the proposed contract, and

- There is no collusion or arrangement between the Proponent and any other Proponent(s) in connection with this project, and
- The Proponent has no knowledge of the contents of other Proposals and has made no comparison of figures or agreement or arrangement, express or implied, with any other party in connection with the making of the tender.

Neither the Proponent, relative, close friend or any employee of the Proponent should have any direct or indirect interest in an entity that provides goods or services to the Project. Proponents participating in this RFP process shall disclose prior to entering into an agreement any potential conflict of interest. If such conflict does exist, the Municipality of Central Manitoulin may at its discretion withhold the award of a contract from the Proponent until the matter is resolved.

Neither, the Proponent, relative, close friend or any employee of the Proponent should offer or receive any entertainment, gifts, gratuities, discounts, commissions, fees or special services (gifts/donations), regardless of value, to or from any employee of the Municipality of Central Manitoulin, or to any consultant or contractor employed by the Municipality of Central Manitoulin, or to any real estate representative acting on behalf of the Municipality of Central Manitoulin. All Proponents shall report to the Municipality of Central Manitoulin any such attempts.

Neither, the Proponent, relative, close friend or any employee of the Proponent shall offer or receive any inducement, payment, discount, commission, reward, gift, special service, incentive, or other remuneration or compensation of any kind (inducement), regardless of value, from any vendor of goods or services to the project, including any consultant or contractor employed by the Municipality of Central Manitoulin, or to any real estate representative acting on behalf of the Municipality of Central Manitoulin. The Proponent agrees to immediately inform the Municipality of Central Manitoulin upon any such inducement being offered.

The Proponent chosen to provide service to the project shall continue to be bound by the foregoing prohibitions after the execution of a Contract agreement.

11.0 PRICES AND TAX

Unless otherwise stipulated, all prices bid, including any Unit Prices, must be stated in Canadian funds. Except as otherwise provided the price(s) bid shall include all duty, delivery, customs clearance, labour, materials, disbursements and all other charges now or hereafter imposed or in force. Harmonized Sales Tax (HST), where applicable, shall be listed separately from the price(s) quoted.

12.0 WORKING LANGUAGE

The working language of the Municipality of Central Manitoulin is English and all responses to this Request for Tender must be English.

13.0 RIGHT TO ACCEPT OR REJECT TENDER

The Municipality reserves the right to reject any or all proposals or to accept any proposal should it be deemed in the best interest of the Corporation to do so.

14.0 EVALUATION AND SELECTION

The Evaluation Team will review and evaluate all submissions to ensure they comply with the terms and conditions of the RFP Documents. Submissions that do not meet all the necessary criteria may be rejected without further consideration.

Consideration for award shall only be undertaken in relation to Proponents who are determined by the Municipality to have satisfied all the requirements. The Evaluation Committee hereby reserves the right, privilege, entitlement, and absolute discretion, and for any reason whatsoever to:

- A. Accept a Proposal which is not the lowest price submission or reject a Proposal even if it is the only one received.
- B. Accept the Proposal deemed most favorable to address the scope of work.
- C. Accept or reject all Proposals, whether in whole or in part;
- D. Accept or reject any unbalanced, irregular, informal or incomplete Proposals; or
- E. Reject any Proponent who is involved in litigation with the Municipality of Central Manitoulin.

15.0 CONSIDERATION

The Evaluation Committee reserves the right to consider, during the evaluation of Proposals:

- A. The Proponent acknowledges that the Owner may rely upon the criteria which the Owner deems relevant; even though such criteria may not have been disclosed to the Proponent. By submitting a Proposal, the Proponent acknowledges the Owner's rights under this Section and absolutely waives any right, or cause of action against the Owner, by reason of the Owner's failure to accept the Proposal submitted by the Proponent, whether such right or cause of action arises in Project, negligence, or otherwise.
- B. The Municipality reserves the right to negotiate minor changes, amendments or modifications to the Successful Bidder's submission with any Selected Bidder(s) without offering the other Bidders the opportunity to amend their submissions. If the Municipality and Selected Bidder(s) cannot negotiate a successful agreement, the Municipality may terminate the negotiations and begin negotiations with the next Selected Bidder(s). This process can continue until an agreement has been executed or all of the Bidder(s) have been rejected. No Bidder shall have any rights against the Municipality arising from Negotiations.

16.0 REGULATION COMPLIANCE AND LEGISLATION

The Successful Proponent shall ensure all services and products provided in respect to this project are in accordance with and under authorization of all applicable authorities, Municipal, Provincial and Federal legislation, including but not limited to:

- The Occupational Health and Safety Act and its regulations;
- The Workplace Safety & Insurance Act and its regulations;

- The Canadian Environmental Protection Act and its regulations;
- The Drainage Act and its regulations;
- The Municipal Act and its regulations;
- Relevant Provincial regulations, Ministry of Environment, Conservation and Parks regulations, etc.
- Highway Traffic Act

Any Contract resulting from this Request for Proposals will be governed by and will be construed and interpreted in accordance with the laws of the Province of Ontario.

17.0 INDEMNIFICATION - MUNICIPALITY NOT EMPLOYER

The Company acknowledges that he/she is an independent Company and shall, defend, indemnify, protect and save harmless The Municipality of Central Manitoulin, its officers, members of municipal council, its agents and employees from any and against all damages, liabilities, expenses, fines, loss, costs (including legal costs), interest, actions, claims, demands, suits or other proceedings of any kind, by whomsoever made, directly or indirectly arising out of the Contract attributable to bodily injury, sickness, disease or death or to damage to or destruction of tangible property including loss of revenue or incurred expense resulting from any acts or omissions of the Company, its officers, agents, servants, employees, customers, invitees or licensees, or occurring in or on the premises or third party premises as a result of activities of whatsoever nature arising out of the furnishing by the Company, its agents or employees of the materials and/or performing of the services covered by this Contract. This indemnity shall be in addition to and not in lieu of any insurance to be provided by the Supplier in accordance with this Contract and shall survive this Contract.

18.0 INSURANCE

The successful Proponent shall provide, maintain and pay for the insurance coverage as detailed below. Proof of insurance shall be submitted to the Owner within ten (10) days of notice of award of the Contract and prior to the start of work, including proof of valid WSIB coverage.

Commercial General Liability Insurance

The Company shall, at their expense obtain and keep in force during the term of the Contract, Commercial General Liability Insurance issued on an Occurrence Basis. Coverage shall include but not limited to:

- Third party Bodily Injury, Personal Injury and Property Damage, to an inclusive limit of not less than \$5,000,000 per occurrence with an aggregate of not less than \$5,000,000.
- The Municipality shall be added as an additional insured with respect to the operations of the Named Insured. This insurance shall be non-contributing with and primary to the Municipality.
- The policy shall contain a provision for cross liability and a severability of interest clause.
- Non-owned Automobile Coverage for a limit of not less than \$5,000,000 including contractual non-owned coverage.
- Products and completed operations coverage.

- b) Contingent Employer's Liability.
- c) Broad Form Property Damage.
- d) Occurrence Property Damage
- e) Broad Form Completed Operations.
- f) The policy shall contain a provision for contractual liability – oral and written.
- g) Owner's and Contractor's Protective.
- h) The policy shall provide the Municipality with 30 days' notice of cancellation; material change or nonrenewal.

Professional Liability Insurance

The Company shall take out and keep in force Professional Liability insurance in the amount of \$5,000,000 providing coverage for acts, errors and omissions arising from their professional services performed under this Agreement. The policy SIR/deductible shall not exceed \$100,000 per claim and if the policy has an aggregate limit, the amount of the aggregate shall be double the required per claim limit.

Automobile Liability Insurance

Automobile liability insurance in respect to owned or leased vehicles used directly or indirectly in the performance of the services covering liability for bodily injury, death, and damage to property with a limit of not less than \$5,000,000.00 inclusive for each and every loss. Any and all deductibles applicable to the above-noted insurance policies shall be the sole responsibility of the Company, and the Municipality shall bear no cost towards such deductibles.

Certificate of Insurance

The Company shall provide a Certificate of Insurance evidencing coverage as noted above at least 10 days prior to Contract commencement. Such policies shall not be cancelled, changed, or lapsed unless the Insurer notifies the Municipality in writing at least thirty (30) days prior to the effective date of such cancellation, material change or lapse. The insurance policies will be in a form and with a company licensed to write business in the Province of Ontario and which are, in all respects, acceptable to the Municipality.

The Company remains responsible for maintaining the required insurance even if the certificates are never exchanged and/or requested.

19.0 NON-ASSIGNMENT

The Proponent may assign neither this Proposal nor any Work to be performed under this RFP or any part hereof without the prior written consent of the Owner. Such written consent, however, shall not under any circumstances relieve the Proponent of his/her liabilities and obligations under this RFP and shall be within the sole and unfettered discretion of the Owner.

20.0 FORM OF CONTRACT

The Proponent shall include a standard contract of engagement with their Proposal.

The Successful Proponent shall enter into a Contract with the Corporation of the Municipality of Central Manitoulin. The Contract shall indicate that Work to be undertaken shall be done to the satisfaction of the Municipality according to the Request for Proposal and for the amount agreed upon by the two parties. The Contract shall also indicate that no additional money shall be paid to the Proponent for any additional work for which prior authorization has not been given in writing.

21.0 PAYMENT & DISBURSMENTS

The Municipality of Central Manitoulin shall make payments to the Contractor in the following manner:

- The Consultant shall prepare and submit a monthly billing statement to the Municipality Accounts Payable and the Project Coordinator for payment.
- The Consultant shall provide a financial report with each invoice which shall include a breakdown of hours, fees, disbursements, previous billings, total approved amount and percent of completion.
- Disbursements: All reasonable and proper expenses incurred by the Company shall be reviewed by the Municipality for merit and validity of reimbursement, and if found to be acceptable, will be reimbursed without any allowance for overhead and/or profit.

22.0 FAILURE TO ENTER INTO AN AGREEMENT

In addition to all of the Municipality's other remedies, if a selected Bidder fails to execute the accepted agreement or satisfy any other applicable conditions within ten (10) days of notice of selection, the Municipality may, in their sole and absolute discretion and without incurring any liability, approve an extension (*should agreement changes be requested*), rescind the selection of that Bidder and proceed with the selection of another Bidder.

23.0 CANCELLATION

- A. In the event the successful Proponent does not comply with the specifications, terms and conditions, and scope of the Document, at any time throughout the duration of the Contract, the Contract shall be cancelled in accordance with the terms contained herein.
- B. The Owner upon non-performance of Contract terms may cancel the Contract; however, in doing so, the Owner does not waive its right to rely upon any obligations or commitments agreed to by the Proponent as part of their Proposal.
- C. If the Company commits any act of bankruptcy or if a receiver is appointed on account of its insolvency or in respect of any of its property or if the Company makes a general assignment for the benefit of its creditor, then, in any such case, the Municipality may, without notice, terminate the Contract.
- D. Where there is a question of non-performance, payment in whole or in part may be withheld at the discretion of the Owner. This action shall not prevent the Owner from taking early payment discounts otherwise applicable.

- E. **Force Majeure** means any event or circumstance beyond the reasonable control of a party that could not have been prevented, avoided, or overcome through the exercise of reasonable foresight, diligence, and care, including but not limited to fire, flood, natural disaster, epidemic, pandemic, labour disruption, war, civil unrest, governmental action, or other similar causes.

Neither party shall be liable for any delay in or failure of performance of its obligations under this Agreement to the extent such delay or failure results from a Force Majeure event. The affected party shall be excused from performance of the affected obligations for the duration of the Force Majeure event, provided that it promptly notifies the other party and makes reasonable efforts to mitigate the effects of the event and resume performance as soon as practicable.

If the Force Majeure event continues for a period exceeding thirty (30) consecutive days, either party may terminate this Agreement upon written notice to the other party, without further liability except for obligations accrued prior to the date of termination.

If the Municipality terminates the Contract, they are entitled to:

- Take possession of all of the work in progress and finish the work by whatever means the Municipality may deem appropriate under the circumstances.
- Withhold any further payments to the Company until its liability to the Municipality can be ascertained.
- Recover from the Company loss, damage and expense incurred by the Municipality by reason of the Company's default (which may be deducted from any monies due or becoming due to the Company, any balance to be paid by the Company to the Municipality).

PART II – DETAILED SCOPE AND BACKGROUND INFORMATION

General Scope:

The Municipality of Central Manitoulin is requesting proposals for engineering consulting services to assess and recommend the most appropriate solution for the Beaver Road East and Beaver Road West crossings through a design process. The Consultant shall evaluate feasible alternatives, including but not limited to rehabilitation/repair of the existing bridge, replacement of the bridges (including modular or prefabricated bridge options), combining both bridges into a single bridge, and replacement with culverts or other suitable crossing structures.

The scope of work includes completing all necessary investigations, condition assessments, studies, environmental and hydraulic/hydrologic analyses, evaluation of feasible alternatives, lifecycle cost assessments, and the development of recommendations.

The alternatives evaluation shall provide a comprehensive review of each option, clearly outlining its advantages, disadvantages, opportunities, constraints, and the rationale for its consideration

or elimination. Each alternative will be presented by the successful Proponent to Council at a date to be determined.

Background:

The Municipality of Central Manitoulin is a rural Municipality located in Northern Ontario on Manitoulin Island, in Lake Huron. The Beaver Road East Bridge is located approximately 0.5 km east of Grimesthorpe Road on Beaver Road. The structure is a 6.8 m long 6.8 m wide timber stringer bridge. The structure has an existing load posting of 10 tonnes. The structure is in overall fair to poor condition with some loss of fill within the cribbing.

The Beaver Road West Bridge is located 0.8 km east of Grimesthorpe Road on Beaver Road. The structure is a three span 5.45 m long 6.8 m wide timber stringer bridge. The structure has an existing load posting of 10 tonnes. Overall, the structure is in fair to poor condition. The structure has an existing load posting of 10 tonnes.

Details of the Current East bridge:

Location: Beaver Road.

Latitude: 45.713577

Longitude -82.309892

AADT: 122

MTO Site Number: MTO N/A

Water Crossing: No known name

Details of the Current West bridge:

Location: Beaver Road.

Latitude: 45.713592

Longitude -82.310905

AADT: 122

MTO Site Number: MTO N/A

The Beaver Bridge East Bridge and Beaver Road West Bridge 2024 OSIM Report is attached as supplementary information.

Detailed Scope:

With this context in mind, the Municipality is seeking proposals from qualified engineering consulting firms to undertake a design project for the two Beaver Road crossings. The Municipality's objective is to identify and design a viable solution for the bridges.

The successful proponent shall provide all consulting services required to advance the project from the findings of the existing OSIM inspection reports through assessment of alternatives and detailed design.

Based on preliminary observations, the Municipality anticipates that replacement of the existing structure with one or a series of culverts may be a feasible solution. However, these assumptions are preliminary only and shall be verified by the successful proponent through completion of all required investigations, studies, analyses, and design work.

Proponents shall include a comprehensive review of the bridge and watercourse as part of their assessment. The review shall evaluate the adequacy of the existing crossing configuration and provide recommendations regarding rehabilitation, bridge replacement, culvert installation, or other suitable crossing solutions. Recommendations shall be supported by technical, environmental, hydraulic, operational, and lifecycle cost considerations, including a clear rationale for advancing or eliminating each alternative.

The scope of work shall include, but not be limited to:

Investigations, Studies and Site Assessments

- Site review and completion of all necessary investigations, studies, and surveys.
- Proponents shall identify and describe all required preparatory work in their proposal, which may include:
 - Topographic and legal surveys.
 - Geotechnical investigations and soils reporting.
 - Hydraulic and hydrologic analyses to assess existing and future flow conditions and confirm upstream and downstream impacts.
 - Condition assessments of the existing bridge structure and overflow culverts.
 - Environmental investigations and permitting requirements, as applicable.
- Evaluation of feasible alternatives and preparation of a recommendation identifying the preferred solution, including advantages, disadvantages, opportunities, constraints, and supporting rationale for each option.

Engineering Design Services

- Preliminary and detailed engineering design for the preferred alternative.
- Preparation and submission of all engineered drawings, specifications, and supporting documentation sealed by Professional Engineers licensed to practice in the Province of Ontario.
- Design and certification in accordance with the Canadian Highway Bridge Design Code (CHBDC), applicable Ontario standards, and all other relevant regulatory requirements.
- Consultation and design review with Municipal staff and Council, including a minimum of two (2) staff meetings and one (1) Council presentation.
- Preparation and submission of record and as-built drawings upon project completion.

Additional Requirements

- Proponents shall familiarize themselves with all applicable regulatory requirements, environmental constraints, and in-water work timing restrictions associated with the project location. Proposed schedules shall account for all applicable work windows, including fisheries timing restrictions and any other permitting requirements that may affect project delivery.

PART III – PROPOSAL REQUIREMENTS AND EVALUATION CRITERIA

The RFP is divided into three components – Descriptive Proposal, Forms/Contract and Financial.

The proponents shall include the following in their proposal package:

Proposal Part A – Detailed Workplan and Relevant Experience (total 70pts)

This section shall be a response to the project scope information and shall include:

1. The Proponent shall provide a detailed project schedule identifying key milestones, meetings, deliverables, and associated completion dates, along with an anticipated overall project completion date. The schedule shall also include the estimated timing for presenting the alternative options to Council.
2. The proponent shall demonstrate experience delivering high quality outcomes on other comparable scopes of work by submitting a brief description of at least three other relevant projects, including at least one other Municipal project. References for these projects shall be provided.
3. The Proponent’s statement of qualifications shall include a brief introduction to the team members who will be assigned to each portion of the scope of work, and their role, as well as relevant experience.
4. The Proponent shall include a list of all sub-consultants, sub-contractors and vendors who will be used to complete the scope of work. Relevant team members and roles will be identified.

Proposal Part B – Forms and Sample Contract (10pts)

1. The Proponent shall submit the completed and signed declaration forms included in PART IV of this RFP document.
2. The Proponent shall submit the draft form of contract document with the proposal submission.

Proposal Part C – Financial (40pts)

1. The Proponent shall submit their financial offer. This offer should correspond with the proponent’s proposed schedule and deliverables for each phase of the project. A detailed price breakdown shall be provided for the cost of each of the major tasks in the proposal, and should include specific activities planned, the timing and associated level of effort by individual or classifications.
2. The financial information provided shall include an Upset Limit.

3. The Proponent shall ensure that disbursements are listed separately from other project costs, and shall also provide a list of typical disbursement charges anticipated for this project, including # of meetings expected, cost per meeting, mileage charges (if a virtual meeting is not possible) and any other costs, etc.
4. All costs shall be provided in Canadian dollars with taxes excluded.

Evaluation

The Proposals will be evaluated and scored in accordance with the requirements of the RFP and the following Scoring Guide:

Parts A and B

Detailed Workplan and Experience Evaluation	Point Allocation
Firm's Qualifications and Experience on Similar Assignments	10
Project Team's Experience	10
Project Understanding	10
Work Plan, Methodology, list of deliverables	25
Project Schedule	15
Total	70 pts
Attendance at Mandatory site meeting	Pass/Fail
Bid forms and declaration completed, signed, submitted	Pass/Fail
Form of Contract for consulting services submitted with proposal.	Pass/Fail
Total	Pass/fail

Proponents are required to achieve a minimum of 70% (49pts) on the overall rated criteria above, as well as a pass on the pass/fail components to be able to proceed to the second stage evaluation of the financial information provided.

Part C

Financial Information evaluation	Awarded Price Points
Fee Schedule & Upset limit	10
Remaining price points will be awarded based on the following formula: Awarded Price Points = $\frac{\text{Lowest Proposal}}{\text{Evaluated Proposal}} \times \text{MAX POINTS (30)}$	30
Total	40pts

PART IV - PROPOSAL FORMS

***** THESE FORMS MUST BE COMPLETED AND INCLUDED IN ADDITION TO THE PROPOSAL MATERIAL AS PART OF THE SUBMISSION PACKAGE *****

PROPOSAL SUMMARY FORM

PROJECT DESCRIPTION: ENGINEERING CONSULTING SERVICES FOR BEAVER ROAD EAST AND WEST BRIDGE REPAIR OR REPLACEMENT

PROJECT LOCATION: Municipality of Central Manitoulin, Manitoulin Island, Ontario. The Municipal Office is located in Mindemoya, Ontario at 6020 Highway 542.

OWNER: Municipality of Central Manitoulin

PROPONENT:

DATE: _____

FIRM NAME: _____

ADDRESS (City, Province, Postal Code): _____

TELEPHONE: _____

EMAIL: _____

AUTHORIZED SIGNATURE: _____

NAME AND POSITION OF SIGNER: _____

WEBSITE: _____

PROPOSALS RECEIVED BY

The Municipality of Central Manitoulin
6020 Highway 542
PO Box 420
Mindemoya, ON P0P 1S0

DECLARATION

TO: Chair and Members of the Tendering Committee, The Municipality of Central Manitoulin

DATED AT: _____ the _____ day of _____, 2026.

1. I, _____, of _____, **DECLARE** that no person, firm, or Corporation, other than the one whose signature or the signature of whose proper officers and seal is or are attached below, has any interest in this submission or in the Contract proposed to be taken.
2. **I FURTHER DECLARE** that this Proposal is made without any connections, knowledge, comparison of figures or arrangement with any other company, firm or person making a submission for the same project and is in all respects fair and without collusion or fraud.
3. **I FURTHER DECLARE** that no member of the Municipal Council, or any Officer of The Corporation is or will become interested, directly, or indirectly, as a contracting party or otherwise, in the performance of the Contract, or in the supplies, work or business to which it relates or any portion of the profits thereof, or any such supplies to be used therein or in any of the monies to be derived therefrom.
4. **I FURTHER DECLARE** that all items in the Proposal are in all respects true.
5. **I FURTHER DECLARE** that I have carefully examined the Request for Proposal document and hereby acknowledge the same to be part and parcel of any contract to be let for the project therein described or defined and do all the work and to provide the services for the prices stated.
6. **I FURTHER DECLARE** that I have a clear understanding of all the work involved in this contract.
7. **I FURTHER DECLARE** that this offer is to continue open to acceptance until the formal contract is executed by the successful Company for the said project OR for a period of sixty (60) days after the closing date, whichever first occurs and that the Municipality may, at any time, within that period, without notice, accept this Submission whether any other Submission has been previously accepted.
8. **I FURTHER DECLARE** that the awarding of the contract based on this Request for Proposal by the Municipality shall be an acceptance of this Proposal.
9. **I FURTHER DECLARE** that in the event of default or failure on our part, that the Municipality shall be at liberty to advertise for new Requests for Proposals, or to carry out the works in any other way they deem best, and I also agree to pay to the said Municipality the difference between this Request for Proposal and any greater sum which the said Municipality may expend or incur by reason of such default or failure or by reason of such action as aforesaid, on their part, including the cost of any advertisement for new Request for Proposals; and to indemnify and save harmless said Municipality and their officers from all loss, damage, cost charges and expenses which they may suffer or be put to by reason of any such default or failure on our part.

10. **I FURTHER DECLARE** that Addendum/Addenda No. _____, inclusive, has/have been received, and that all changes specified in the Addendum/Addenda have been included in the prices submitted.

Witness

Signature (I have authority to bind the company)

Date

Name of Company

E-mail Address

Address

Name of Signing Authority

Telephone

APPENDIX A

Excerpted 2024 OSIM Report for Central Manitoulin Prepared by Tulloch Engineering



Municipality of Central Manitoulin – 2022 OSIM Inspections



January 2023
TULLOCH Project #: 22-0983



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Sault Ste. Marie,
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22-0983

January 24, 2022

The Municipality of Central Manitoulin
6020 Hwy 542, Mindemoya, ON
P0P 1S0

Attention: James Taylor, CRS, Roads Superintendent

Re: OSIM Reports for the Municipality of Central Manitoulin

Dear Mr. Taylor:

The Municipality of Central Manitoulin hired Tulloch Engineering Inc. (TULLOCH) to perform the biennial visual inspections of ten (10) bridge structures and two (2) culvert structures according to the Ontario Structure Inspection Manual (OSIM) under Ontario Reg 104/97. The inspections were completed on June 6 and June 7, 2022, by the undersigned and OSIM forms are attached. The goal of these inspections is to ensure, within an economic framework, an acceptable standard for structures in terms of public safety, comfort, and convenience. The main objectives for the regular inspections are to:

- Maintain structures in a safe condition
- Prolong the life of structures
- Identify maintenance and repair needs
- Provide the basis for structure management

The element data has been updated to reflect observations made during our inspections this year. General maintenance and repair/rehabilitation items are outlined herein and should be used as budget figures for future capital or repair costings in your asset management plan. Bridges that should be highlighted as your priority structures include the Townline Road Bridge, the Beaver Road East and West Bridges and the Cranson Road Culvert.

Townline Road Bridge had severe corrosion noted to the beams primarily at the bearing seats. This requires reinforcement repairs as soon as possible which would include cleaning the entirety of the bearing seats to expose the bearing seats, ends of girders and the bearings/bearing plates (if present) which are currently covered in gravel and debris. The repairs will include reinforcing of the beam webs at the bearing locations. The best option here would be to excavate the ends of the bridge to expose the bearing seats and the abutments from the approach ends of the bridge. This will be more expensive and required road closure however, this creates the opportunity to repair the ballast walls which have severe decay throughout and require replacement as well. The existing soffit elevation appears low and subject to regular flooding which should be confirmed with a hydraulic assessment to verify the required opening size below the bridge (including any overflow/relief culverts that are immediately to the west). It is our understanding that the bridge has been closed to traffic as of last fall and that replacement has been selected as an alternative option to a structure evaluation and reinforcing repairs.



The Beaver Road bridges (Beaver Road East and Beaver Road West) are in fair condition overall with current 10 tonne load posting. The general age of these structures is impacting the bridge condition index rating. These bridges both require an update to the railing systems due to a non-standard railing/post connection. The abutments have undermining and loss of their fill material within the cribbing that requires repairs to maintain the performance of the bridge. The undermining repairs are important as we have noted that during our inspection an additional 8x8 bearing timber was installed towards the front edge of the cribs which causes the bridge loadings to be concentrated on the front face versus the original centered bearing location. The presence of the gravel overlay on the deck results in constant wet areas in the decking and soffit and the timber stringers. The repairs would continue to keep the bridges at their current level of service, however, if removal of the load posting is an absolute requirement, then a higher level of rehabilitation/reinforcement would be required during the planned repairs. TULLOCH should be consulted prior to any major rehabilitation planning.

Finally, the Cranston Road Culvert requires additional barrel reinforcement along the west barrel wall between sections which have previously had reinforcement repairs completed. The date of these repairs is unknown to TULLOCH (at this point) and it is unknown as to whether this was something that had surfaced shortly after original construction or if this is being caused by movement of the barrel shape. During our inspection there were additional cracks discovered in the same bolt line as was previously reinforced. Reinforcement is required in the cracked corrugations north of the existing reinforcement. TULLOCH is recommending that a monitoring system be initiated to regularly inspect/survey benchmark locations within the culvert for continued movement/cracking.

The bridges shall continue to be inspected every 2 years in accordance with Ontario Reg 104/97. We trust the enclosed is adequate for your needs at this time and TULLOCH would welcome the opportunity to provide you with additional pricing for any additional engineering support or monitoring services for your structures. Should you have questions regarding the information provided herein, please contact us at your convenience.

Sincerely,
TULLOCH Engineering Inc.

Matt Kirby, P. Eng.
Project Manager
MK:sr



Encl. (12) - OSIM Inspection Reports
cc: Patricia Mader - Municipal Coordinator

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1. INTRODUCTION

Tulloch Engineering Inc. has been retained by the Municipality of Central Manitoulin to undertake detailed visual inspections of the municipally owned bridges within their jurisdiction. In accordance with Ontario Regulation 104/97 – Standards for Bridges, the structural integrity, safety and condition of every bridge shall be determined through the performance of at least one inspection in every second calendar year under the direction of a professional engineer and in accordance with the Ontario Structure Inspection Manual (OSIM). O. Reg. 472/10, s. 2.

The goal of the structural inspections is to ensure that an acceptable standard is being maintained for each bridge in terms of public safety, comfort, and convenience. The objectives of the inspections are as follows:

- To identify critical maintenance, rehabilitation, and or replacement needs of the bridges;
- To protect and prolong the useful life of the bridges;
- To provide a basis for scheduling and funding of the maintenance, rehabilitation repairs, or replacement of the bridges;

This report contains completed OSIM inspection forms, relevant photographs, suggested repairs, and estimated costs for repairs at each site. The bridges inspected as part of this assignment are shown on the key map provided in Figure 1.0 below.

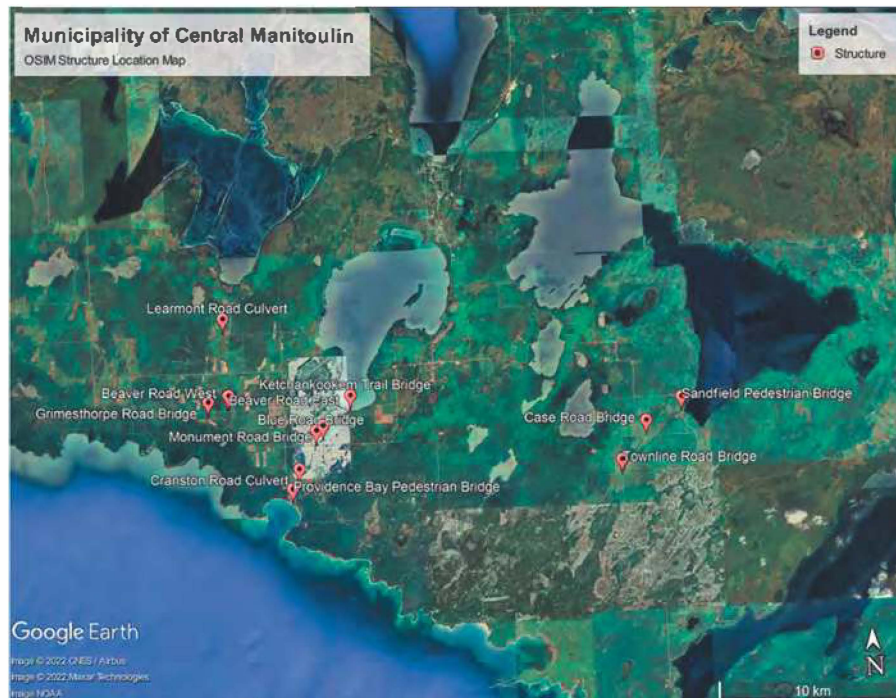


Figure 1: Bridge Locations

1.1 Inspection Procedures

Detailed visual inspections involve review of each primary structural element. The structural elements are identified by primary groupings and sub-groupings of each element. Material defects such as wood rot or concrete spalling were recorded and measured in the field, refer to Appendix A for a full glossary of terms for the material defects. The condition of each element is quantified and assessed with a rating of 'excellent', 'good', 'fair', or 'poor'. The condition ratings are quantified for either a portion of the total structural element, or the entirety of the structural element.

2. INSPECTION SUMMARIES

The results of the detailed visual inspections are recorded using standard Ontario Structure Inspection Manual (OSIM) forms. The forms provide a report of existing data and conditions at the time of the inspection for each bridge. Results of the previous inspections completed were used as a template for this round of inspections. Updated OSIM forms are located in Appendix B. The reports identify additional inspections required and recommended work to repair deficiencies along with a schedule for such repairs. The following summarizes the results of our inspections.

2.1 Beaver Road East Bridge

Beaver Road East is located approximately 0.5 km east of Grimesthorpe Road on Beaver Road. The structure is a 6.8 m long 6.8 m wide timber stringer bridge. The structure has an existing load posting of 10 tonnes. The structure is in overall fair to poor condition with some loss of fill within the cribbing.

Recommended Maintenance

None

Recommended Repairs

1-5 years

- Clean edges of cribs from algae, replace lost fill and restore undermining.
- Replace railing system as the current post supports are non-standard.

2.2 Beaver Road West Bridge

Beaver Road West Bridge is located 0.8 km east of Grimesthorpe Road on Beaver Road. The structure is a three span 5.45 m long 6.8 m wide timber stringer bridge with. The structure has an existing load posting of 10 tonnes. Overall, the structure is in fair to poor condition. The structure has an existing load posting of 10 tonnes.

Recommended Maintenance

None

Recommended Repairs

1-5 years

- Clean edges of cribs from algae, replace lost fill and restore undermining.
- Replace railing system as the current post supports are non-standard.

2.3 Blue Road Bridge

Blue Road Bridge is located approximately 400 m west of Monument Road on Blue Road. The structure is a single span 15.25 m long 6.2 m wide steel girder bridge, constructed in 2005. Overall, the structure is in good condition.

Recommended Maintenance

1 year

- Clear debris from abutments, bearing seats and top of wingwall seats.

Recommended Repairs

1 year

- Replace decayed guiderail posts and spacer blocks

2.4 Case Road Bridge

Case Road Bridge is located approximately 550 m west of Trails End Road on Case Road. The structure is a double span 12.2 m long 6.9 m wide steel girder bridge. The structure is in overall good condition.

Recommended Maintenance

1 year

- Replace missing delineator sign.
- Remove vegetation growth around approach barriers and embankments.

Recommended Repairs

1-5 years

- Remove gravel overburden on deck
- Replace broken spacer blocks in barriers

2.5 Cranston Road Culvert

Cranston Road Culvert is located 300 m east from River Road on Cranston Road. The structure is a steel arch culvert that is 21.5 m long and 5.4 m wide. The culvert is in overall fair condition. The culvert has cracking along a joint at the bolt line.

Recommended Maintenance

1 year

- Place rock protection around edges of wingwalls
- Remove vegetation around inlet
- Tighten loose nuts in culvert barrel

1-5 years

- All trees and shrubs should be removed from the roadway embankments above the culvert barrel.

Recommended Repairs

1 year

- Weld rebar to prevent further cracking at bolts
- Install guiderail delineators

1-5 years

- Place rock protection on embankments to prevent scour.
- Replace guiderail posts and tighten cables

2.6 Grimesthorpe Bridge

Ritter Bridge is located 300 m south of The Beaver Road on Grimesthorpe Road. The structure is a double span 20.9 m long 8.4 m wide concrete arch culvert. The structure is in overall good condition.

Recommended Maintenance

1 year

- Remove gravel buildup and vegetation under guiderail.
- Remove debris from guiderail posts.
- Seal cracking in bridge wearing surface.

Recommended Repairs

- None

2.7 Ketchankookem Trail Bridge

Ketchankookem Trail Bridge is located 500 m west of Old Highway 551 on Ketchankookem Trail Road. The structure is a rectangular voided slab with a length of 10.9 m and a width of 10 m. The structure is in overall good condition.

Recommended Maintenance

1 year

- Route and seal cracks in approach sidewalk.

Recommended Repairs

1 year

- Clean curbs and barrier joints of sand and debris
- Route and seal transverse cracks at approaches

2.8 Learmont Road Culvert

Tuira Bridge is located 650 m east of Cemetery Road on Watson Road E. The structure is an open bottom steel arch culvert with a length of 5.8 m and a width of 10.88 m. The structure is in overall excellent condition.

Recommended Maintenance

1 year

- Monitor gabion baskets to ensure that flow at culvert is not adversely obstructed.

Recommended Repairs

1 year

- Fill and pack erosion channel at northeast quadrant

2.9 Monument Road Bridge

Monument Road Bridge is located 200 m north of Blue Road on Monument Road. The structure is a solid slab concrete bridge with a length of 9.2 m and a width of 9.2 m. The structure is in overall good condition.

Recommended Maintenance

1 year

- Remove vegetation growth adjacent to wingwalls
- Clear gravel and debris from approaches and bridge deck

Recommended Repairs

None

2.10 Providence Bay Pedestrian Bridge

Providence Bay Pedestrian Bridge is located on the downtown Providence Bay boardwalk. The structure is a cambered steel bridge with a length of 30.0 m and a width of 2.03 m. The structure is in overall fair to good condition.

Recommended Maintenance

1 year

- Refasten nails in the deck
- Monitor bridge deflections
- Replace broken pickets in railing system

Recommended Repairs

Urgent

- Install added support at pier south of bridge for boardwalk.

2.11 Sandfield Pedestrian Bridge

Sandfield Pedestrian Bridge is in Sandfield, Ontario. The structure is an open bottom steel arch culvert with a length of 5.8 m and a width of 10.88 m. The structure is in overall fair to good condition.

Recommended Maintenance

1 year

- Clean bearings of debris buildup

Recommended Repairs

1-5 years

- Restore lost bearing material and stabilize material erosion

2.12 Townline Road Bridge

Townline Road Bridge is located 30 m west of Side Road 15 on Townline Road. The structure is a two-span steel stringer bridge with a length of 9.71 m and a width of 6.75 m. The structure is in overall poor condition. The bridge girders and bearings are in poor condition and should be replaced/repared as soon as possible. Localized steel reinforcement is required immediately until replacement is complete. A load evaluation is recommended to determine the allowable bridge capacity or otherwise closed until repairs/replacement is possible.

Recommended Maintenance

1 year

- Remove decay in top of guiderail posts and fill with epoxy to prevent further decay
- Clean excess gravel and debris from curbs annually

Recommended Repairs

Urgent

- Install bearing stiffeners/reinforcement to girders at the bearings.
- Clean gravel and sand from bearings
- Replace bearings and ballast walls at same time as steel repairs.

1-5 years

- Repair concrete spalls and undermining of wingwalls

3. IMPROVEMENT COSTS

The tables in Appendix C summarize the estimated cost of the repair and rehabilitation required for the deficiencies identified through the inspection process. Below is a summary of the required repair costs.

Priority Rank	Bridge No. & Description	Bridge Type/Description	Year Built	BCI - Bridge Condition Index	BSI - Bridge Sufficiency Index	Comments / Repair & Maintenance Recommendations	Urgent (Within 1 Year)	1-5 Years	6-10 Years	Maintenance
1	Townline Road Bridge	Steel Girders with Timber Deck	1970	30	27	Steel girders, bearings and ballast wall to be replaced, add bearing stiffeners to girders, repair concrete spalls and undermining in wingwalls, clean gravel and sand off of bearings.	\$ 13,000	\$ 153,000	-	-
2	Beaver Road West	Timber Stringers with Timber Deck	Unknown	43	38	Replace guiderail post system and repair undermining/loss of fill incursions.	\$ -	\$ 32,500	-	-
3	Beaver Road East	Timber Stringers with Timber Deck	Unknown	40	35	Replace guiderail post system and repair undermining/loss of fill incursions.	\$ -	\$ 32,500	-	-
4	Cranston Road Culvert	Arch Culvert	2010	56	53	Place rock protection to prevent further scour, weld rebar to prevent further cracking at bolt cracks, replace broken guiderail posts and tighten cables, install guiderail delineators, cutback encroaching vegetation around embankments, tighten loose nuts	\$ 6,000	\$ 55,000	-	\$ 500
5	Learmont Culvert	Ellipse Culvert	Unknown	70	67	Repair minor washout and erosion at the northeast embankment	\$ -	\$ 500	-	-
6	Sanfield Pedestrian Bridge	Cambered Steel Truss	Unknown	70	70	Clear bearings of debris and restore lost bearing material and stabilize abutments.	-	\$ 7,500	-	-
7	Providence Bay Pedestrian Bridge	Cambered Steel Truss	Unknown	71	71	Replace broken railing pickets, touch up paint, pound down popped up fasteners, and add additional support at south boardwalk	\$ 1,700	-	-	-
8	Case Road Bridge	Steel Girders with Timber Deck	Unknown	81	78	Replace missing delineator signs, remove overburden gravel on bridge deck, replace broken spacer blocks on guiderail and clean off bearings.	\$ 500	\$ 6,000	-	-
9	Monument Road Bridge	Solid Slab	2006	88	85	Seal cracking in bridge deck wearing surface and cut back encroaching vegetation around the embankments	\$ 1,500	-	-	-
10	Blue Road Bridge	Steel Girders with Concrete Deck	2005	89	86	Replace decayed posts and spacer blocks, monitor scour of downstream banks	\$ 1,500	-	-	-
11	Ketchankookem Trail Bridge	Rectangular Voided Slab	2012	94	90	Route and seal cracks in approach sidewalk, clean curbs and barrier joints of sand and debris, route and seal cracks in approach wearing surfaces.	\$ 2,000	-	-	-
12	McAllister Bridge	Concrete Arch Culvert	2012	91	90	Remove gravel windrow built up under the barriers and seal bridge deck and approach cracks.	\$ 1,500	-	-	\$ 500

4. CONCLUSIONS AND RECOMMENDATIONS

Upon completion of the biennial structure inspections, a number of recommendations have been identified for both short and long-term planning with municipal structures.

Critical items have been noted above and should be scheduled to be undertaken by the Town as soon as possible/practical.

The Beaver Road East and West Bridges are both in need of new guiderail systems and the crib works need to be repaired, cleaned and monitored.

Cranston Road Culvert requires further weld repairs to the barrel of culvert to prevent further cracking along the bolt line. The culvert also requires additional rock protection/scour protection to prevent further scour to the banks as well as the inlets and outlets and repairs to the guiderail.

Learmont Culvert is in over fair to good condition and requires monitoring the gabion baskets to ensure they do not subside further causing flow restrictions.

Sandfield Pedestrian Bridge is in overall fair condition and requires the abutments to be stabilized through the restoration of loss material.

Providence Bay Pedestrian Bridge is also in fair to good condition and requires repairs to the broken pickets and the coatings. The approach boardwalk also has a limited bearing on the piers at the south approach which requires repair and continued monitoring.

Case Road Bridge is in overall good condition with gravel overburden on the bridge deck as well as broken spacer blocks need to be replaced.

Monument Road Bridge is in overall good condition required vegetation to be removed and cracking to be sealed in the bridge wearing surface.

Ketchankookem Trail Bridge is in overall good condition with cracking in the approach sidewalk and approach wearing surface.

Blue Road Bridge is in overall good condition and requires the guiderail posts to be replaced and the downstream banks should be monitored for scour.

McAllister Bridge is in good condition and has cracks in the wearing surface on the bridge deck and the approaches that require sealing.

Townline Road Bridge is in poor condition and requires replacement of the steel girders, bearings and ballast walls. The bridge requires immediate repairs to the steel and bearings as outlined. TULLOCH recommends that a load evaluation be carried out on the bridge to determine the reduced bridge capacity or closed until repairs/replacement can be completed.

We trust that the contents of this report sufficiently outline the requirements for bridge maintenance, repair, and replacement. Should you have any questions or comments on the contents of this report, please do not hesitate to contact our office.

Respectfully Submitted,

TULLOCH ENGINEERING INC.

REPORT PREPARED BY:



Scott Reaume, EIT

REPORT REVIEWED BY:



Matt Kirby, P. Eng
Project Manager

APPENDIX A

Glossary of Definitions

Abutment - A substructure unit which supports the end of the structure and retains the approach fill.

Auxiliary Components - Any component which does not share in the load carrying capacity of the structure.

Biennial Structure Inspection - An inspection performed in every second calendar year to assess the condition of the structure, in accordance with the methodology described in OSIM.

Bridge - A structure which provides a roadway or walkway for the passage of vehicles, pedestrians or cyclists across an obstruction, gap or facility and is greater than or equal to 3 m in span.

Bridge Condition Index (BCI) - The BCI rating is a planning tool developed by the Ontario Ministry of Transportation that helps schedule maintenance and rehabilitation work. The BCI is not used to rate or indicate the safety of a bridge. The BCI result is organized into ranges from 0 to 100. To calculate the BCI rating, the current dollar value of the bridge is divided by the replacement cost of the bridge. The replacement value is based on the cost to reconstruct a new bridge. Using this formula enables the Owner to make an informed decision about the amount of work a bridge requires and whether or not to pursue replacement over repair in the near future.

Rating	Maintenance Schedule
Good: BCI Range 70 -100	Maintenance is not usually required within the next five years
Fair: BCI Range 60 -70	Maintenance work is usually scheduled within the next five years. This is the ideal time to schedule major bridge repairs to get the most out of bridge spending.
Poor: BCI Less than 60	Maintenance work is usually scheduled within one year.

Bridge Sufficiency Index (BSI) – The BSI rating is a planning tool developed by the Ontario Ministry of Transportation. The BSI is calculated using the BCI rating less ratings for Importance Factors including Traffic, Economic Implications, Bridge Width and Bridge Profile or Alignment. It is a planning tool with a range of 0 to 100 and helps prioritize maintenance and rehabilitation work, and replacement, with bridges of equal BCI but lower BSI having importance over bridges with higher BSI.

Chord - The upper and lower main longitudinal component in trusses or arches extending the full length of the structure.

Coating - The generic term for paint, lacquer, enamel, sealers, galvanizing, metallizing, etc.

Concrete Deck Condition Survey - A detailed inspection of a concrete deck in accordance with The Structure Rehabilitation Manual.

Culvert (Structural) - A Structure that forms an opening through soil and has a span of 3 metres or more

Defect - An identifiable, unwanted condition that was not part of the original intent of design.

- **Scaling** - Scaling is the local flaking, or loss of the surface portion of concrete or mortar as a result of the freeze-thaw deterioration of concrete. Scaling is common in non-air-entrained concrete but can also occur in air-entrained concrete in the fully saturated condition. Scaling is prone to occur in poorly finished or overworked concrete where too many fines and not enough entrained air is found near the surface.
- **Disintegration** - Disintegration is the physical deterioration or breaking down of the concrete into small fragments or particles. The deterioration usually starts in the form of scaling and, if allowed to progress beyond the level of very severe scaling is considered as disintegration. Disintegration may be caused by de-icing chemicals, sulphates, chlorides or by frost action.
- **Erosion** - Erosion is the deterioration of concrete brought about by water-borne sand and gravel particles scrubbing against concrete surfaces. Similar, damage may be caused by flowing ice. Erosion is sometimes combined with the chemical action of air and water-borne pollutants which accelerate the breakdown of the concrete. Erosion is generally an indication that the concrete is not durable enough for the environment in which it has been placed.
- **Corrosion of Reinforcement** - Corrosion is the deterioration of reinforcement by electrolysis. The alkali content in concrete protects the reinforcement from corrosion. However, when chloride ions above a certain concentration are dissolved in water and penetrate through the concrete to the reinforcement this protection breaks down and corrosion starts. In the initial stages, corrosion may appear as a rust-stain on the concrete surface. In the advanced stages, the surface concrete above the reinforcement cracks, delaminates and spalls off exposing heavily rusted reinforcement.
- **Delamination** - Delamination is defined as a discontinuity of the surface concrete which is substantially separated but not completely detached from concrete below or above it. Visibly, it may appear as a solid surface but can be identified as a hollow sound by tapping or chain dragging. Delamination begins with the corrosion of reinforcement and subsequent cracking of the concrete. Delamination or debonding may also occur in concrete that has been patched or overlaid due to the continued deterioration of the older concrete. This may happen even in the absence of any rusting of reinforcing steel.
- **Spalling** - A spall is a fragment, which has been detached from a larger concrete mass. Spalling is a continuation of the delamination process whereby the actions of external loads, pressure exerted by the corrosion of reinforcement or by the formation of ice in the delaminated area results in the breaking off of the delaminated concrete.

- Cracking - A crack is a linear fracture in concrete which extends partly or completely through the member. Cracks in concrete occur as a result of tensile stresses introduced in the concrete. Tensile stresses are initially carried by the concrete and reinforcement until the level of the tensile stresses exceeds the tensile capacity of the concrete. After this point the concrete cracks and the tensile force is transferred completely to the steel reinforcement. The crack widths and distribution is controlled by the reinforcement in reinforced and prestressed concrete, whereas in plain concrete there is no such control.
- Alkali-Aggregate Reaction - In Ontario, there exists several sources of aggregates that react adversely with the alkalis in cement to produce a highly expansive gel. Currently, these sources of reactive aggregates are generally avoided, but they do exist in many existing structures and still may occur in newer structures. The two general types of reactions in Ontario are alkali-carbonate and alkali-silica reaction. The expansion of the gel and aggregates occurs due to hydroxyl ions in the concrete pore solution, which under moist conditions, leads to cracking and deterioration of the concrete.
- Surface Defects - Surface defects are not necessarily serious in themselves; however, they are indicative of a potential weakness in the concrete, and their presence should be noted but not classified as to severity, except for honeycombing and pop-outs.
 - STRATIFICATION is the separation of the concrete components into horizontal layers in over-wetted or over-vibrated concrete. Water, laitance, mortar and coarse aggregates occupy successively lower positions. A layered structure in concrete will also result from the placing of successive batches that differ in appearance.
 - SEGREGATION is the differential concentration of the components of mixed concrete resulting in nonuniform proportions in the mass. Segregation is caused by concrete falling from a height, with the coarse aggregates settling to the bottom and the fines on top. Another form of segregation occurs where reinforcing bars prevent the uniform flow of concrete between them.
 - COLD JOINTS are produced if there is a delay between the placement of successive pours of concrete, and if an incomplete bond develops at the joint due to the partial setting of the concrete in the first pour.
 - DEPOSITS are often left behind where water percolates through the concrete and dissolves or leaches chemicals from it and deposits them on the surface.
 - HONEYCOMBING is produced due to the improper or incomplete vibration of the concrete which results in voids being left in the concrete where the mortar failed to completely fill the spaces between the coarse aggregate particles.
 - POP-OUTS are shallow, typically conical depressions, resulting from the breaking away of small portions of the concrete surface, due to the expansion of some aggregates or due to frost action. The shattered aggregate particle may be found at the bottom of the depression, with a part of the aggregate still adhering to the pop-out cone.
 - ABRASION is the deterioration of concrete brought about by vehicles or snow-plough blades scraping against concrete surfaces, such as, decks, curbs, barrier walls or piers.

- WEAR is usually the result of dynamic and/or frictional forces generated by vehicular traffic, coupled with the abrasive influx of sand, dirt, and debris. It can also result from the friction of ice or water-borne particles against partly or completely submerged members. The surface of the concrete appears polished.
- SLIPPERY CONCRETE SURFACES may result from the polishing of the concrete deck surface by the action of repetitive vehicular traffic.

Detailed Visual Inspection - An element by element visual assessment of material defects, performance deficiencies and maintenance needs of a structure.

Deterioration - A defect that has occurred over a period of time.

Distress - A defect produced by loading.

Elements - The individual parts of a structure defined for inspection purposes. Several bridge components may be grouped together to form one bridge element for inspection purposes

Environment - An element's exposure to salt spray:

- Benign - Not exposed (e.g. River Pier)
- Moderate - Exposed but element protected (e.g. Asphalt covered and waterproofed deck)
- Severe - Exposed and element not protected (e.g. Exposed concrete deck, Barrier Wall)

Evaluation - The determination of the load carrying capacity of structures in accordance with the requirements of the Canadian Highway Bridge Design Code.

Maintenance - Any action which is aimed at preventing the development of defects or preventing deterioration of a structure or its components.

Primary Components - The main load carrying components of the structure.

Rehabilitation - Any modification, alteration, retrofitting or improvement to a structure subsystem or to the structure which is aimed at correcting existing defects or deficiencies.

Remaining Service Life - Remaining Service Life is an estimate of the useful remaining life of the structure and is based on the year of construction or major rehabilitation and a service life of 50 years for culverts that are not plastic, polymer coated or concrete, 50 years for bridges constructed prior to 2000, 50 years for steel bridges and 70 years for other structures.

Repair - Any modification, alteration, retrofitting or improvement to a component of the structure which is aimed at correcting existing defects or deficiencies.

Retaining Wall - Any structure that holds back fill and is not connected to a bridge.

Secondary Components - Any component which helps to distribute loads to primary components, or carries wind loads, or stabilizes primary components.

Sign Support - A metal, concrete, or timber structure, including supporting brackets, service walks and mechanical devices where present, which support a luminaire, sign or traffic signal and which span or extend over a highway.

Span - The horizontal distance between adjacent supports of the superstructure of a bridge, or the longest horizontal dimension of the cross-section of a culvert or tunnel taken perpendicular to the walls.

Stringers - Stringers span between floor beams and provide the support for the deck above.

Structure - Bridge, culvert, tunnel, retaining wall or sign support.

Suspected Performance Deficiency - A Suspected Performance Deficiency should be recorded during an inspection, if an element's ability to perform its intended function is in question, and one or more performance defects exist.

APPENDIX B

OSIM Forms

Inventory Data:

Structure Name	<input type="text" value="Beaver Road East #3"/>		
Main Highway #	<input type="text" value="N/A"/>	On <input checked="" type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Beaver Road, 500m east of Grimesthorpe Rd."/>	Service under	<input checked="" type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	<input type="text" value="50 - Northern"/>	Latitude:	<input type="text" value="63.510617"/> Longitude: <input type="text" value="9.210989"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input type="checkbox"/>
Old County	<input type="text" value="49 - Manitoulin"/>	Posted Speed	<input type="text" value="N/A"/> No. of Lanes <input type="text" value="2"/>
Township	<input type="text" value="657 - Campbell"/>	AADT	<input type="text"/> % Truck <input type="text"/>
Structure Type 1	<input type="text" value="Timber Girder"/>	Travel Stream	<input type="text"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text" value="E to W"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text" value="7.4"/> (m)	Inspection Year	<input type="text" value="2022"/>
Overall Str. Width	<input type="text" value="6.8"/> (m)	Inspection Duration	<input type="text"/> (hrs)
Culvert length	<input type="text"/> (m)	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="50.3"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text" value="6.1"/> (m)	Min. Vertical Clearance	<input type="text"/> (m)
Skew Angle	<input type="text" value="0"/> (Degree)	Detour Distance	<input type="text" value="8.1"/> (km)
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text" value="0.15"/> (m)
Span Lengths	<input type="text" value="6.8"/> (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="N/A"/>	Year of superstruct. constructed	<input type="text" value="2012"/>
Last Reg OSIM Inspection	<input type="text" value="2020"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value=" / / 10"/> (tonnes)
Work History: (Date/description) 2012 Surface treatment			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

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Field Inspection Information:			
Date of Inspection:	2022-06-07	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

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Rev

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:	X		
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

Overall Structure Notes:	
Recommended Work on Structure:	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	
Date of Next Inspection:	2024

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

2018

Rev 2008

Element Data

Element Group:	Abutments	Length:	1.4 (m)			
Element Name:	Abutment Walls	Width:	6.8 (m)			
Location:	East and West of Bridge	Height:	1.2 (m)			
Material:	Wood	Count:	16.3 (sq. m)			
Element Type:	Timber Cribbing with fill	Total Quantity:				
Environment:	Benign Moderate Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
				13.6	2.7	01.
Comments: A new pressure treated 8x8 was installed on front face of cribbing and shimmed tight to stringers. Beam cribbing is only half bearing at butt joint at the girder fourth from the south as the newly installed timber crib member was not installed properly and does not meet the other timber member.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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East abutment general arrangement

Element Data

Element Group:	Accessories		Length:			
Element Name:	Signs		Width:			
Location:	East and West Abutment		Height:			
Material:	Steel		Count:	5		
Element Type:			Total Quantity:	5 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	
			5			00. None
Comments: Edge delineations in place. Only one load posting sign present at east approach. West approach signage controlled by signs at adjacent bridge to the west.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

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Element Data

Element Group:	Approaches		Length:	10.0 (m)		
Element Name:	Wearing Surface		Width:	6.1 (m)		
Location:	East and west of bridge		Height:			
Material:	Surface treatment		Count:	2		
Element Type:			Total Quantity:	122 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² / m / each / % / all		118.75	3.25	3.25	00. None
Comments: Center line wide crack in east approach. Wide transverse crack in west approach. Light to medium ravelling and wheel rutting throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Wide transverse and longitudinal cracks at east approach

Element Data

Element Group:	Barriers		Length:	1.1 (m)		
Element Name:	Posts		Width:	0.2 (m)		
Location:	North and South of Bridge		Height:	0.2 (m)		
Material:	Wood		Count:	8		
Element Type:	8x8 timber posts		Total Quantity:	8 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	08. Pedestrian/Vehicu
					8	
Comments: Non-standard post connection onto deck and girders.						
Recommended Work:			<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
Replace barrier posts.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Typical railing support

Element Data

Element Group:	Barriers	Length:	8.0 (m)			
Element Name:	Railing Systems	Width:				
Location:	North and South of Bridge	Height:	0.3 (m)			
Material:	Steel	Count:	2			
Element Type:	Steel guiderail	Total Quantity:	16.0 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good	Fair	Poor*	
					16	00. None
Comments: Rail is in overall good condition however it is controlled by the condition of the posts. Excess gravel on bridge deck is blocking the drainage in the curbs.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Curb/railing system with excess gravel buildup on bridge deck

Element Data

Element Group:	Beams/MLE	Length:	7.4 (m)			
Element Name:	Stringers	Width:	0.3 (m)			
Location:		Height:	0.5 (m)			
Material:	Wood	Count:	8			
Element Type:	Timber Stringer	Total Quantity:	71.0 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			35.48	11.84	23.68	00. None
Comments: The second stringer from the north at the east abutment has a 3mm check with a 44.5mm depth for 125mm. The 3rd stringer from north at the west bearing has a check with 1" depth and 16" in length on one side only. There is a 4" deep check on the 4th stringer from south bearing that's 30" long and 1" from front edge of cribbing. Stringers are likely D. Fir and creosoted.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical stringer general arrangement

Element Data

Element Group:	Decks		Length:	7.4 (m)		
Element Name:	Deck Top		Width:	6.8 (m)		
Location:			Height:	0.1 (m)		
Material:			Count:	0		
Element Type:	Laminated Deck		Total Quantity:	50.3 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all			50.3		00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Element Data

Element Group:	Decks	Length:	7.4 (m)			
Element Name:	Wearing Surface	Width:	6.2 (m)			
Location:		Height:				
Material:	Gravel	Count:				
Element Type:	Surface Treatment	Total Quantity:	45.9 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good 34.9	Fair 10	Poor* 1	Perform. Deficiencies 00. None
Comments: Wide crack at east limit. Light to moderate ravelling and wheel rutting throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical deck wearing surface

Element Data

Element Group:	Sidewalks/Curbs	Length:	7.3 (m)			
Element Name:	Curbs	Width:	0.3 (m)			
Location:	North and South of Bridge	Height:	0.14 (m)			
Material:	Wood	Count:	2			
Element Type:	Squared Timber	Total Quantity:	8.4 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
				8.4		00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

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Plugged scupper drain in curb

Element Data

Element Group:	Decks		Length:	3.4 (m)		
Element Name:	Soffit		Width:	2.8 (m)		
Location:	Interior		Height:	0.2 (m)		
Material:	Wood		Count:	1		
Element Type:	3x8"		Total Quantity:	9.52 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:	Creosote					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all			9.52		00. None
Comments: Active wet areas throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A			
Replace decking.			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Element Data

Element Group:	Decks	Length:	3.4 (m)			
Element Name:	Soffit	Width:	2.0 (m)			
Location:	Exterior	Height:				
Material:	Wood	Count:	2			
Element Type:	3x8"	Total Quantity:	13.6 (sq. m)			
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>
Protection System:	Creosote					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all			13.6		00. None
Comments: Active wet areas throughout.						
Recommended Work:			<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
Replace decking.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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06/07/2022

Typical exterior soffit

Element Data

Element Group:	Decks		Length:	2.0 (m)		
Element Name:	Soffit		Width:	2.8 (m)		
Location:	Ends		Height:			
Material:	Wood		Count:	2		
Element Type:	3x8"		Total Quantity:	11.2 (sq. m)		
Environment:	Benign / Moderate / <u>Severe</u>		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units <u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
				11.2		00. None
Comments: Active wet areas throughout.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A		

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Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4.0 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good 4.0	Fair	Poor*	00. None
Comments: Embankments are in overall good condition with no signs of erosion.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

Rev2008

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Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Streams and Waterways	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:		Total Quantity:	1.0 (all)
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good
			Fair
			Poor*
			00. None
Comments: Waterway is generally unobstructed with no signs of scour.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A	

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Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Posts	Replace guiderail posts		X			\$7,500
Abutments	Repair undermining/loss of fill in cribs		X			\$30,000
Total Cost						\$37,500

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

ADDITIONAL PHOTOS



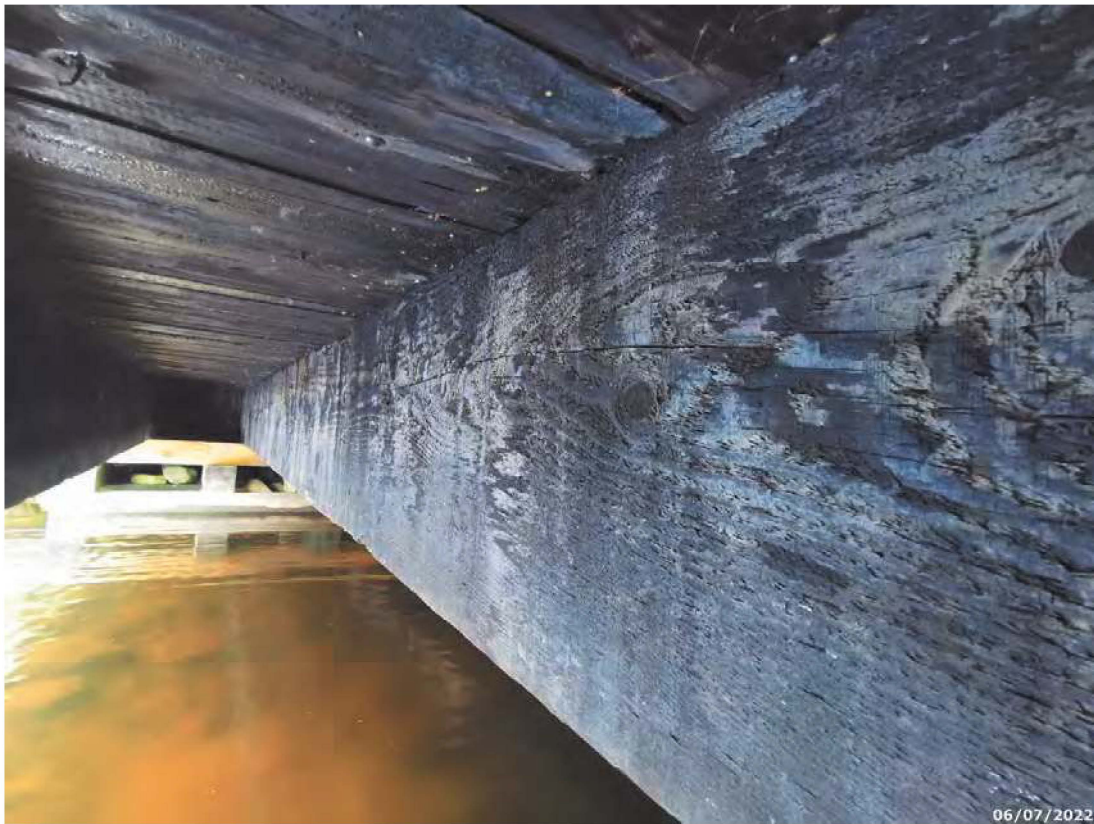
Looking west across structure



Looking east across structure



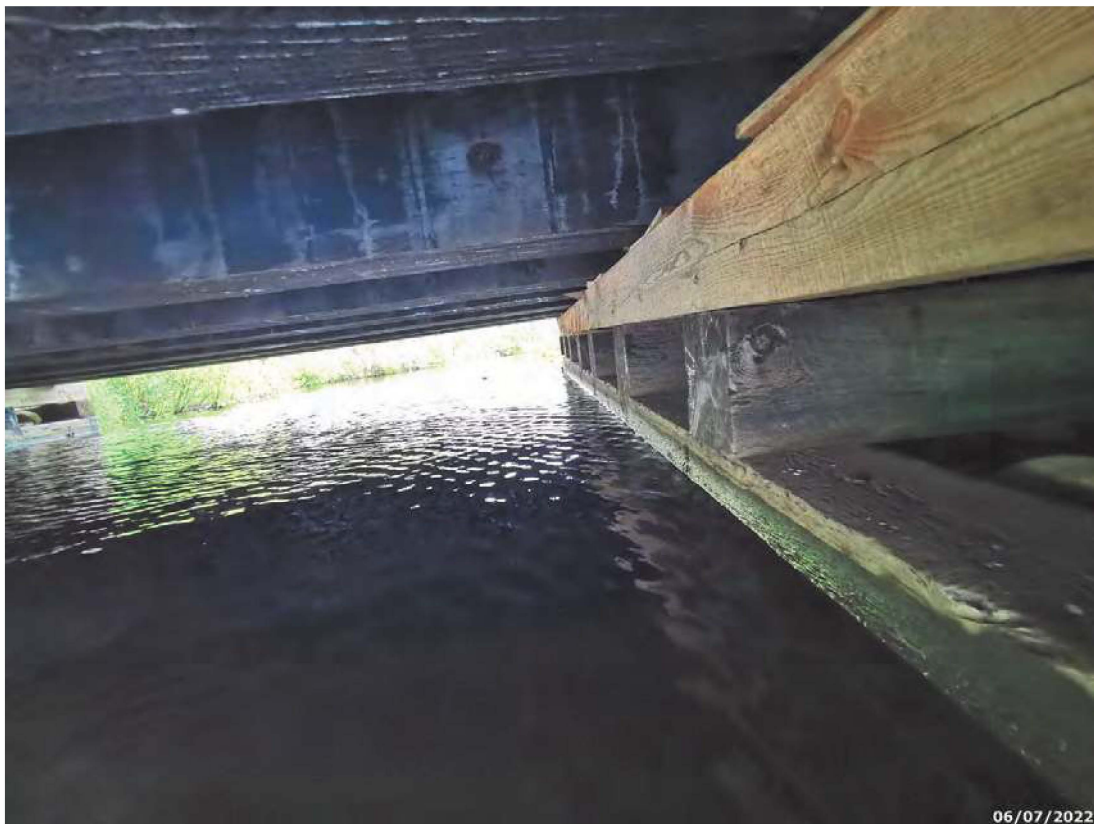
South elevation



Typical stringer, medium check localized at bearing



East abutment general arrangement



West abutment new cribbing member with shims



Typical abutment crib



Exposed ballast wall, southwest quadrant

Inventory Data:

Structure Name	<input type="text" value="Beaver Road West #2"/>		
Main Highway #	<input type="text" value="N/A"/>	On <input type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Beaver Road, 800m east of Grimesthorpe Rd."/>	Service under	<input type="checkbox"/> Navig. Water <input checked="" type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	<input type="text" value="50 - Northern"/>	Latitude:	<input type="text" value="45.713548"/> Longitude: <input type="text" value="7.689181"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Old County	<input type="text" value="46 - Manitoulin"/>	Posted Speed	<input type="text" value="N/A"/> No. of Lanes <input type="text" value="2"/>
Township	<input type="text" value="657 - Campbell"/>	AADT	<input type="text"/> % Truck <input type="text" value="5"/>
Structure Type 1	<input type="text" value="Timber Girders"/>	Travel Stream	<input type="text"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text" value="E to W"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text" value="7.35"/> (m)	Inspection Year	<input type="text" value="2022"/>
Overall Str. Width	<input type="text" value="6.8"/> (m)	Inspection Duration	<input type="text"/> (hrs)
Culvert length	<input type="text"/> (m)	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="50"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text" value="6.3"/> (m)	Min. Vertical Clearance	<input type="text"/> (m)
Skew Angle	<input type="text" value="0"/> (Degree)	Detour Distance	<input type="text" value="8.1"/> (km)
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text" value="0.15"/> (m)
Span Lengths	<input type="text" value="5.45"/> (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="N/A"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2020"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text" value="2012"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ / 10"/> (tonnes)
<p>Work History: (Date/description) In 2012 the surface treatment was redone.</p> <p>Investigation History: (Date/description) Last evaluation was August 27, 2022</p>			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

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Field Inspection Information:			
Date of Inspection:	2022-06-07	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

2.008

2018

Rev

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:		X	
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:	X		
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

Overall Structure Notes:	
Recommended Work on Structure:	<input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	Structure is in overall fair condition. An updated load evaluation should be completed within two years. Replacement should be considered.
Date of Next Inspection:	2024

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

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Element Data

Element Group:	Abutments	Length:	1.9 (m)			
Element Name:	Abutment Walls	Width:	6.75 (m)			
Location:	East and West of Bridge	Height:	1.4 (m)			
Material:	Wood and rock fill	Count:	2			
Element Type:	Timber Cribbing with fill	Total Quantity:	18.9 (sq. m)			
Environment:	Benign (Moderate) Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m² / each / % / all	Exc.	Good	Fair	Poor*	
				14.2	4.7	00. None
Comments: Moderate localized decay, wide splits at vertical dowels between cribbing courses. Undermining at front footings with 1 foot deep that goes along the full width of the abutment.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years Timber cribbing to be replaced and undermining repaired.			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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West abutment general arrangement

Element Data

Element Group:	Accessories		Length:			
Element Name:	Signs		Width:			
Location:	East and West		Height:			
Material:	Steel		Count:	5		
Element Type:			Total Quantity:	5 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	
			5			00. None
Comments: Single load posting installed on west approach (east side is governed by adjacent bridge). 4 hazard signs are present.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
Install load posting sign.			01. N/A			

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Looking west across structure, no load posting sign

Element Data

Element Group:	Approaches		Length:	10.0 (m)		
Element Name:	Wearing Surface		Width:	6.3 (m)		
Location:	East and West of bridge		Height:			
Material:	Surface Treatment		Count:	2		
Element Type:			Total Quantity:	126.0 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² / m / each / % / all		123.5	1.5	1	00. None
Comments:						
There is a wide crack at end of deck at east approach, medium centerline crack at east approach and a medium center line crack at west approach.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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East approach with medium center line crack and wide transverse crack

Element Data

Element Group:	Barriers	Length:	1.05 (m)			
Element Name:	Posts	Width:	0.19 (m)			
Location:		Height:	0.19 (m)			
Material:	Wood	Count:	8			
Element Type:	Timber Posts	Total Quantity:	8 (each)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:	Pressure Treatment					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² / m (each) % / all				8	
Comments: Posts are rolling and have been impacted. Posts have a spacing of 2.3-2.5m and are supported off a 3-ply 2x4 outrigger.						
Recommended Work:			<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
Replace railing system.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Typical railing posts and supports

Element Data

Element Group:	Barriers	Length:	8.0 (m)			
Element Name:	Railing Systems	Width:				
Location:	North and South sides of bridge	Height:	0.3 (m)			
Material:	Steel	Count:	2			
Element Type:	Flex Beam	Total Quantity:	16.0 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good	Fair	Poor*	
					16	00. None
Comments: Steel railings in general good condition, however govern by non-standard support posts.						
Recommended Work:			<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
Upgrade railing system.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Typical Barrier system

Element Data

Element Group:	Beams/MLE		Length:	7.35 (m)		
Element Name:	Stringers		Width:	0.25 (m)		
Location:			Height:	0.3 (m)		
Material:	Wood		Count:	11		
Element Type:	Sawn Timber		Total Quantity:	64.7 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:	Creosote					
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² m / each / % / all		41.18	17.64	6.0	00. None
Comments:						
the 2nd stringer from north has a check that's 2.5" deep and 90" long from east abutment, the 5th stringer from north has 0.25" check that's 0.5" deep and full span, the 6th stringer from north has 0.25" check that's 1" deep and 7' long from east abutment, and the 7th stringer from north has 6mm check that's 1" deep and full length of the stringer. Active wet areas and water staining.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical stringer general arrangement

Element Data

Element Group:	Decks		Length:	7.35 (m)		
Element Name:	Deck Top		Width:	6.75 (m)		
Location:			Height:	0.1 (m)		
Material:	Wood		Count:	0		
Element Type:	Laminated Deck		Total Quantity:	49.6 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
				49.6		01.
Comments:						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

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Element Data

Element Group:	Decks	Length:	7.35 (m)			
Element Name:	Wearing Surface	Width:	6.15 (m)			
Location:		Height:				
Material:	Gravel	Count:	1			
Element Type:	Surface Treatment	Total Quantity:	45.2 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good	Fair	Poor*	
			43.2	2.0		00. None
Comments: Localized moderate ravelling and light rutting throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical deck wearing surface with localized moderate ravelling and light rutting

Element Data

Element Group:	Sidewalks/Curbs	Length:	7.3 (m)			
Element Name:	Curbs	Width:	0.3 (m)			
Location:	North and South of bridge	Height:	0.15 (m)			
Material:	Wood	Count:	2			
Element Type:	Timber	Total Quantity:	8.8 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
				8.8		00. None
Comments: Scupper drains in curb are plugged with gravel. Curb is constantly wet due to partial coverage.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			02. Bridge Cleaning <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Remove debris from drainage.			

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Plugged scupper drain in curb

Element Data

Element Group:	Decks		Length:	2.0 (m)		
Element Name:	Soffit		Width:	6.30 (m)		
Location:	Ends		Height:	-		
Material:	Wood		Count:	2		
Element Type:			Total Quantity:	25.2 (sq. m)		
Environment:	Benign / Moderate / <u>Severe</u>		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all			25.2		00. None
Comments: Active wet areas						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Element Data

Element Group:	Decks	Length:	3.35 (m)			
Element Name:	Soffit	Width:	2.0 (m)			
Location:	Exterior	Height:				
Material:	Wood	Count:	2			
Element Type:		Total Quantity:	13.4 (sq. m)			
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all			13.4		00. None
Comments: Active wet areas throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical exterior soffit

Element Data

Element Group:	Decks		Length:	3.35 (m)		
Element Name:	Soffit		Width:	2.80 (m)		
Location:	Interior		Height:			
Material:	Wood		Count:	1		
Element Type:			Total Quantity:	9.38 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
				9.38		00. None
Comments: Active wet areas throughout.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

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Typical interior soffit

Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good 4.0	Fair	Poor*	00. None
Comments: Embankments in overall good condition with no signs of erosion.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

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Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:			Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1 (all)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good 1.0	Fair	Poor*	00. None
Comments: No evidence of scour and waterway is generally unobstructed.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

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Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Posts	Replace guiderail posts		X			\$7,500
Abutments	Repair undermining/loss of fill in cribs		X			\$30,000
Total Cost						\$37,500

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

Inventory Data:

Structure Name	<input type="text" value="Blue Road Bridge #6"/>		
Main Highway #	<input type="text" value="N/A"/>	On <input checked="" type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Blue Road, 0.4km west of Monument Road, Mindemoya River"/>	Service under	<input checked="" type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	<input type="text" value="#50 - Northern"/>	Latitude:	<input type="text" value="N5061476"/> Longitude: <input type="text" value="E402688"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Old County	<input type="text" value="#49 - Manitoulin"/>	Posted Speed	<input type="text" value="NP"/> No. of Lanes <input type="text" value="2"/>
Township	<input type="text" value="#659 - Carnarvon"/>	AADT	<input type="text" value="<500"/> % Truck <input type="text" value="<5%"/>
Structure Type 1	<input type="text" value="Steel Girder Bridge"/>	Travel Stream	<input type="text"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text" value="East/West"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text" value="15.25"/> (m)	Inspection Year	<input type="text" value="2022"/>
Overall Str. Width	<input type="text" value="6.2"/> (m)	Inspection Duration	<input type="text" value="1"/> (hrs)
Culvert length	<input type="text"/> (m)	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="94.6"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text" value="6.0"/> (m)	Min. Vertical Clearance	<input type="text"/> (m)
Skew Angle	<input type="text" value="20"/> (Degree)	Detour Distance	<input type="text" value="8"/> (km)
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text"/> (m)
Span Lengths	<input type="text" value="12.5"/> (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="2005"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2020"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

Rev 2008 2018

Field Inspection Information:			
Date of Inspection:	2022-06-07	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

2.008

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:	X		
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

2018

Overall Structure Notes:	
Recommended Work on Structure:	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	
Date of Next Inspection:	2024

Rev 2008

Suspected Performance Deficiencies

- | | | |
|---|--|-----------------------------------|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|-----------------------------|------------------------------|--|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Sealing (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

2018

Rev 2008

Element Data

Element Group:	Abutments	Length:	3.40 (m)			
Element Name:	Abutment Walls	Width:	7.05 (m)			
Location:	East and West of Bridge	Height:	1.2/2.25 (m)			
Material:	Concrete	Count:	2			
Element Type:		Total Quantity:	47.5			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
		47.5				00. None
Comments: Hairline cracking 1m south of centerline at west abutment through vertical face halfway onto horizontal face. Vegetation and debris present on bearing seat.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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East abutment general arrangement

Element Data

Element Group:	Approaches		Length:	11.0 (m)		
Element Name:	Wearing Surface		Width:	5.60 (m)		
Location:	East and west of structure		Height:	-		
Material:	Gravel		Count:	2		
Element Type:			Total Quantity:	123.2 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
			100	23.2		09.
Comments: Light rutting at southeast approach. Light to medium pot holes at east approach. Settlement of east approach slab with localized crack at south wheel path. Medium transverse crack at end of approach deck.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Rev2008

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East approach pot holes

Element Data

Element Group:	Approaches		Length:	67.2 (total) (m)		
Element Name:	Barriers		Width:			
Location:	North and South Edges		Height:			
Material:	Steel		Count:			
Element Type:	Steel Beam Guiderail		Total Quantity:	67.2 (m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² (m) each / % / all		55	7.2	5	00. None
Comments:						
Moderate scrape damage typical throughout. Severe decay in two spacer blocks in SE approach guiderail. SW guiderail is rotated away from road and has a missing offset block. NW guiderail posts have some spacer blocks with severe decay. Three cable guiderail is slack and requires tightening. Missing bolts on SW and SE approach.						
Recommended Work:			Maintenance Needs:			
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A			
Tighten slack three cable guiderail. Replace guiderail posts and spacer blocks with severe decay and correct rotation of the SW guiderail posts.			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Southeast guiderail (typical)

Element Data

Element Group:	Barriers	Length:	19.0 (m)			
Element Name:	Railing Systems	Width:	-			
Location:	North and South Edges of Bridge	Height:	-			
Material:	Steel	Count:	2			
Element Type:	Steel Beam Guiderail	Total Quantity:	38.0 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good 30	Fair 4	Poor* 4	00. None
Comments: Offset blocks and posts with moderate decay present. Medium to wide splits and checks in posts and spacer blocks.						
Recommended Work:			<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
Replace decayed offset blocks.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Rev2008

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Typical guiderail (Thrie beam, 2-ply)

Element Data

Element Group:	Beams/MLE	Length:	1.0 (m)			
Element Name:	Girders	Width:	0.18 (m)			
Location:	End	Height:	0.605 (m)			
Material:	Weathering Steel	Count:	6			
Element Type:		Total Quantity:	10.3 (sq. m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc. 10.3	Good	Fair	Poor*	00. None
Comments:						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Rev2008

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Typical Steel Framing General Arrangement

Element Data

Element Group:	Beams/MLE		Length:	10.75 (m)		
Element Name:	Girders		Width:	0.18 (m)		
Location:	Interior		Height:	0.605 (m)		
Material:	Weathering Steel		Count:	3		
Element Type:			Total Quantity:	55.5 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	55.5				00. None
Comments:						
Small localized warp in bottom flange of center girder at 1/3 point from west abutment.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.			01. N/A			

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Typical steel general arrangement, looking west

Element Data

Element Group:	Bracing		Length:	2.30 (m)		
Element Name:	Bracing		Width:	0.17 (m)		
Location:	End		Height:	0.20 (m)		
Material:	Steel		Count:	4		
Element Type:	I - Shape		Total Quantity:	4.0 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc. 4	Good	Fair	Poor*	00. None
Comments:						
Recommended Work:			Maintenance Needs:			
None			01. N/A			
			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

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Channel brace, local deformation in girder bottom flange

Element Data

Element Group:	Bracing		Length:	2.3 (m)		
Element Name:	Bracing		Width:			
Location:	Interior		Height:			
Material:	Steel		Count:	2		
Element Type:	Channel		Total Quantity:	2.0 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	00. None
	m ² / m (each) % / all	2				
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

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Element Data

Element Group:	Abutments	Length:	0.20 (m)			
Element Name:	Bearings	Width:	0.30 (m)			
Location:	East and West Abutments	Height:	0.04 (m)			
Material:	Elastomeric Pads	Count:	6			
Element Type:		Total Quantity:	6.0 (each)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² / m <u>each</u> % / all	6				
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None			01. N/A			

Rev2008

Rev2008



Center girder bearing, west abutment

Element Data

Element Group:	Decks		Length:	15.25 (m)		
Element Name:	Deck Top		Width:	6.20 (m)		
Location:			Height:	0.45 (m)		
Material:	Concrete		Count:	1		
Element Type:			Total Quantity:	94.6 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			94.6			00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

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Element Data

Element Group:	Decks		Length:	12.8 (m)		
Element Name:	Soffit		Width:	0.70 (m)		
Location:	Exterior		Height:			
Material:	Concrete		Count:	2		
Element Type:			Total Quantity:	17.9 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	17.9				00. None
Comments: Hairline crack observed on northwest exterior soffit roughly 6m from west abutment.						
Recommended Work:			Maintenance Needs:			
None			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



Typical exterior soffit

Element Data

Element Group:	Decks	Length:	12.8 (m)			
Element Name:	Soffit	Width:	2.98 (m)			
Location:	Interior	Height:				
Material:	Concrete	Count:	2			
Element Type:		Total Quantity:	76.3 (sq. m)			
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	74.3	1	1		00. None
Comments:						
Hairline crack 6m from west abutment. Light efflorescence coming through (3m narrow to medium crack) 4m from east abutment.						
Recommended Work:			Maintenance Needs:			
None			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

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Typical interior soffit

Element Data

Element Group:	Accessories		Length:	-		
Element Name:	Signs		Width:	-		
Location:	East and West Approaches		Height:	-		
Material:	Steel		Count:	12		
Element Type:			Total Quantity:	12 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good 12	Fair	Poor*	00. None
Comments: Missing hazard marker at northeast approach.						
Recommended Work:			Maintenance Needs:			
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years Install hazard marker at northeast approach.			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

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Looking east across structure

Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Embankments		Width:			
Location:	NE, NW, SE, SW		Height:			
Material:	Vegetation and Rock Protection		Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	
			2	2		00. None
Comments: Gabion basket is positioned at southeast corner and is functioning adequately. Downstream embankments have moderate scour.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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06/07/2022

Northeast embankment

Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Streams and Waterways	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:		Total Quantity:	1.0 (all)
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good
			Fair
			Poor*
			1.0
			00. None
Comments: Waterway is generally unobstructed. Some light to medium scour/undermining of banks both upstream and downstream			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year 18. Other Monitor scour of embankments both up and downstream	
None.			

Rev2008

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Upstream scour and undermining

Element Data

Element Group:	Retaining Walls	Length:	27.5 (m)			
Element Name:	Walls	Width:				
Location:	Northeast Approach	Height:	2.10 (m) (above grade)			
Material:	Steel	Count:	1			
Element Type:	Sheet Pile	Total Quantity:	57.8 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good 57.8	Fair	Poor*	Perform. Deficiencies 00. None
Comments: Sheet pile retaining wall has light surface corrosion.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Sheet pile general arrangement, northeast embankment

Element Data

Element Group:	Decks		Length:	15.25 (m)		
Element Name:	Wearing Surface		Width:	6.0 (m)		
Location:			Height:	-		
Material:	Surface Treatment		Count:	1		
Element Type:			Total Quantity:	91.5 sq. m		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all		91.5			00. None
Comments: Localized raveling and light wear in surface treatment.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical deck wearing surface

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Barriers	Replace decayed posts and spacer blocks			X		\$1,500
Embankments	Monitor scour of downstream banks					Maintenance
Total Cost						

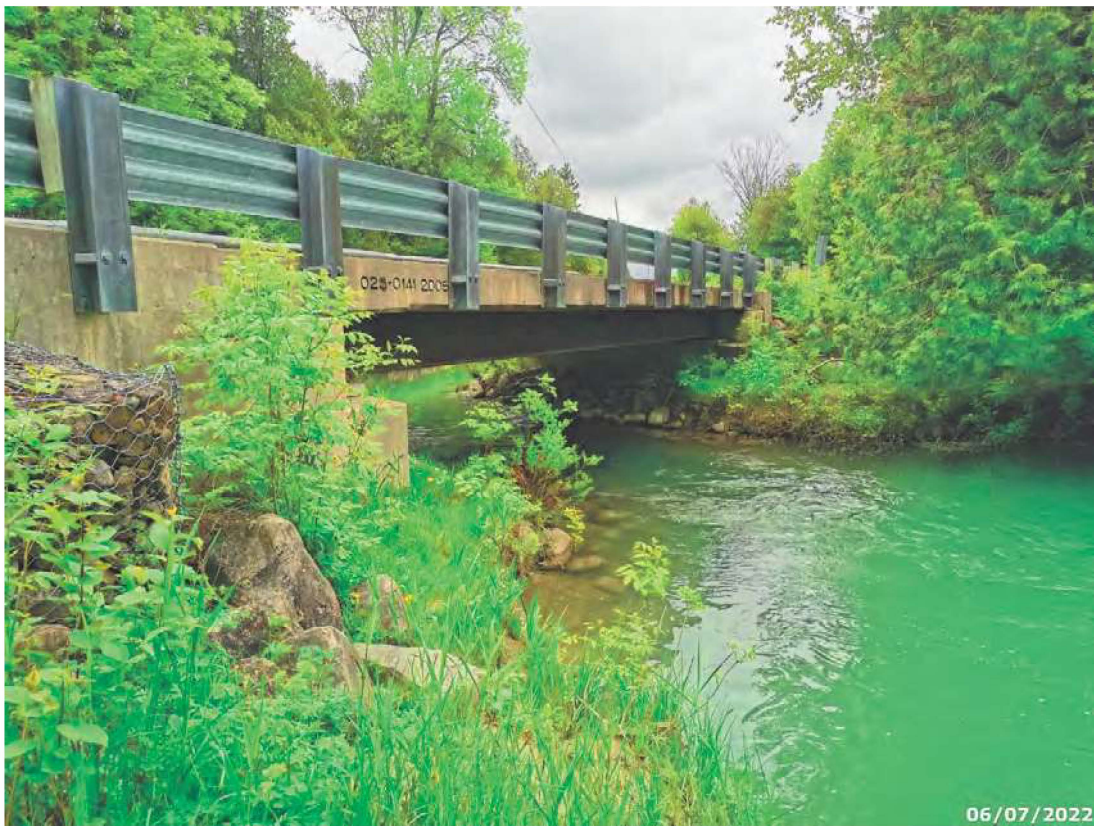
Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

ADDITIONAL PHOTOS



Looking West Across The Structure



South elevation



North elevation



Typical expansion end



Neoprene bearing pad along deck over ballast wall joint



Debris buildup in bearing seat



Severe end decay of spacer block



Settlement of east approach



Rotated approach guiderail and missing spacer block, southwest approach



Downstream scour and undermining



Localized crack with efflorescence

ADDITIONAL PHOTOS



Looking east across structure



South elevation



North elevation



Northeast abutment cribbing with moderate decay, lichen growth and wide split through dowel



Typical edge of deck with algae and lichen growth



Wide split in second timber from north in cribbing



Typical footing with undermining



Typical footing undermining



Downstream



Upstream



Wide splits in cribbing members

Inventory Data:

Structure Name	<input type="text" value="Case Road Bridge #9"/>		
Main Highway #	<input type="text" value="N/A"/>	On <input type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Case Road, 550m west of Trails End Road"/>	Service under	<input checked="" type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/>
MTO Region	<input type="text" value="50 - Northern"/>	Latitude:	<input type="text" value="45 41.6' N"/>
Regional Engineer	<input type="text"/>	Longitude:	<input type="text" value="82 1.3' W"/>
MTO Area	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Old County	<input type="text" value="49 - Manitoulin"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Township	<input type="text" value="659 - Camarvon"/>	Posted Speed	<input type="text" value="NP"/> No. of Lanes <input type="text" value="2"/>
Structure Type 1	<input type="text" value="Steel Girder"/>	AADT	<input 500")"="" type="text" value("<=""/> % Truck <input type="text" value("<5%")"=""/>
Structure Material 1	<input type="text"/>	Travel Stream	<input type="text"/>
Structure Type 2	<input type="text"/>	Traffic Directional Bound	<input type="text" value="E to W"/>
Structure Material 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Total Deck Length	<input type="text" value="12.2"/> (m)	Inspection Frequency	<input type="text" value="2"/> (years)
Overall Str. Width	<input type="text" value="6.9"/> (m)	Inspection Year	<input type="text" value="2022"/>
Culvert length	<input type="text"/>	Inspection Duration	<input type="text"/> (hrs)
Total Deck Area	<input type="text" value="84.2"/> (sq.m)	Interchange Number	<input type="text"/>
Roadway Width	<input type="text" value="6.5"/> (m)	Interchange Structure Number	<input type="text"/>
Skew Angle	<input type="text"/> (Degree)	Min. Vertical Clearance	<input type="text"/> (m)
No. of Spans	<input type="text" value="2"/>	Detour Distance	<input type="text" value="10"/> (km)
Span Lengths	<input type="text" value="6.0"/>	Fill on Structure	<input type="text" value="-"/> (m)
For retaining wall:			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="N/A"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2020"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

Rev 2008 2018

Field Inspection Information:			
Date of Inspection:	2022-06-06	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

2.008

2018

Rev

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:	X		
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

Overall Structure Notes:	
Recommended Work on Structure:	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	
Date of Next Inspection:	2024

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

2018

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Element Data

Element Group:	Abutments	Length:	6.25 (m)			
Element Name:	Abutment Walls	Width:	0.44 (m)			
Location:	East and West of Bridge	Height:	1.80 (m)			
Material:	Concrete	Count:	2			
Element Type:		Total Quantity:	22.5 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			22.5			00. None
Comments: Mild Spalling in the southeast quadrant.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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North abutment general arrangement

Element Data

Element Group:	Piers	Length:	6.80 (m)			
Element Name:	Shafts/Columns/Pile Bents	Width:	0.55 (m)			
Location:	Center of span	Height:	1.50 (m)			
Material:	Concrete	Count:	2			
Element Type:		Total Quantity:	20.4 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
			20.4			00. None
Comments:						
Recommended Work:						
None			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Pier arrangement looking south

Element Data

Element Group:	Abutments	Length:	2.5/1.6 (m)			
Element Name:	Wingwalls	Width:	0.44 (m)			
Location:	Four corner of bridge	Height:	2.10 (m)			
Material:	Concrete	Count:	4			
Element Type:		Total Quantity:	17.2 (sq. m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units <u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
			12.9	4.0	0.3	00. None
Comments: Spalling and deterioration of the concrete in the north east wing wall. Medium cracking, moderate efflorescence, moderate map cracking, and localized moderate delamination present in south east wingwall.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None. Monitor cracking and delamination in wingwalls.			01. N/A			

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Southeast wingwall

Element Data

Element Group:	Accessories		Length:			
Element Name:	Signs		Width:			
Location:	East and West of bridge		Height:			
Material:	Steel		Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc. 3	Good	Fair	Poor* 1	00. None
Comments: Missing delineator at the southeast quadrant.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year 18. Other Replace missing delineator.			

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Element Data

Element Group:	Approaches		Length:	16.25 (m)		
Element Name:	Wearing Surface		Width:	6.00 (m)		
Location:	East and West Sides of Bridges		Height:			
Material:	Gravel		Count:	2		
Element Type:			Total Quantity:	195.0 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good	Fair	Poor*	
			195			00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.						

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Element Data

Element Group:	Approaches	Length:	16.25 (m)			
Element Name:	Barriers	Width:				
Location:	North and south edges of bridge	Height:				
Material:	Steel	Count:	4			
Element Type:	Steel beam guiderail	Total Quantity:	65.0 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good	Fair	Poor*	
				65		00. None
Comments: Guiderail height is low because of excess gravel on bridge deck. Northeast approach guiderail has broken spacer block and encroaching vegetation.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			02. Bridge Cleaning			
Replace broken spacer block.			<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Remove vegetation.			

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Northeast approach guiderail, broken spacer block, vegetation encroaching

Element Data

Element Group:	Barriers	Length:	13.4 (m)			
Element Name:	Railing Systems	Width:				
Location:	North and south of bridge	Height:				
Material:	Steel	Count:	2			
Element Type:	Steel beam guiderail	Total Quantity:	26.8 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good	Fair	Poor*	
			26.8			00. None
Comments: Curb is buried under overburden gravel. There is a minor erosion channel present at the southwest corner.						
Recommended Work: Remove overburden gravel.			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
			<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical guiderail system, buried curb, minor erosion channel at southwest corner

Element Data

Element Group:	Beams/MLE		Length:	1.00 (m)		
Element Name:	Girders		Width:	0.14 (m)		
Location:	End		Height:	0.40 (m)		
Material:	Steel		Count:	14		
Element Type:	I-type girders		Total Quantity:	16.9 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:	Galvanized					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	16.9				00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

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Element Data

Element Group:	Beams/MLE		Length:	10.2 (m)		
Element Name:	Girders		Width:	0.14 (m)		
Location:	Interior		Height:	0.40 (m)		
Material:	Steel		Count:	7		
Element Type:			Total Quantity:	86.4 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:	Galvanized					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	86.4				00. None
Comments: Light water staining on girders.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.						

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Typical Interior Girders

Element Data

Element Group:	Bracing		Length:			
Element Name:	Bracing		Width:			
Location:	End		Height:			
Material:	Steel		Count:	12		
Element Type:			Total Quantity:	12 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:	Galvanized					Perform. Deficiencies
Condition Data:	Units		Exc.	Good	Fair	Poor*
	m ² / m	<u>each</u> % / all	12			
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

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Element Data

Element Group:	Bracing		Length:			
Element Name:	Bracing		Width:			
Location:	Interior		Height:			
Material:	Steel		Count:	18		
Element Type:			Total Quantity:	18.0 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:	Galvanized					Perform. Deficiencies
Condition Data:	Units		Exc.	Good	Fair	Poor*
	m ² / m	(each) % / all	18			
Comments:						
Recommended Work:			Maintenance Needs:			
None			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Element Data

Element Group:	Decks	Length:	12.15 (m)			
Element Name:	Wearing Surface	Width:	6.55 (m)			
Location:		Height:				
Material:	Gravel	Count:	1			
Element Type:		Total Quantity:	79.6 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good 79.6	Fair	Poor*	00. None
Comments: Gravel is overburden on deck and there is debris build up in the northeast quadrant.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years Remove overburden gravel on deck.			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical deck wearing surface

Element Data

Element Group:	Decks	Length:	12.15 (m)			
Element Name:	Deck Top	Width:	6.55 (m)			
Location:		Height:				
Material:	Wood	Count:				
Element Type:	Laminated Lumber	Total Quantity:	79.6 (sq. m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:	Pressure treated lumber					Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
			79.6			00. None
Comments: Pressure treated alkaline copper quarternary.						
Recommended Work:			Maintenance Needs:			
None			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Element Data

Element Group:	Decks	Length:	12.15 (m)			
Element Name:	Soffit	Width:	0.30 (m)			
Location:	Exterior	Height:				
Material:	Wood	Count:	2			
Element Type:		Total Quantity:	7.3 (sq. m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:	Pressure treated ACQ lumber					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all			7.3		00. None
Comments: Active wet areas on edges of deck.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Actively wet exterior deck boards

Element Data

Element Group:	Decks	Length:	12.15 (m)			
Element Name:	Soffit	Width:	0.83 (m)			
Location:	Interior	Height:				
Material:	Wood	Count:	6			
Element Type:		Total Quantity:	60.5 (sq. m)			
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>
Protection System:	Pressure treated ACQ lumber					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	30	30.5			00. None
Comments:						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Interior soffit looking north

Element Data

Element Group:	Sidewalks/Curbs	Length:	12.15 (m)			
Element Name:	Curbs	Width:	0.23 (m)			
Location:	North and south of bridge	Height:	0.16 (m)			
Material:	Wood	Count:	2			
Element Type:	Laminated lumber	Total Quantity:	13.4 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:	Pressure treated ACQ lumber					Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			13.4			00. None
Comments: Curbs covered with gravel.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.						

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Element Data

Element Group:	Joints		Length:	6.55 (m)		
Element Name:	Seals		Width:	0.07 (m)		
Location:	East and west of bridges		Height:			
Material:	Rubber		Count:	2		
Element Type:			Total Quantity:	2 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good	Fair	Poor*	00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

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Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Embankments	Width:	
Location:	4 corners of bridge	Height:	
Material:	Vegetation and rock	Count:	4
Element Type:		Total Quantity:	4 (each)
Environment:	<input checked="" type="radio"/> Benign / <input type="radio"/> Moderate / <input type="radio"/> Severe	Inspected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Limited
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m <input checked="" type="radio"/> each % / all	Exc.	Good
			Fair
			Poor*
			00. None
Comments: Vegetation growth on embankments.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year 02. Bridge Cleaning Cut back vegetation.	

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Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:			Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1 (all)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good	Fair	Poor*	
			1			00. None
Comments: Stream in general good condition with no evidence of scour or blockage.						
Recommended Work:			Maintenance Needs:			
None.			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Upstream

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Signs	Replace missing delineator			X		\$500
Decks	Remove gravel overburden		X			\$5,000
Barriers	Replace broken spacer blocks		X			\$1,000
Bearings	Clean off bearings and bearing seats			X		Maintenance
Total Cost						\$6,500

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

ADDITIONAL PHOTOS



Looking north across structure



Looking south across structure



West elevation



East elevation



Downstream



South abutment typical bearing



South abutment typical bearing



North abutment typical bearing, severe debris buildup

Inventory Data:

Structure Name	<input type="text" value="Cranston Road Culvert #7"/>		
Main Highway #	<input type="text"/>	On <input checked="" type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Cranston Road
Mindemoya River"/>	Service under	<input type="checkbox"/> Navig. Water <input checked="" type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	<input type="text" value="50 Northern"/>	Latitude:	<input type="text" value="40599E"/> Longitude: <input type="text" value="5058939N"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Old County	<input type="text" value="49 Manitoulin"/>	Posted Speed	<input type="text"/> No. of Lanes <input type="text" value="2"/>
Township	<input type="text" value="657 Campbell"/>	AADT	<input type="text" value="<500"/> % Truck <input type="text" value="<0%"/>
Structure Type 1	<input type="text" value="Arch Culvert"/>	Travel Stream	<input type="text"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text"/> (m)	Inspection Year	<input type="text" value="2021"/>
Overall Str. Width	<input type="text"/> (m)	Inspection Duration	<input type="text" value="1"/> (hrs)
Culvert length	<input type="text" value="21.5"/> (m)	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="32.4"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text" value="6.0"/> (m)	Min. Vertical Clearance	<input type="text"/> (m)
Skew Angle	<input type="text" value="0"/> (Degree)	Detour Distance	<input type="text" value="8"/> (km)
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text" value="2.0"/> (m)
Span Lengths	<input type="text" value="5.4"/> (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="N/A"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2021"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

Rev 2008 2018

Field Inspection Information:			
Date of Inspection:	2022-06-07	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Cloudy	Temperature:	18

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Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:			X
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

Overall Structure Notes:	
Recommended Work on Structure:	<input type="checkbox"/> None <input checked="" type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	Additional reinforcing bars required along the west wall between previous repairs. Some other general maintenance items are required.
Date of Next Inspection:	2024

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

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Element Data

Element Group:	Culverts	Length:	21.5 (m)			
Element Name:	Barrels	Width:	5.4 (m)			
Location:		Height:	3.5 (m)			
Material:	Steel	Count:	1			
Element Type:	Corrugated Steel	Total Quantity:	263 (sq. m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:	Galvanized					Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			124.9	130	8.1	04.
Comments: Light to moderate corrosion throughout with some flaking at the waterline. Localized severe corrosion at Southwest end at waterline. Sidewall at center line, West wall is bulging out. Bulge in sidewall at Southwest end. Bolts cracking at North end, West wall 1m in from start of full barrel along most of the west wall (16 total ribs with cracks).						
Recommended Work:			<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
Weld rebar in place at cracks and weld cracks near bolts.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Cracking at Bolt Line Along West Wall

Element Data

Element Group:	Culverts	Length:	1.5 (m)			
Element Name:	Inlet Components	Width:	0.4 (m)			
Location:	North End	Height:	1.5 (m)			
Material:	Concrete Cutoff Wall	Count:	2			
Element Type:		Total Quantity:	4.5 (m ²)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
			2.25	2.25		00. None
Comments: Generally in fair to good condition with localized scour present beyond the cut off walls on the upstream embankments. Severe tree growth around the inlet components.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 13., 02.	
None					<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Place rock protection around edges of wingwalls. Remove vegetation around inlet.	

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Severe tree growth around inlet components

Element Data

Element Group:	Culverts	Length:	1.5 (m)			
Element Name:	Outlet Components	Width:	0.4 (m)			
Location:	South End	Height:	1.5 (m)			
Material:	Concrete Cutoff Wall	Count:	2			
Element Type:		Total Quantity:	4.5 (m ²)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:			Perform. Deficiencies			
Condition Data:	Units m ² / m / each / % / all	Exc.	Good	Fair	Poor*	
				4.5		00. None
Comments: Localized moderate spalls, horizontal cold joints, upper half has shifted 2.5" relative to the lower half at the cold joint in the southwest quadrant.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.			01. N/A			

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Perched outlet

Element Data

Element Group:	Approaches		Length:	20 (m)		
Element Name:	Wearing Surface		Width:	5.3 (m)		
Location:			Height:			
Material:	Surface Treatment		Count:	2		
Element Type:			Total Quantity:	212 (m ²)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
			212			00. None
Comments: Generally in good shape with no rutting or pot holes.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Looking west across structure

Element Data

Element Group:	Approaches		Length:	48 (m)		
Element Name:	Barriers		Width:			
Location:	N/S		Height:	0.5 (m)		
Material:	3 cable guide rail		Count:	2		
Element Type:			Total Quantity:	96 (m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good	Fair	Poor*	Load Carrying Capacity
			40	50	6	
Comments: Cables are loose, clips are missing in some areas, some posts have moderate to severe decay. There are three broken guiderail posts. There is a broken and missing guiderail post in the northwest quadrant						
Recommended Work:			Maintenance Needs: 03. Railing System Repair			
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years Replace the cable guiderail and timber posts.			<input checked="" type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year Tighten cables, add delineators, replace missing clips, replace broken posts			

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Broken and missing guiderail post in northwest quadrant

Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Embankments	Width:	
Location:		Height:	
Material:	Vegetated Soil	Count:	4
Element Type:		Total Quantity:	4 each
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good
			Fair
			Poor*
			15.
Comments: Moderate to severe scour present on embankment in the northeast quadrant. Moderate erosion of the northwest embankment. Trees growing on the embankments overtop of the culvert barrel.			
Recommended Work:		Maintenance Needs:	
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		01. N/A	
All trees and shrubs should be removed from the roadway embankments above the barrel. Rock protection required at base of embankments.		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Moderate to severe scour and erosion at northeast quadrant

Element Data

Element Group:	Waterways and Streams		Length:			
Element Name:	Waterways		Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:	1 (all)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good 1	Fair	Poor*	00. None
Comments: Waterway is generally unobstructed with some evidence of scour.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

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Looking Upstream

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Embankments	Place rock protection to prevent further scour.		X			\$50,000.00
Culverts	Weld rebar to prevent further cracking at bolts.			X		\$5,000.00
Barriers	Replace guiderail posts and tighten cables		X			\$5,000.00
Accessories	Install guiderail delineators			X		\$1,000.00
Embankments	Trim back vegetation			X		Maintenance
Culverts	Tighten loose nuts			X		Maintenance
Total Cost						\$61,000.00

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

Culvert barrel is generally in good condition but rebar should be welded in at all crack locations to prevent any further cracking. The cable guiderail has several rotten posts that will need to be replaced within 5 years. Guiderail delineators should be installed to assist the snow plow during winter months. Rock protection is required to stop erosion/scour beyond the concrete cutoff walls on the inlet and outlet pool.

ADDITIONAL PHOTOS



Looking East Across Structure



Looking south through culvert barrel, along east wall



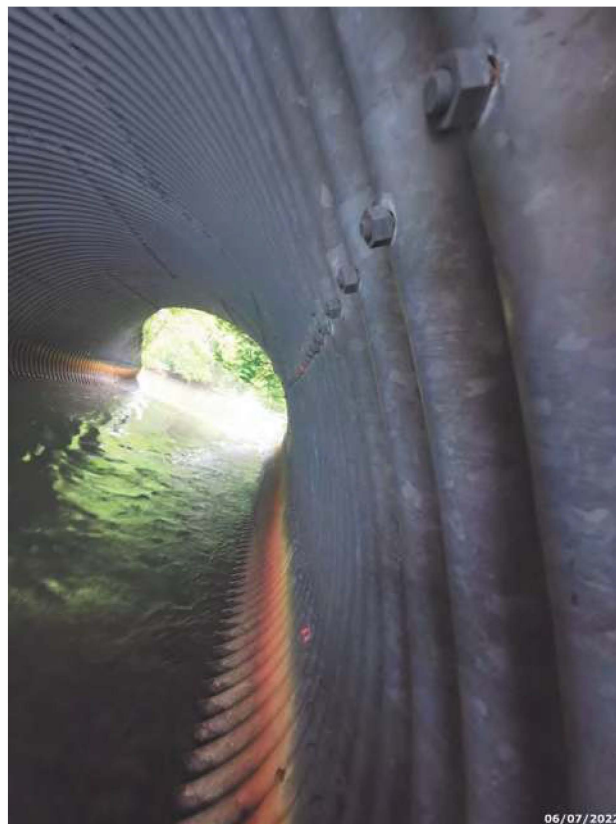
North Elevation



South Elevation



Moderate spall on southeast outlet cutoff wall



Bulge in east wall at south shoulder



Center line joint, no full contact of nuts



Moderate erosion of northwest bank



Looking Downstream

Inventory Data:

Structure Name	<input type="text" value="McAllister Bridge - Structure #11"/>		
Main Highway #	<input type="text"/>	On <input checked="" type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input checked="" type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Grimesthorpe Road"/>	Service under	<input type="checkbox"/> Navig. Water <input checked="" type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/>
		LHRS offset:	<input type="text"/>
MTO Region	<input type="text" value="50 - Northen"/>	Latitude:	<input type="text" value="396936E"/>
		Longitude:	<input type="text" value="5062782N"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Old County	<input type="text" value="49 - Manitoulin"/>	Posted Speed	<input type="text" value="N/A"/>
		No. of Lanes	<input type="text" value="2"/>
Township	<input type="text" value="657 - Campbell"/>	AADT	<input type="text" value="<500"/>
		% Truck	<input type="text" value="<10%"/>
Structure Type 1	<input type="text" value="Concrete Arch Culvert"/>	Travel Stream	<input type="text" value="N/S"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text" value="E/W"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text" value="20.9"/> (m)	Inspection Year	<input type="text"/>
Overall Str. Width	<input type="text" value="8.4"/> (m)	Inspection Duration	<input type="text"/> (hrs)
Culvert length	<input type="text"/>	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="175.5"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text" value="8.0"/> (m)	Min. Vertical Clearance	<input type="text" value="2.4"/> (m)
Skew Angle	<input type="text" value="0"/> (Degree)	Detour Distance	<input type="text" value="10"/> (km)
No. of Spans	<input type="text" value="2"/>	Fill on Structure	<input type="text" value="0.6"/> (m)
Span Lengths	<input type="text" value="11.7/9.3"/> (m)		
For retaining wall:			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="2012"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2021"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

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Field Inspection Information:			
Date of Inspection:	2022-06-07	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

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Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:	X		
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

Overall Structure Notes:	
Recommended Work on Structure:	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	Generally in good condition.
Date of Next Inspection:	2024

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

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Element Data

Element Group:	Barriers	Length:	1.905 (m)			
Element Name:	Railing Systems	Width:				
Location:	East and West Sides	Height:	0.3 (m)			
Material:	Steel	Count:	50			
Element Type:	Steel flex beam/steel post	Total Quantity:	92.25 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:	Galvanized steel					Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good	Fair	Poor*	
			95.25			00. None
Comments: Buildup of gravel windrow and vegetation under guiderail should be removed. Scrape damage present throughout on flex beam from plow.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			02. Bridge Cleaning <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Remove gravel buildup and vegetation under guiderail.			

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Element Data

Element Group:	Barriers	Length:	0.15 (m)			
Element Name:	Posts	Width:	0.15 (m)			
Location:	East and West Sides	Height:	0.66 (m)			
Material:	Steel with plastic blocks	Count:	50			
Element Type:	N/A	Total Quantity:	95.25 (each)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:	Galvanized steel					Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc. 50	Good	Fair	Poor*	00. None
Comments: 22 posts on steel plates on concrete headwall. Severe debris buildup on posts and base plates.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			02. Bridge Cleaning <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Remove debris from posts and base plates.			

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Element Data

Element Group:	Decks		Length:	47 m		
Element Name:	Wearing Surface		Width:	8.08 m		
Location:	Top of concrete arch		Height:			
Material:	chip seal/asphalt		Count:			
Element Type:			Total Quantity:	380 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m² / m / each / % / all		350	30		00. None
Comments: Some longitudinal/transverse cracking and localized potholes with patching. Light washboarding at south approach. Medium transverse crack in north approach.						
Recommended Work:			Maintenance Needs: 12. Bridge Surface Repair			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Seal cracking in wearing surface.			

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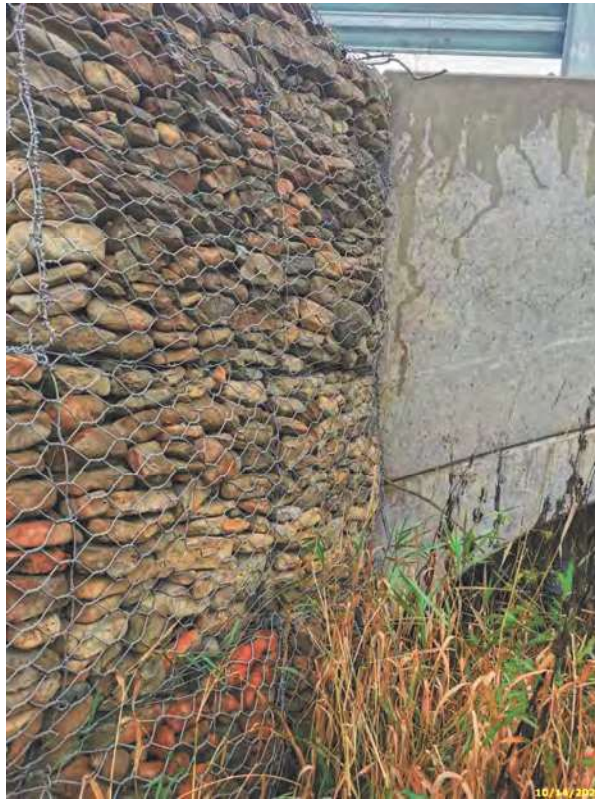
Typical Wearing Surface

Element Data

Element Group:	Abutments	Length:	4.5 m			
Element Name:	Wingwalls	Width:	N/A			
Location:	NE, NW, SE, SW	Height:	3.4 m			
Material:	Rock filled steel gabion	Count:	4			
Element Type:	Gabions	Total Quantity:	61.2 sq. m			
Environment:	Benign Moderate Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:	Coated steel mesh					Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
			61.2			00. None
Comments:						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical Rock Filled Steel Gabion Wingwall (Northwest Quadrant)

Element Data

Element Group:	Culverts	Length:	
Element Name:	Inlet Components	Width:	
Location:	East Side	Height:	
Material:	Concrete	Count:	
Element Type:	Headwall	Total Quantity:	28 sq. m
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good
		26	1
			Fair
			1
			Poor*
Comments:			
1 medium crack in the top of the Southeast quadrant by the guiderail.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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East elevation

06/07/2022

Element Data

Element Group:	Culverts	Length:	
Element Name:	Outlet Components	Width:	
Location:	West side	Height:	
Material:	Concrete	Count:	
Element Type:	Headwall	Total Quantity:	28 sq. m
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	28
		Good	
		Fair	
		Poor*	
Comments:			00. None
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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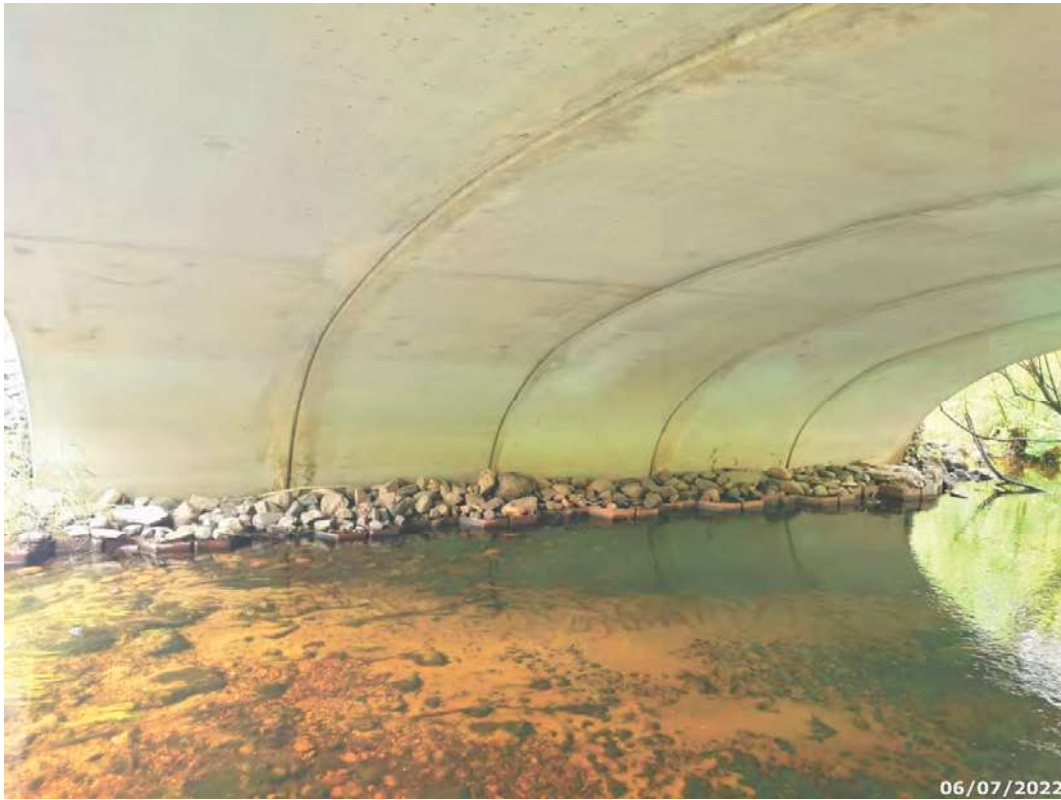
West elevation

Element Data

Element Group:	Culvert - Arch	Length:	11.685 m			
Element Name:	Barrels	Width:	1.829 m			
Location:	Large (North)	Height:	0.325 m			
Material:	Concrete	Count:	5			
Element Type:		Total Quantity:	107 sq. m			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	107	Good	Fair	Poor*
						00. None
Comments: Some efflorescence and water staining on the East wall at centerline joint. Active wet area at joint.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs:	
					01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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North Barrel

Element Data

Element Group:	Culvert - Arch	Length:	9.242 m			
Element Name:	Barrel	Width:	1.829 m			
Location:	Small (South)	Height:	0.325 m			
Material:	Concrete	Count:	5			
Element Type:		Total Quantity:	85 sq. m			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	00. None
Comments: Active wet area at joint between arches.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

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South Barrel

Element Data

Element Group:	Accessories		Length:			
Element Name:	Signs		Width:			
Location:	Each side/End of culvert		Height:			
Material:	Steel		Count:	10		
Element Type:			Total Quantity:	10 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good 10	Fair	Poor*	Perform. Deficiencies 00. None
Comments: Edge delineators, reflective signs in place.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Bridge sign and dirty hazard marker

Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Streams and Waterways	Width:	
Location:		Height:	
Material:		Count:	
Element Type:		Total Quantity:	1
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good Fair Poor*
			1 00. None
Comments: Waterway is generally unobstructed with no evidence of scour.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A	

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Downstream

Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Embankments	Width:	
Location:		Height:	
Material:	Vegetation	Count:	4
Element Type:		Total Quantity:	4.0 (each)
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good 4
			Fair
			Poor*
Comments: Good vegetation growth throughout all embankments.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Southwest gabion basket embankment

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Barriers	Remove gravel windrow under barrier			X		Maintenance
Decks	Seal bridge deck and approach cracks			X		\$1,500
Total Cost						\$1,500

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		\$0.00

Justification:

Monitor efflorescence and water staining at joint between the culverts. Seal cracks in wearing surface to prevent excess water penetration. Remove gravel buildup under the barriers around base plates.

ADDITIONAL PHOTOS



Looking North Across The Structure



Looking South Across The Structure



Upstream



Localized potholes and patching



Medium transverse crack in north approach



Moisture and wetting of center joint

Inventory Data:

Structure Name	<input type="text" value="Ketchankookem Trail Bridge #8"/>		
Main Highway #	<input type="text" value="N/A"/>	On <input checked="" type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Ketchankookem Trail, 500m west of Old Highway 551, Hare Creek"/>	Service under	<input checked="" type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	<input type="text" value="50 - Northern"/>	Latitude:	<input type="text" value="45 44.8'"/> Longitude: <input type="text" value="82 10.4'"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Old County	<input type="text" value="49 - Manitoulin"/>	Posted Speed	<input type="text" value="80"/> No. of Lanes <input type="text" value="2"/>
Township	<input type="text" value="659 - Camarvon"/>	AADT	<input 500")"="" type="text" value("<=""/> % Truck <input type="text" value("<10%")"=""/>
Structure Type 1	<input type="text" value="Rectangular Voided Slab"/>	Travel Stream	<input type="text"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text" value="East to West"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text" value="10.9"/> (m)	Inspection Year	<input type="text" value="2022"/>
Overall Str. Width	<input type="text" value="10"/> (m)	Inspection Duration	<input type="text"/> (hrs)
Culvert length	<input type="text"/> (m)	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="109"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text" value="7.9"/> (m)	Min. Vertical Clearance	<input type="text"/> (m)
Skew Angle	<input type="text" value="0"/> (Degree)	Detour Distance	<input type="text" value="7.6"/> (km)
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text"/> (m)
Span Lengths	<input type="text" value="8.6"/> (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Rev 2018

Historical Data:			
Year Built	<input type="text" value="2010"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2020"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

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Field Inspection Information:			
Date of Inspection:	2022-06-07	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

2.008

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:	X		
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

2018

Overall Structure Notes:	
Recommended Work on Structure:	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	Structure is in overall good condition.
Date of Next Inspection:	2024

Rev 2008

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

2018

Rev 2008

Element Data

Element Group:	Abutments	Length:	3.60 (m)			
Element Name:	Abutment Walls	Width:	10.0 (m)			
Location:	East and West of Bridge	Height:	1.2 (m)			
Material:	Concrete	Count:	2			
Element Type:		Total Quantity:	41.3 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc. 41.3	Good	Fair	Poor*	00. None
Comments: The current water level is 600mm from the soffit. Height of abutment wall was measured as the exposed height.						
Recommended Work: None			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Rev2008

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Typical west abutment general arrangement

Element Data

Element Group:	Accessories		Length:			
Element Name:	Signs		Width:			
Location:	East and West		Height:			
Material:	Steel		Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good	Fair	Poor*	
			4			00. None
Comments:						
Recommended Work:						
			Maintenance Needs: 01. N/A			
			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Looking east across structure

Element Data

Element Group:	Approaches	Length:	20.5 (m)			
Element Name:	Barriers	Width:				
Location:	North and South of bridge	Height:				
Material:	Steel	Count:	4			
Element Type:	Steel beam guiderail	Total Quantity:	82.0 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good 82	Fair	Poor*	00. None
Comments:						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Typical approach guiderail

Element Data

Element Group:	Approaches	Length:	6.0 (m)			
Element Name:	Wearing Surface	Width:	7.8 (m)			
Location:	East and West of bridge	Height:				
Material:	Asphalt	Count:	2			
Element Type:		Total Quantity:	93.6 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good 85.1	Fair 4	Poor* 4	Perform. Deficiencies 00. None
Comments: 1.5m of light to medium map cracking in east approach. Wide transverse cracks at the end of each approach spanning the entire roadway.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Wide transverse cracking and potholes at end of approach

Element Data

Element Group:	Barriers		Length:	15.70 (m)		
Element Name:	Barrier/Parapet Walls		Width:	0.30 (m)		
Location:	Interior - North and south		Height:	1.05/0.6 (m)		
Material:	Concrete		Count:	2		
Element Type:			Total Quantity:	20.3 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc. 16.3	Good 2	Fair 2	Poor*	00. None
Comments: Hairline cracking observed in parapet walls. Medium vertical cracks in parapet wall at eight locations.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

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Typical barrier and handrail

Element Data

Element Group:	Barriers	Length:	15.70 (m)			
Element Name:	Barrier/Parapet Walls	Width:	0.30 (m)			
Location:	Exterior - North and South	Height:	1.05/0.6 (m)			
Material:	Concrete	Count:	2			
Element Type:		Total Quantity:	20.3 (sq. m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
		16.3	2	2		00. None
Comments:						
Height of parapet walls at the end of the wall was 1.05m and then 0.8m for the length of the wall. Medium cracking at vertical face at bridge deck in line with parapet at the north and south wall.						
Recommended Work:			Maintenance Needs:			
None			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Sand buildup at south barrier

Element Data

Element Group:	Beams/MLE	Length:	9.70 (m)			
Element Name:	Rectangular Voided Slab	Width:	10.0 (m)			
Location:		Height:	0.40 (m)			
Material:	Concrete	Count:				
Element Type:	Prestress Planks	Total Quantity:	97.0 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc. 97	Good	Fair	Poor*	00. None
Comments: Concrete deck poured onto concrete planks. Hairline crack present at the west abutment wall.						
Recommended Work:			Maintenance Needs:			
None			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

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Element Data

Element Group:	Decks	Length:	10.9 (m)			
Element Name:	Wearing Surface	Width:	7.90 (m)			
Location:		Height:				
Material:	Asphalt	Count:	1			
Element Type:		Total Quantity:	86.1 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			79.5	6.6		00. None
Comments: Light to medium map cracking present. Transverse cracking present on the edge of the approach slab, approximately 1 meter west of east face of west abutment wall.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Light to medium map cracking in bridge deck wearing surface

Element Data

Element Group:	Decks	Length:	8.60 (m)			
Element Name:	Soffit	Width:	8.00 (m)			
Location:	Interior	Height:				
Material:	Concrete	Count:	1			
Element Type:		Total Quantity:	68.8 (sq. m)			
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	68.8				00. None
Comments: Current water level is 600mm from the soffit.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Deck soffit, looking east

Element Data

Element Group:	Decks		Length:	8.60 (m)		
Element Name:	Soffit		Width:	1.00 (m)		
Location:	Exterior		Height:			
Material:			Count:	2		
Element Type:			Total Quantity:	17.2 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc. 17.2	Good	Fair	Poor*	00. None
Comments: Narrow cracks through exterior soffit below joint in parapet walls and at bearing seat at the northeast and southeast corners.						
Recommended Work:			Maintenance Needs:			
None			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

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Element Data

Element Group:	Sidewalks/Curbs	Length:	26.90 (m)			
Element Name:	Sidewalk/Curbs	Width:	1.50 (m)			
Location:	North of bridge deck	Height:	0.15 (m)			
Material:	Concrete	Count:	1			
Element Type:		Total Quantity:	44.4 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			44.4	0.75	0.75	00. None
Comments: Hairline surface cracks present in sidewalk. Wide cracks at two locations on approaches with sealant installed in cracks. Light to moderate abrasion damage on full length of curb.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.			01. N/A			

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Sealed wide crack in approach sidewalk

Element Data

Element Group:	Barriers	Length:	14.0 (m)			
Element Name:	Hand Railings	Width:	0.09 (m)			
Location:	North and South of bridge	Height:				
Material:	Steel	Count:	4			
Element Type:	Steel Pipe	Total Quantity:	56.0 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:	Galvanized					Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc. 56.0	Good	Fair	Poor*	00. None
Comments: Two steel pipe hand railings above each parapet wall on the bridge.						
Recommended Work:			Maintenance Needs:			
None			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Sidewalks	Route/seal cracks in approach sidewalk			X		\$500
Decks	Clean curbs and barrier joints of sand and debris			X		Maintenance
Approaches	Route and seal transverse cracks at approaches			X		\$1,500
	and patching.					
Total Cost						\$2,000

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

Cracking in asphalt should be rout and sealed as well as the cracking in the concrete sidewalk. Clean bridge deck as a part of yearly maintenance.

ADDITIONAL PHOTOS



South elevation



North elevation



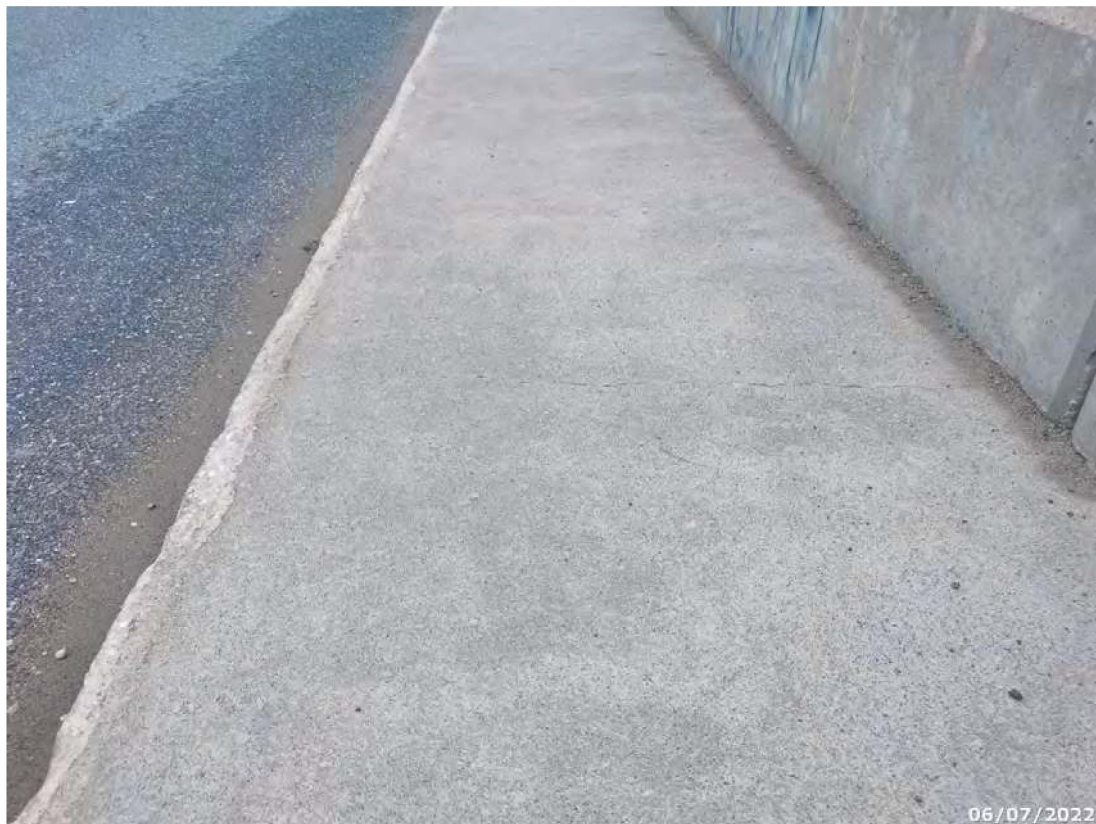
Looking west across structure



Downstream



Upstream



Typical sidewalk condition, localized medium transverse crack



Northwest embankment



Northeast embankment



Southeast embankment



Southwest embankment

Inventory Data:

Structure Name	<input type="text" value="Learmont Road Culvert #4"/>		
Main Highway #	<input type="text"/>	On <input checked="" type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Learmont Road"/>	Service under	<input type="checkbox"/> Navig. Water <input checked="" type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/>
MTO Region	<input type="text" value="50 - Northern"/>	Latitude:	<input type="text" value="397985E"/>
Regional Engineer	<input type="text"/>	Longitude:	<input type="text" value="5067146N"/>
MTO Area	<input type="text"/>	Heritage Designation:	<input type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
Old County	<input type="text" value="49 - Manitoulin"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Township	<input type="text" value="657 - Campbell"/>	Posted Speed	<input type="text" value="NP"/> No. of Lanes <input type="text" value="2"/>
Structure Type 1	<input type="text" value="Ellipse Culvert"/>	AADT	<input type="text" value="<500"/> % Truck <input type="text" value="<10"/>
Structure Material 1	<input type="text"/>	Travel Stream	<input type="text"/>
Structure Type 2	<input type="text"/>	Traffic Directional Bound	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Total Deck Length	<input type="text" value="3.0"/> (m)	Inspection Frequency	<input type="text" value="2"/> (years)
Overall Str. Width	<input type="text" value="18.5"/> (m)	Inspection Year	<input type="text" value="2022"/>
Culvert length	<input type="text"/>	Inspection Duration	<input type="text"/> (hrs)
Total Deck Area	<input type="text" value="15.9"/> (sq.m)	Interchange Number	<input type="text"/>
Roadway Width	<input type="text" value="5.3"/> (m)	Interchange Structure Number	<input type="text"/>
Skew Angle	<input type="text" value="15"/> (Degree)	Min. Vertical Clearance	<input type="text"/> (m)
No. of Spans	<input type="text" value="1"/>	Detour Distance	<input type="text" value="8"/> (km)
Span Lengths	<input type="text" value="3.05"/>	Fill on Structure	<input type="text" value="0.5"/> (m)
For retaining wall:			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="N/A"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2021"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

Rev 2008 2018

Field Inspection Information:			
Date of Inspection:	2022-06-07	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

2.008

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:	X		
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

2018

Overall Structure Notes:	
Recommended Work on Structure:	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	Culvert is generally in good condition and requires maintenance to extend the life of the structure
Date of Next Inspection:	2024

Rev 2008

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

2018

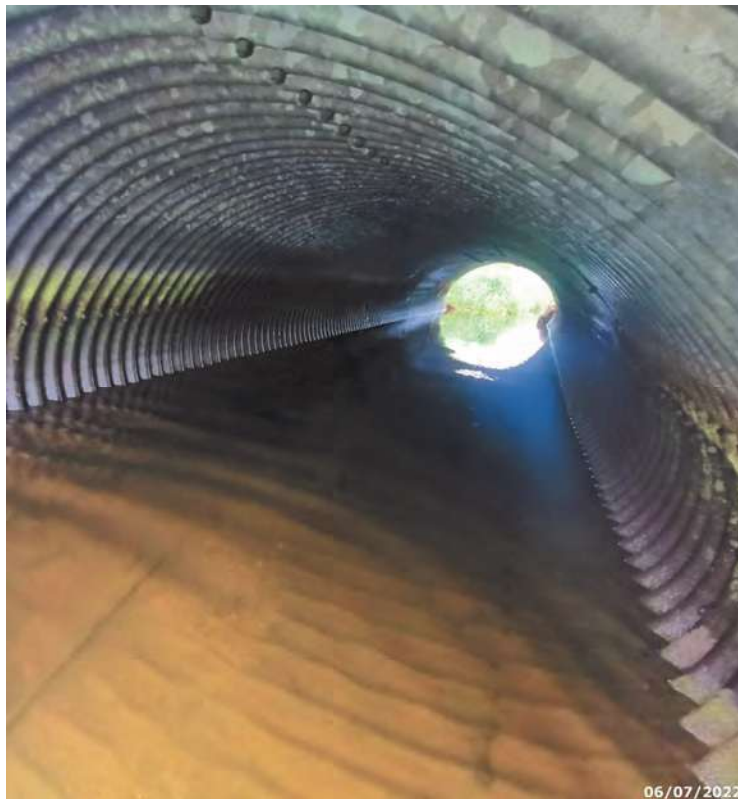
Rev 2008

Element Data

Element Group:	Culverts	Length:	16.5 m			
Element Name:	Barrel	Width:	3.0 m			
Location:		Height:	2.0 m			
Material:	Steel	Count:	1			
Element Type:	Corrugated Steel	Total Quantity:	132 sq. m			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:	Galvanized					Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc. 44	Good 68	Fair 20	Poor*	00. None
Comments: Light to moderate corrosion at the waterline. Light bulge along east wall of the barrel.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Looking south through culvert barrel along obvert

Element Data

Element Group:	Retaining Walls	Length:	12/4/3.4/5.5 m			
Element Name:	Walls	Width:	1 m			
Location:	NE,NW,SW,SE	Height:	1.2 m			
Material:	Gabion Basket	Count:	1			
Element Type:	Steel Cage with Rocks	Total Quantity:	29.9 sq. m			
Environment:	Benign Moderate Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:	Plastic covered gabion wire.					Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
				15	14.9	15.
Comments: Gabion baskets are bulging and moving towards waterway. There is an erosion channel at the edge of culvert behind gabion basket.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Erosion channel behind failed gabion basket

Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Embankments	Width:	
Location:		Height:	
Material:	Vegetation	Count:	4
Element Type:		Total Quantity:	4 each
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good
			3
			Fair
			1
			Poor*
			00. None
Comments: Moderate washout in NE slope. Erosion channel forming behind gabion basket.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Pack and fill erosion channel at Northeast quadrant.	
		13.	

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North elevation

Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Streams and Waterways	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:		Total Quantity:	1 All
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good
			Fair
			Poor*
			00. None
Comments: Waterway is generally unobstructed with no evidence of scour.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A	

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Looking upstream

Element Data

Element Group:	Approaches	Length:	10 m			
Element Name:	Wearing Surface	Width:	5.3 m			
Location:	East and west approaches	Height:				
Material:	Surface treatment	Count:	2			
Element Type:		Total Quantity:	106 sq. m			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
			105	1		00. None
Comments: Minor breakout on North shoulder.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Looking east across structure

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Embankments	Repair minor washout/erosion at NE corner			X		\$500.00
Total Cost						\$500.00

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

Washout in Northeast quadrant should be backfilled and packed to ensure no further damage to roadway. Monitor gabion baskets for further movement/restricting flow into culvert.

ADDITIONAL PHOTOS



Looking West Across The Structure



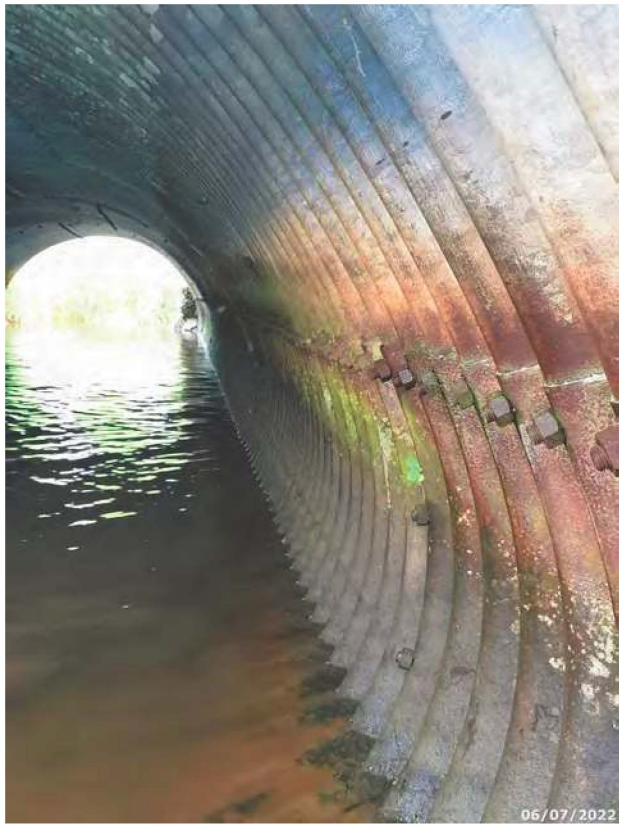
Looking downstream



South elevation



Looking South Along West Barrel Wall



Looking North Along East Barrel Wall



Potholes and broken shoulder edge of surface treatment

Inventory Data:

Structure Name	<input type="text" value="Monument Road Bridge #5"/>		
Main Highway #	<input type="text" value="N/A"/>	On <input checked="" type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Monument Road, 0.2km North of Blue Road, Mindemoya River"/>	Service under	<input checked="" type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	<input type="text" value="#50 - Northern"/>	Latitude:	<input type="text" value="45 19.9' N"/> Longitude: <input type="text" value="82 14.7' W"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Old County	<input type="text" value="#49 - Manitoulin"/>	Posted Speed	<input type="text" value="NP"/> No. of Lanes <input type="text" value="2"/>
Township	<input type="text" value="#659 - Carnarvon"/>	AADT	<input type="text" value="<500"/> % Truck <input type="text" value="<10%"/>
Structure Type 1	<input type="text" value="Solid Slab"/>	Travel Stream	<input type="text"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text" value="North/South"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text" value="9.2"/> (m)	Inspection Year	<input type="text" value="2022"/>
Overall Str. Width	<input type="text" value="9.2"/> (m)	Inspection Duration	<input type="text" value="1"/> (hrs)
Culvert length	<input type="text"/> (m)	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="84.6"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text" value="8.0"/> (m)	Min. Vertical Clearance	<input type="text"/> (m)
Skew Angle	<input type="text" value="0"/> (Degree)	Detour Distance	<input type="text" value="8"/> (km)
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text" value="-"/> (m)
Span Lengths	<input type="text" value="9.2"/> (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="2006"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2020"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

Rev 2008 2018

Field Inspection Information:			
Date of Inspection:	2022-06-07	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders, camera		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

2.008

2018

Rev

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	<input checked="" type="checkbox"/>		
Detailed Deck Condition Survey:	<input checked="" type="checkbox"/>		
Non-destructive Delamination Survey of Asphalt-Covered Deck:	<input checked="" type="checkbox"/>		
Concrete Substructure Condition Survey:	<input checked="" type="checkbox"/>		
Detailed Coating Condition Survey:	<input checked="" type="checkbox"/>		
Detailed Timber Investigation	<input checked="" type="checkbox"/>		
Post-Tensioned Strand Investigation	<input checked="" type="checkbox"/>		
Underwater Investigation:	<input checked="" type="checkbox"/>		
Fatigue Investigation:	<input checked="" type="checkbox"/>		
Seismic Investigation:	<input checked="" type="checkbox"/>		
Structure Evaluation:	<input checked="" type="checkbox"/>		
Monitoring	<input checked="" type="checkbox"/>		
Deformations, Settlements and Movements:	<input checked="" type="checkbox"/>		
Crack Widths:	<input checked="" type="checkbox"/>		
RSS Horizontal movements of face:	<input checked="" type="checkbox"/>		
RSS Vertical movements of overall structure:	<input checked="" type="checkbox"/>		
RSS Local movements or deterioration of facing elements:	<input checked="" type="checkbox"/>		
RSS Horizontal movements within overall structure:	<input checked="" type="checkbox"/>		
RSS Vertical movements within overall structure:	<input checked="" type="checkbox"/>		
RSS Lateral earth pressure at the back of facing elements:	<input checked="" type="checkbox"/>		
Investigation Notes:			

Overall Structure Notes:	
Recommended Work on Structure:	<input type="checkbox"/> None <input checked="" type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	Seal cracking in surface treatment to prevent flow of water through the bridge deck.
Date of Next Inspection:	2024

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

2018

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Element Data

Element Group:	Abutments	Length:	5.00 (m)			
Element Name:	Wingwalls	Width:	-			
Location:	Four Corners of Bridge	Height:	3.20 (m)			
Material:	Concrete	Count:	4			
Element Type:		Total Quantity:	64.0 (sq. m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
			54	10		00. None
Comments: Localized stained vertical crack at northeast wingwall. Tree growth adjacent to wingwall.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 02. Bridge Cleaning	
None					<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Cut back vegetation growth adjacent to wingwalls.	

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Localized stained medium crack at northwest wingwall

Element Data

Element Group:	Abutments	Length:	-			
Element Name:	Abutment Walls	Width:	9.20 (m)			
Location:	North and South	Height:	2.60 (m)			
Material:	Concrete	Count:	2			
Element Type:		Total Quantity:	47.8 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
		45.8	1.0	1.0		00. None
Comments:						
Medium vertical crack noted on south abutment at 2/3 height at mid-width. At one third from east end on south abutment there is a narrow to medium vertical crack spanning the full height and connects to crack in soffit.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None			01. N/A			

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South abutment general arrangement

Element Data

Element Group:	Approaches		Length:	19.0 (m)		
Element Name:	Barriers		Width:	-		
Location:	East and West of Bridge		Height:	-		
Material:	Steel		Count:	2		
Element Type:	Steel Beam Guiderail		Total Quantity:	38.0 (m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good	Fair	Poor*	
			38			00. None
Comments: Guiderail posts have light corrosion at the baseplates. Excessive debris and gravel buildup present. Offset block displaced in NE quadrant, impact damage in NW and SW quadrant.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			02. Bridge Cleaning <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
			Clean debris and gravel buildup.			

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Typical barrier system, excess debris buildup

Element Data

Element Group:	Approaches		Length:	10.0 (m)		
Element Name:	Wearing Surface		Width:	8.00 (m)		
Location:	North and South of Bridge		Height:	-		
Material:	Surface Treatment		Count:	2		
Element Type:			Total Quantity:	160.0 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			157	0.5	2.5	00. None
Comments: Medium to wide transverse crack at north approach. Wide crack and settlement of approach wearing surface at south approach.						
Recommended Work:			Maintenance Needs:			
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
Seal cracking in wearing surface.						

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Medium to wide transverse crack in north approach

Element Data

Element Group:	Decks	Length:	9.20 (m)			
Element Name:	Wearing Surface	Width:	9.20 (m)			
Location:		Height:	-			
Material:	Surface Treatment	Count:	1			
Element Type:		Total Quantity:	84.6 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>		No <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			84.6			00. None
Comments: Light wear and raveling present throughout.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Typical deck wearing surface

Element Data

Element Group:	Decks		Length:	9.2 (m)		
Element Name:	Soffit		Width:	1.0 (m)		
Location:	Exterior		Height:			
Material:	Cast-in-place Concrete		Count:	2		
Element Type:			Total Quantity:	18.4 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc. 18.4	Good	Fair	Poor*	00. None
Comments:						
Recommended Work:			Maintenance Needs:			
None.			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Soffit general arrangement, looking north

Element Data

Element Group:	Decks		Length:	8.00 (m)		
Element Name:	Soffit		Width:	8.20 (m)		
Location:	Interior		Height:	-		
Material:	Cast-in-place Concrete		Count:	1		
Element Type:			Total Quantity:	65.6 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc. 64.1	Good 1.5	Fair	Poor*	Perform. Deficiencies 00. None
Comments: 8' narrow crack observed running with span at the south abutment. Localized 2' long narrow crack with efflorescence.. 8-10' long narrow crack with efflorescence in Northwest corner.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A		

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Soffit general arrangement, looking south

Element Data

Element Group:	Accessories	Length:	
Element Name:	Signs	Width:	
Location:	Corners of Bridge	Height:	
Material:	Steel	Count:	4
Element Type:		Total Quantity:	4 (each)
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good 4
			Fair
			Poor*
Comments: Signs are at the transition not the end of the guiderail system			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A
None			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

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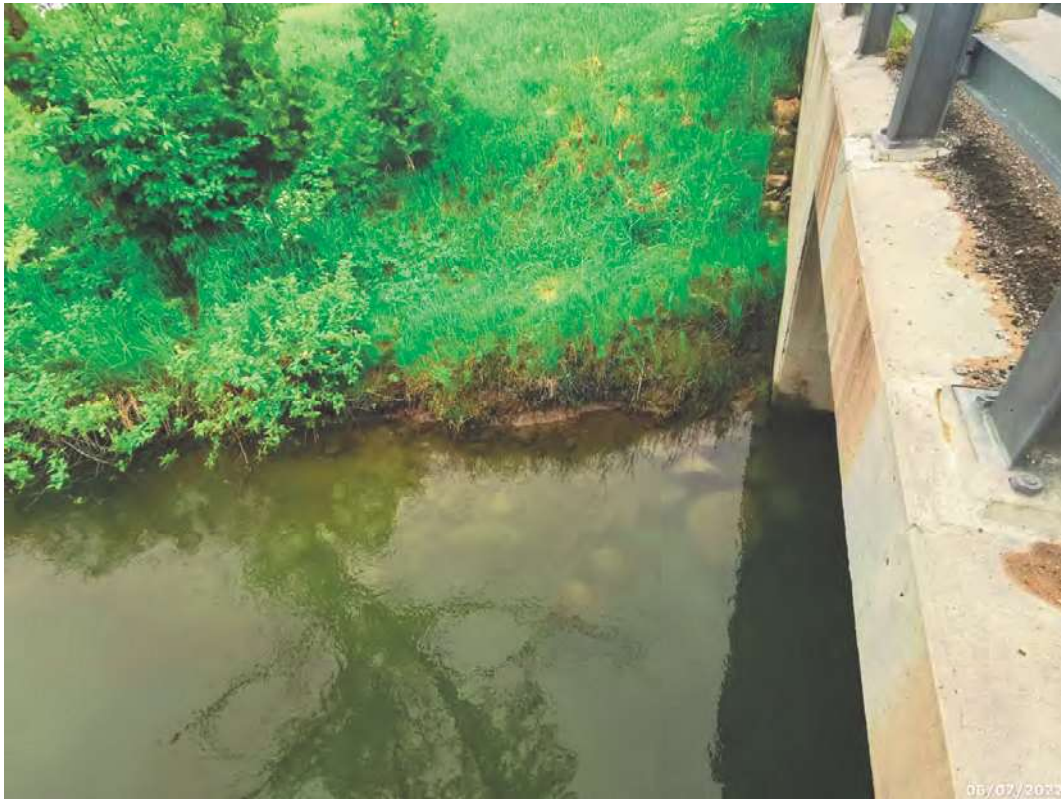
Looking north across structure

Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Embankments		Width:			
Location:	4 Corners of Bridge		Height:			
Material:	Vegetation/Rock Protection		Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	
			4			00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None			01. N/A			

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Southeast embankment

Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Streams and Waterways	Width:	
Location:		Height:	
Material:		Count:	1.0
Element Type:		Total Quantity:	1.0 (all)
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good 1.0
			Fair
			Poor*
Comments: Stream is generally unobstructed and is in good shape upstream/downstream of bridge.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A	

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Upstream

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Approaches	Seal cracks in wearing surface			X		\$1,500
Embankments	Cut back vegetation around the embankments			X		Maintenance
Total Cost						

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

ADDITIONAL PHOTOS



Looking south across structure



East elevation



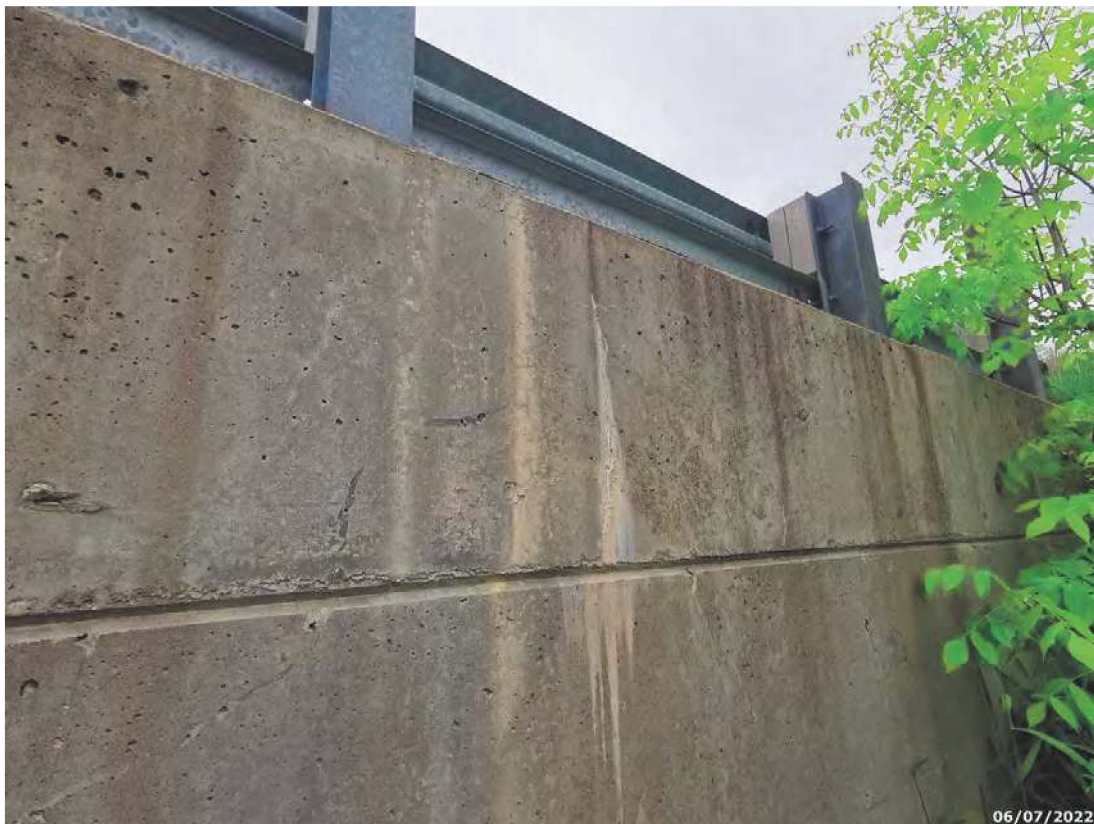
West elevation



Tree growth adjacent to wingwall



Light to medium transverse crack and settlement of south approach wearing surface



Localized stained vertical crack at northeast wingwall



Medium crack in soffit in southeast quadrant



Medium to wide stained crack in soffit



Downstream



Northeast embankment



Northwest embankment



Southwest embankment

Inventory Data:

Structure Name	<input type="text" value="Providence Bay Pedestrian Bridge"/>		
Main Highway #	<input type="text" value="N/A"/>	On <input type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input checked="" type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text" value="Downtown Providence Bay Boardwalk"/>	Service under	<input checked="" type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	<input type="text" value="50 - Northern"/>	Latitude:	<input type="text" value="45.667431"/> Longitude: <input type="text" value="-82.268562"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input type="checkbox"/>
Old County	<input type="text" value="49 - Manitoulin"/>	Posted Speed	<input type="text" value="N/A"/> No. of Lanes <input type="text" value="N/A"/>
Township	<input type="text" value="657 - Campbell"/>	AADT	<input type="text" value="N/A"/> % Truck <input type="text" value="N/A"/>
Structure Type 1	<input type="text" value="Cambered Steel Truss"/>	Travel Stream	<input type="text" value="North to south"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text" value="30"/> (m)	Inspection Year	<input type="text" value="2022"/>
Overall Str. Width	<input type="text" value="2.03"/> (m)	Inspection Duration	<input type="text" value="1"/> (hrs)
Culvert length	<input type="text"/>	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="54.9"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text"/>	Min. Vertical Clearance	<input type="text"/> (m)
Skew Angle	<input type="text" value="0"/> (Degree)	Detour Distance	<input type="text" value="-"/> (km)
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text" value="-"/> (m)
Span Lengths	<input type="text" value="30"/> (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

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Historical Data:			
Year Built	<input type="text" value="N/A"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="Unknown"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

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Field Inspection Information:			
Date of Inspection:	2022-06-06	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape, hip waders		
Special Access Equipment:			
Weather:	Overcast	Temperature:	18

2.008

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	X		
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		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring	X		
Deformations, Settlements and Movements:	X		
Crack Widths:	X		
RSS Horizontal movements of face:	X		
RSS Vertical movements of overall structure:	X		
RSS Local movements or deterioration of facing elements:	X		
RSS Horizontal movements within overall structure:	X		
RSS Vertical movements within overall structure:	X		
RSS Lateral earth pressure at the back of facing elements:	X		
Investigation Notes:			

2018

Overall Structure Notes:	
Recommended Work on Structure:	<input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	Monitor approach sidewalk at south end where pier has minimal contact for supporting deck boards/beam. Add support angle to pier to support boardwalk.
Date of Next Inspection:	2024

Rev 2008

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

2018

Rev 2008

Element Data

Element Group:	Decks	Length:	30.0 (m)			
Element Name:	Wearing Surface	Width:	1.83 (m)			
Location:		Height:	0.051 (m)			
Material:	Wood	Count:				
Element Type:	2x6 Pressure treated lumber	Total Quantity:	54.9 (sq. m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m² / each / % / all	Exc.	Good	Fair	Poor*	
			54.9			00. None
Comments: Light wear and weathering on deck. A few nails are beginning to stick up of deck surface.						
Recommended Work:			Maintenance Needs: 12. Bridge Surface Repair			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Refasten nails.			

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Typical deck wearing surface

Element Data

Element Group:	Trusses/Arches	Length:	30.0 (m)			
Element Name:	Bottom Chords	Width:	0.076 (m)			
Location:	East and West of bridge	Height:	0.102 (m)			
Material:	Steel	Count:	2			
Element Type:	4x3 HSS	Total Quantity:	21.4 (sq. m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:	Paint					Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			21.4			00. None
Comments: Bottom chord has moderate deflection at the midspan on the west side and it appears on two spans. Sag in bottom chord at first vertical after splice connection from north on east side.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			18. Other <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Monitor Bridge deflections.			

Rev2008

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Moderate deflection of bottom chord at midspan

Element Data

Element Group:	Trusses/Arches		Length:	30.0 (m)		
Element Name:	Top Chords		Width:	0.102 (m)		
Location:	East and West of bridge		Height:	0.102 (m)		
Material:	Steel		Count:	2		
Element Type:	4x4 HSS		Total Quantity:	24.5 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:	Paint					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² / m / each / % / all	24.5				00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.			01. N/A			

Rev2008

Rev2008



East elevation, full truss shown

Element Data

Element Group:	Trusses/Arches		Length:	1.75 (m), 2.76 (m)		
Element Name:	Verticals/Diagonals		Width:	0.102 (m), 0.052 (m),		
Location:	East and West of bridge		Height:	0.102 (m), 0.052 (m), 0.076 (m)		
Material:	Steel		Count:	-		
Element Type:	2x3 and 2x2 diagonals and 4x4 verticals (HSS)		Total Quantity:	57.3 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	57.3				00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

Rev2008

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Splice connection

Element Data

Element Group:	Beams/MLE		Length:	2.03 (m)		
Element Name:	Diaphragms		Width:	0.102 (m)		
Location:	East and West Sides of Bridges		Height:	0.203 (m)		
Material:	Steel		Count:	15		
Element Type:	8x4 HSS		Total Quantity:	18.6 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:	Painted					Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc. 15	Good	Fair	Poor*	
Comments:						
Recommended Work:			Maintenance Needs:			
None.			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Deck soffit general arrangement, looking south

Element Data

Element Group:	Beams/MLE		Length:	2.9 (m)		
Element Name:	Bracing		Width:	0.038 (m)		
Location:			Height:	0.038 (m)		
Material:	Steel		Count:	28		
Element Type:	1.5x1.5x0.25 angle, cross bracing		Total Quantity:	28 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc. 28	Good	Fair	Poor*	00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

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Element Data

Element Group:	Beams/MLE	Length:	30.0 (m)			
Element Name:	Stringers	Width:	0.052 (m), 0.076 (m)			
Location:	Ends and middle span	Height:	0.052 (m)			
Material:	Steel	Count:				
Element Type:	2x2 and 2x3 HSS	Total Quantity:	20.2 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:	Painted					Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
			20.2			00. None
Comments:						
Recommended Work:						
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years						
Maintenance Needs:						
<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year						
None						
01. N/A						

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Element Data

Element Group:	Barriers	Length:	30.0 (m)			
Element Name:	Hand Railings	Width:	-			
Location:	East and west of bridge	Height:	-			
Material:	Steel	Count:	2			
Element Type:	2" Pipe	Total Quantity:	60.0 (m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:	Painted					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	00. None
	m ² / m <u>each</u> % / all	60				
Comments:						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Rev2008

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Typical hand railing arrangement

Element Data

Element Group:	Barriers	Length:	
Element Name:	Posts	Width:	
Location:	East and West of bridge	Height:	
Material:	Wood	Count:	337
Element Type:	Wood 1.5x1.5 pickets on 2x6 and 2x4	Total Quantity:	337 (each)
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:	Pressure treated		Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good
			Fair
			Poor*
			00. None
Comments: Moderate weathering of wood elements. Two broken pickets were flagged at time of inspection.			
Recommended Work:		Maintenance Needs: 03. Railing System Repair	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Replace broken pickets.	

Rev2008

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Broken picket

Element Data

Element Group:	Decks		Length:	2.0 (m)		
Element Name:	Soffit		Width:	1.83 (m)		
Location:	Ends		Height:	-		
Material:	Wood		Count:	2		
Element Type:	Wood Decking		Total Quantity:	7.32 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all		7.32			00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

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Element Data

Element Group:	Decks		Length:	26.0 (m)		
Element Name:	Soffit		Width:	1.83 (m)		
Location:	Interior		Height:			
Material:	Wood		Count:	1		
Element Type:	Wood Decking		Total Quantity:	47.6 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all		47.6			00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None						

Rev2008

Rev2008



Deck soffit general arrangement looking north

Element Data

Element Group:				Length:				
Element Name:				Width:				
Location:				Height:				
Material:				Count:				
Element Type:				Total Quantity:				
Environment:		Benign / Moderate / Severe		Inspected:		Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:							Perform. Deficiencies	
Condition Data:	Units		Exc.	Good	Fair	Poor*		
	m ² / m / each / % / all						00. None	
Comments:								
Recommended Work:				Maintenance Needs:				
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A				

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Element Data

Element Group:	Abutments	Length:	2.65 (m)			
Element Name:	Abutment Walls	Width:	0.410 (m)			
Location:	North and south of bridge	Height:	1.45 (m)(N)/1.65 (m)(S)			
Material:	Cast-in-place Concrete	Count:	2			
Element Type:		Total Quantity:	21 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good 20	Fair 1	Poor*	Perform. Deficiencies 00. None
Comments: North abutment has medium crack on south face at the inner west anchor bolt.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

Rev2008

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North abutment general arrangement

Element Data

Element Group:	Foundations		Length:			
Element Name:	Foundation (below ground level)		Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good	Fair	Poor*	00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

Rev2008

Rev2008

Element Data

Element Group:	Abutments	Length:	0.406 (m)			
Element Name:	Bearings	Width:	0.203 (m)			
Location:	North and south ends of structure	Height:	0.019 (m)			
Material:	Steel	Count:	4			
Element Type:	Bearing plate on abutment	Total Quantity:	4 (each)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:	Painted					Perform. Deficiencies
Condition Data:	Units m ² / m <u>(each)</u> % / all	Exc.	Good	Fair	Poor*	
			2	1	1	00. None
Comments: North bearing plates not in full contact with abutment. South end slotted holes were torched out during installation of plates. South bearing plates project 5/8" inboard. South end is the free end. Minor corrosion at bearings. Loose anchors at south bearing.						
Recommended Work:			Maintenance Needs:			
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years Shim under truss plate to restore full bearing			01. N/A <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Monitor bearings for movement			

Rev2008

Rev2008



Minimal contact at northwest bearing

Element Data

Element Group:	Coatings		Length:	varies		
Element Name:	Structural Steel		Width:	varies		
Location:	(Truss, beams, bracing, etc.)		Height:	varies		
Material:	Paint		Count:			
Element Type:			Total Quantity:	166 (sq. m)		
Environment:	Benign / Moderate / <u>Severe</u>		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
			141.1	16.6	8.3	00. None
Comments: Localized moderate weathering with complete breakdown and loss of protective coating throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

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Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	
			2	2		00. None
Comments: Rotation of gabion baskets in place at north embankments. Storm sewer outlet at northeast embankment.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



Failed and rotated gabien basket

Element Data

Element Group:	Embankments and Streams	Length:	
Element Name:	Streams and Waterways	Width:	
Location:		Height:	
Material:		Count:	1
Element Type:		Total Quantity:	1 (all)
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good
			Fair
			Poor*
			00. None
Comments: Waterway is generally unobstructed with no evidence of scour.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A	

Rev2008

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Upstream

Element Data

Element Group:	Approaches	Length:	6.0			
Element Name:	Pedestrian Walkway	Width:	1.83			
Location:	North and south of bridge	Height:	-			
Material:	Wood	Count:	2			
Element Type:		Total Quantity:	22 (sq. m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
				22		00. None
Comments: Minimal approach boardwalk bearing on south approach.						
Recommended Work:			<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 18. Other	
Add support angle to pier to support boardwalk.					<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Monitor bearing/pier movement	

Rev2008

Rev2008



Minimal approach sidewalk bearing

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Railings	Replace broken railing pickets			X		\$200
Coatings	Touch up paint			X		Maintenance
Decks	Pound down nails in deck			X		Maintenance
Approaches	South boardwalk support			X		\$1,500
Bearings	Place shim plates at the bearings			X		Maintenance
Total Cost						\$1,700

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

ADDITIONAL PHOTOS



North bearing



West elevation



Storm sewer outlet, northeast of bridge



South bearing general arrangement, loose anchor nuts



Looking north across structure



Looking south across structure



Downstream

Inventory Data:

Structure Name	<input type="text" value="Sandfield Pedestrian Bridge"/>		
Main Highway #	<input type="text" value="N/A"/>	On <input type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input checked="" type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	<input type="text"/>	Service under	<input type="checkbox"/> Navig. Water <input checked="" type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	<input type="text" value="Municipality of Central Manitoulin"/>	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	<input type="text" value="50 - Northern"/>	Latitude:	<input type="text" value="45.70326"/> Longitude: <input type="text" value="-81.99807"/>
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Old County	<input type="text" value="49 - Manitoulin"/>	Posted Speed	<input type="text" value="N/A"/> No. of Lanes <input type="text" value="N/A"/>
Township	<input type="text" value="657 - Campbell"/>	AADT	<input type="text" value="N/A"/> % Truck <input type="text" value="N/A"/>
Structure Type 1	<input type="text" value="Cambered Steel Truss"/>	Travel Stream	<input type="text" value="N to S"/>
Structure Material 1	<input type="text"/>	Traffic Directional Bound	<input type="text" value="N/A"/>
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	<input type="text" value="2"/> (years)
Total Deck Length	<input type="text" value="11.85"/> (m)	Inspection Year	<input type="text" value="2022"/>
Overall Str. Width	<input type="text" value="2.0"/> (m)	Inspection Duration	<input type="text" value="1"/> (hrs)
Culvert length	<input type="text"/>	Interchange Number	<input type="text"/>
Total Deck Area	<input type="text" value="21.69"/> (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	<input type="text"/>	Min. Vertical Clearance	<input type="text" value="1.067"/> (m)
Skew Angle	<input type="text" value="0"/> (Degree)	Detour Distance	<input type="text"/>
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text" value="0"/> (m)
Span Lengths	<input type="text" value="11.85"/> (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

Rev 2018

Rev 2018

Rev 2018

Historical Data:			
Year Built	<input type="text" value="N/A"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="Unknown"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Work History: (Date/description)			
Investigation History: (Date/description)			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

Rev 2008 2018

Field Inspection Information:			
Date of Inspection:	2022-06-06	Type of Inspection:	<input checked="" type="checkbox"/> Reg. OSIM <input type="checkbox"/> Enh. OSIM
Inspected By:	Matt Kirby, P. Eng		
Others in Party:	Scott Reaume, EIT		
Enh. Access Equipment:	Hammer, measuring tape		
Special Access Equipment:			
Weather:	Rain	Temperature:	12

2.008

2018

Rev

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Material Condition Survey	<input checked="" type="checkbox"/>		
Detailed Deck Condition Survey:	<input checked="" type="checkbox"/>		
Non-destructive Delamination Survey of Asphalt-Covered Deck:	<input checked="" type="checkbox"/>		
Concrete Substructure Condition Survey:	<input checked="" type="checkbox"/>		
Detailed Coating Condition Survey:	<input checked="" type="checkbox"/>		
Detailed Timber Investigation	<input checked="" type="checkbox"/>		
Post-Tensioned Strand Investigation	<input checked="" type="checkbox"/>		
Underwater Investigation:	<input checked="" type="checkbox"/>		
Fatigue Investigation:	<input checked="" type="checkbox"/>		
Seismic Investigation:	<input checked="" type="checkbox"/>		
Structure Evaluation:	<input checked="" type="checkbox"/>		
Monitoring	<input checked="" type="checkbox"/>		
Deformations, Settlements and Movements:	<input checked="" type="checkbox"/>		
Crack Widths:	<input checked="" type="checkbox"/>		
RSS Horizontal movements of face:	<input checked="" type="checkbox"/>		
RSS Vertical movements of overall structure:	<input checked="" type="checkbox"/>		
RSS Local movements or deterioration of facing elements:	<input checked="" type="checkbox"/>		
RSS Horizontal movements within overall structure:	<input checked="" type="checkbox"/>		
RSS Vertical movements within overall structure:	<input checked="" type="checkbox"/>		
RSS Lateral earth pressure at the back of facing elements:	<input checked="" type="checkbox"/>		
Investigation Notes:			

Overall Structure Notes:	
Recommended Work on Structure:	<input type="checkbox"/> None <input checked="" type="checkbox"/> Minor Rehab. <input type="checkbox"/> Major Rehab. <input type="checkbox"/> Replace
Timing of Recommended Work:	<input checked="" type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years
Overall Comments:	Bearing seats to be cleaned, small settlement of fill at south approach and repair/replace undermining at both abutments.
Date of Next Inspection:	2024

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| 01 Load carrying capacity | 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 09 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 10 Surface ponding | 16 Other performance deficiencies |
| | 11 Deck/Wall drainage | |

Maintenance Needs

- | | | |
|------------------------------------|-------------------------------------|---|
| 01 N/A | 07 Structural Steel Repair | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Concrete Repair | 14 Concrete Sealing |
| 03 Railing System Repair | 09 Timber Repair | 15 N/A |
| 04 N/A | 10 Works for Modular bridges | 16 Works for Drainage System |
| 05 Bridge Deck Joint Repair | 11 Animal/Pest Control | 17 Sealing (Loose Concrete or ACR Steel) |
| 06 N/A | 12 Bridge Surface Repair | 18 Other Maintenance |

2018

Rev 2008

Element Data

Element Group:	Decks	Length:	11.65 (m)			
Element Name:	Wearing Surface	Width:	1.83 (m)			
Location:		Height:	-			
Material:	Wood	Count:	1			
Element Type:		Total Quantity:	21.32 (sq. m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
			21.32			00. None
Comments: Deck made of 2x10 and 2x6 boards. Algae and lichen growth present on deck.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



Typical deck wearing surface

Element Data

Element Group:	Decks	Length:	11.65			
Element Name:	Soffit	Width:	1.83			
Location:	Interior	Height:				
Material:	Wood	Count:	1			
Element Type:		Total Quantity:	21.32 (sq. m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
			21.32			00. None
Comments: Algae growth present.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Rev2008

Rev2008



Typical deck soffit looking south

Element Data

Element Group:	Decks	Length:	2.0			
Element Name:	Soffit	Width:	1.83			
Location:	Ends	Height:				
Material:	Wood	Count:	2			
Element Type:		Total Quantity:	7.32 (sq. m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
			7.32			00. None
Comments: Algae growth present.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.						

Rev2008

Rev2008

Element Data

Element Group:	Barriers	Length:	11.85 (m)			
Element Name:	Railing Systems	Width:	0.038 (m)			
Location:	East and West of bridge	Height:	-			
Material:	Steel	Count:	10			
Element Type:	Cut 1.5" pipe	Total Quantity:	10 (each)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:	None					Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good 10	Fair	Poor*	Perform. Deficiencies 00. None
Comments: Light corrosion throughout.						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



Typical railing system

Element Data

Element Group:	Trusses/Arches		Length:	11.85 (m)		
Element Name:	Top Chords		Width:	0.076 (m)		
Location:	East and west of bridge		Height:	0.052 (m)		
Material:	Steel		Count:	2		
Element Type:	3x2 HSS		Total Quantity:	3.0 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all	1.5	1.5			00. None
Comments: Light corrosion throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.						

Rev2008

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Element Data

Element Group:	Trusses/Arches		Length:	11.85 (m)		
Element Name:	Bottom Chords		Width:	0.076 (m)		
Location:	East and west of bridge		Height:	0.052 (m)		
Material:	Steel		Count:	2		
Element Type:	3x2 HSS		Total Quantity:	3.0 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	00. None
Comments: Light corrosion throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

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Element Data

Element Group:	Trusses/Arches		Length:	1.55 (m), 1.06 (m)		
Element Name:	Verticals/Diagonals		Width:	0.052 (m), 0.076 (m)		
Location:	East and west of bridge		Height:	0.052 (m)		
Material:	Steel		Count:	20 verts, 18 diagonals		
Element Type:	2x2 Diagonal HSS, 3x2 Vertical HSS		Total Quantity:	12.8 (sq. m)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:	None					Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc. 12.8	Good	Fair	Poor*	00. None
Comments: Light corrosion throughout.						
Recommended Work:			Maintenance Needs:			
None.			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

Rev2008

Rev2008

Element Data

Element Group:	Beams/MLE	Length:	2.0 (m)			
Element Name:	Diaphragms	Width:	0.052 (m)			
Location:	East and west of bridge	Height:	0.102 (m)			
Material:	Steel	Count:	20			
Element Type:	2x4	Total Quantity:	20 (each)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Limited <input type="checkbox"/>	
Protection System:	None					Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good 20	Fair	Poor*	00. None
Comments: Light corrosion throughout						
Recommended Work: None.			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Rev2008

Rev2008



Deck soffit looking north

Element Data

Element Group:	Beams/MLE		Length:	2.36 (m)		
Element Name:	Bracing		Width:	0.052 (m)		
Location:	Between vertical posts, 1 per bay		Height:	0.052 (m)		
Material:	Steel		Count:	9		
Element Type:	2x2 Angle		Total Quantity:	9 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/>		Limited <input checked="" type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	
			9			00. None
Comments: Light corrosion throughout						
Recommended Work:			<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A	
None.					<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Rev2008

Rev2008



Deck soffit looking south

Element Data

Element Group:	Beams/MLE	Length:	2.0 (m)			
Element Name:	Stringers	Width:	0.052 (m)			
Location:	Ends	Height:	0.052 (m)			
Material:	Steel	Count:	6			
Element Type:	2x2 HSS	Total Quantity:	2.50 (sq. m)			
Environment:	Benign / Moderate / Severe		Inspected:			Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all		2.50			00. None
Comments: Light corrosion throughout						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.						

Rev2008

Rev2008

Element Data

Element Group:	Beams/MLE	Length:	7.8 (m)			
Element Name:	Stringers	Width:	0.052 (m)			
Location:	Exterior	Height:	0.052 (m)			
Material:	Steel	Count:	2			
Element Type:	2x2 HSS	Total Quantity:	3.25 (sq. m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:	None					Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	00. None
Comments: Light corrosion throughout						
Recommended Work:			Maintenance Needs:			
None.			01. N/A			
			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008

Element Data

Element Group:	Beams/MLE		Length:	7.8 (m)		
Element Name:	Stringers		Width:	0.052 (m)		
Location:	Interior		Height:	0.052 (m)		
Material:	Steel		Count:	1		
Element Type:	2x2 HSS		Total Quantity:	1.62 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all		1.62			00. None
Comments: Light corrosion throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
None.						

Rev2008

Rev2008

Element Data

Element Group:	Abutments	Length:	3.25 (m)			
Element Name:	Abutment Walls	Width:	0.60 (m)			
Location:	North and south of bridge	Height:	0.57 (m)			
Material:	Cast-in-place Concrete	Count:	2			
Element Type:		Total Quantity:	7.6 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all			7.6		00. None
Comments:						
North abutment has localized moderate spall, honey combing present on the structure side, moderate to severe undermining present on south side. South abutment has severe debris buildup, moderate to severe undermining and vegetation growth. South approach has evidence of settlement and a 2" depression at end of the bridge walk surface.						
Recommended Work:			Maintenance Needs:			
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years Restore and stabilize material at front edge of abutments.			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			



Moderate to severe undermining at south abutment

Element Data

Element Group:	Foundations		Length:			
Element Name:	Foundation (below ground level)		Width:			
Location:			Height:			
Material:			Count:			
Element Type:			Total Quantity:			
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good	Fair	Poor*	00. None
Comments: Moderate loss of material under abutment/footing.						
Recommended Work:			Maintenance Needs:			
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years Replace and stabilize material under abutment.			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

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Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good 4	Fair	Poor*	00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

Rev2008

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Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:			Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1 (all)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good	Fair	Poor*	
			1			00. None
Comments: Waterway is generally unobstructed with no evidence of scour.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

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Element Data

Element Group:	Approaches		Length:			
Element Name:	Stairs		Width:			
Location:	North		Height:			
Material:	Wood		Count:	1		
Element Type:			Total Quantity:	1 (all)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc.	Good	Fair	Poor*	
				1		00. None
Comments: 4 step approach and final step is not flush with abutment and presents a tripping hazard.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Rev2008

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Typical north approach

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Abutments	Clear bearings of debris			X		Maintenance
Abutments	Restore lost bearing material and stabilize		X			\$7,500
Total Cost						\$7,500

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision	
Contingencies:		
Total Cost		

Justification:

Bearing material under the abutments has eroded and should be replaced to stabilize abutments.

ADDITIONAL PHOTOS



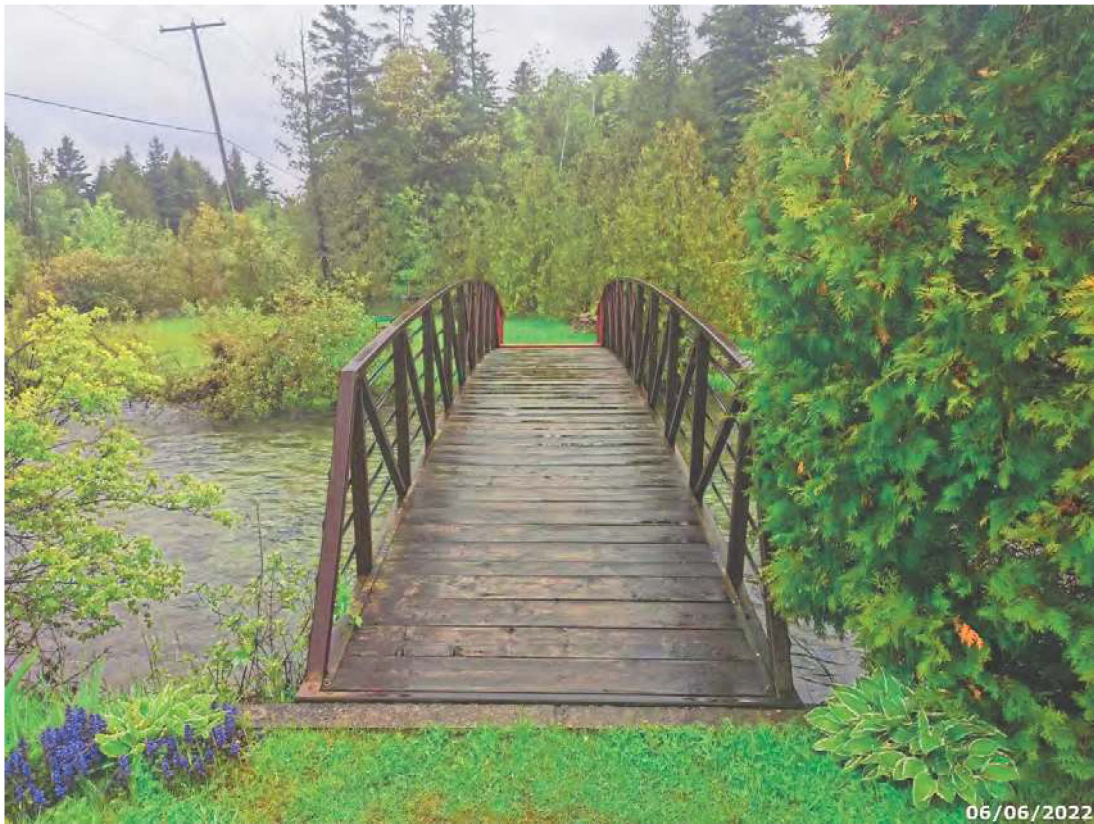
East Elevation



West Elevation



Looking north across structure



Looking south across structure



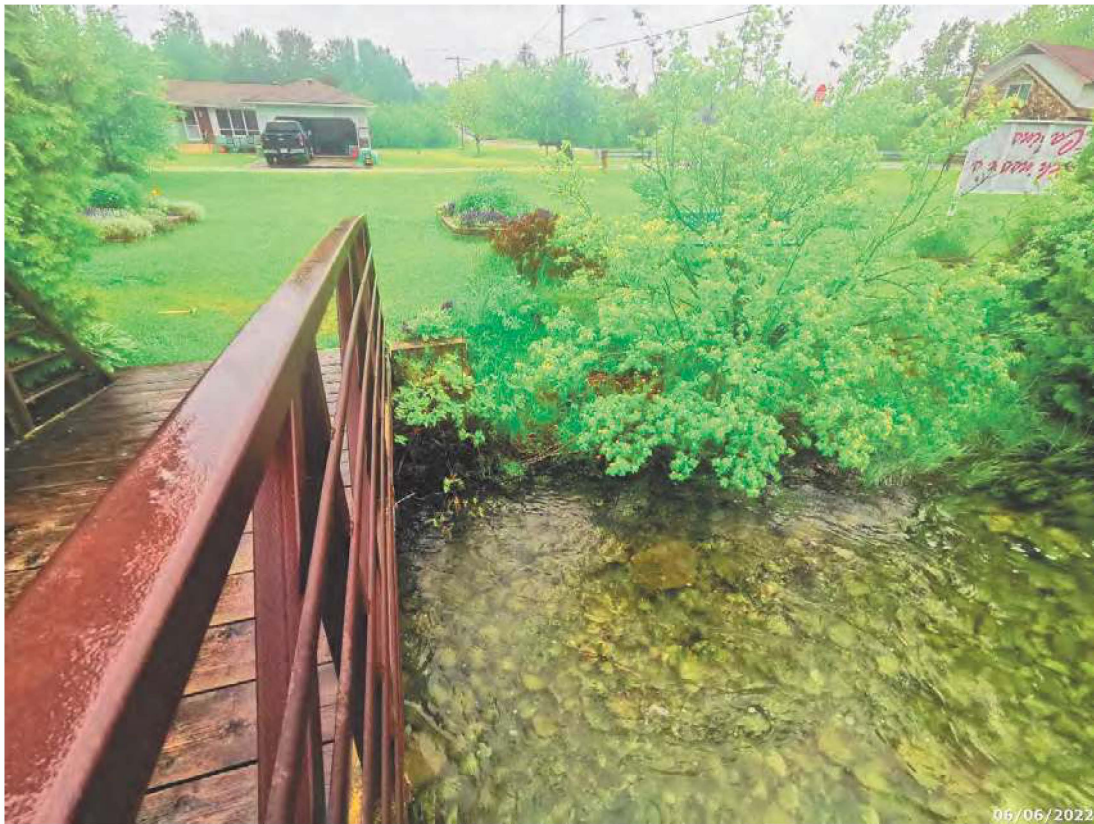
Northeast embankment



Northeast embankment



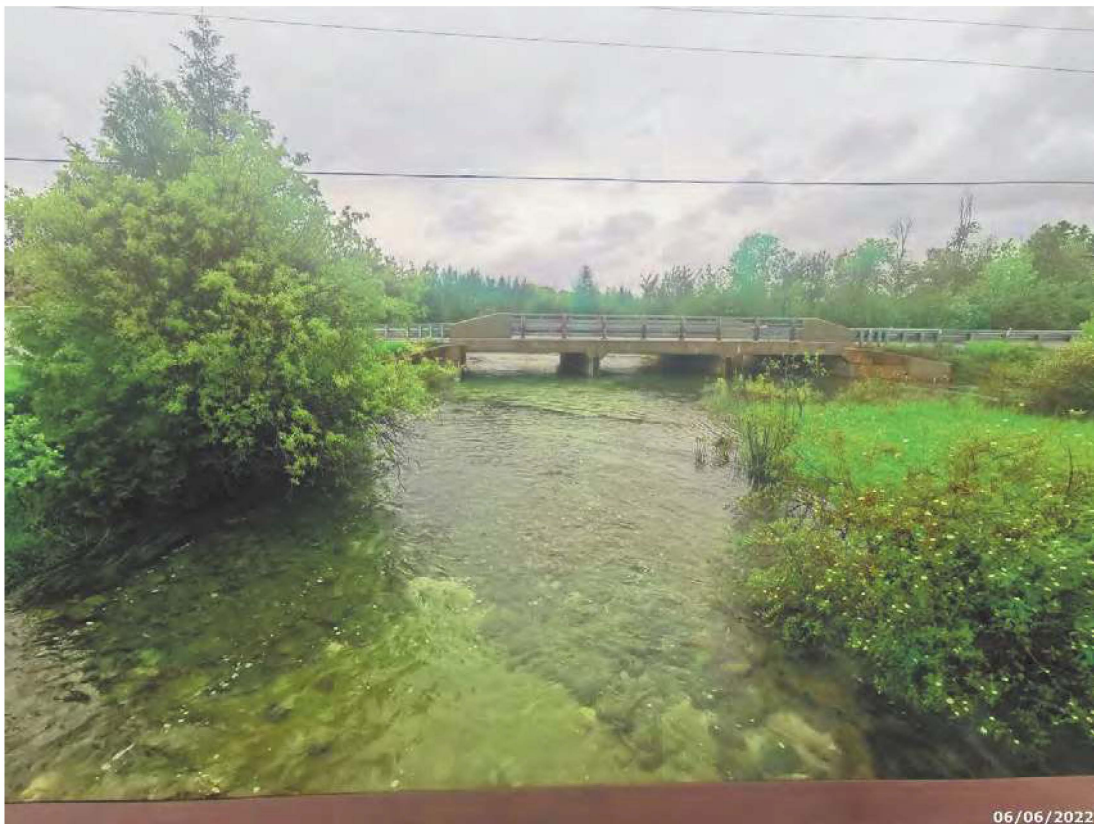
Southeast embankment



Southwest embankment



Upstream



Downstream



Severe debris buildup, south bearing



North abutment general arrangement, light spall and undermining at south edge

Inventory Data:

Structure Name	Townline Road Bridge #10		
Main Highway #	<input type="text"/>	On <input type="checkbox"/> or Under <input type="checkbox"/> Structure	Service on structure: <input type="checkbox"/> Navig. Water <input type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Location description	Townline Road border with Tehkumwah Township	Service under	<input type="checkbox"/> Navig. Water <input checked="" type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other
Owner/Custodian	Municipality of Central Manitoulin	LHRS:	<input type="text"/> LHRS offset: <input type="text"/>
MTO Region	50 Northern	Latitude:	418939E Longitude: 5058419N
Regional Engineer	<input type="text"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List
MTO Area	<input type="text"/>	Hwy Class:	Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local <input checked="" type="checkbox"/>
Old County	49 - Manitoulin	Posted Speed	<input type="text"/> No. of Lanes <input type="text"/> 1
Township	Tehkumwah	AADT	30 % Truck <input type="text"/> 10
Structure Type 1	7 I-beam Girders	Travel Stream	N/S
Structure Material 1	<input type="text"/>	Traffic Directional Bound	E/W
Structure Type 2	<input type="text"/>	Inspection Route Sequence	<input type="text"/>
Structure Material 2	<input type="text"/>	Inspection Frequency	2 (years)
Total Deck Length	9.71 (m)	Inspection Year	2022
Overall Str. Width	6.75 (m)	Inspection Duration	1 (hrs)
Culvert length	<input type="text"/> (m)	Interchange Number	<input type="text"/>
Total Deck Area	60 (sq.m)	Interchange Structure Number	<input type="text"/>
Roadway Width	6.1 (m)	Min. Vertical Clearance	0.7 (m)
Skew Angle	0 (Degree)	Detour Distance	10 (km)
No. of Spans	2	Fill on Structure	0.15 (m)
Span Lengths	4.83,4.88 (m)		
<u>For retaining wall:</u>			
Total Wall Length	<input type="text"/> (m)	Max. Wall Height	<input type="text"/> (m)
Total Wall Area	<input type="text"/> (sq.m)	Ave. Wall Height	<input type="text"/> (m)
		Angle of Backfill	<input type="text"/> (Degree)

Rev. 2018

Rev 2018

Rev 2018

Historical Data:			
Year Built	<input type="text" value="1970"/>	Year of superstruct. constructed	<input type="text"/>
Last Reg OSIM Inspection	<input type="text" value="2019"/>	Year of Last Minor Rehab.	<input type="text"/>
Last Enh. OSIM Inspection	<input type="text"/>	Year of Last Major Rehab.	<input type="text"/>
	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
<p>Work History: (Date/description) New post and SBGR system installed within the last 10-15 years.</p> <p>Investigation History: (Date/description) Last underwater inspection: Jan. 1, 1998</p>			

Scheduled Improvements:	
Regional Priority Number <input type="text"/>	Programmed Work Year <input type="text"/>
Nature of Program Work:	

Appraisal Indices:	Comments
Fatigue	
Seismic	
Scour	
Flood	
Barrier	
Curb	
Load Capacity	

Element Data

Element Group:	Abutments	Length:				
Element Name:	Abutment Walls	Width:	7.3 (m)			
Location:	East and West of Bridge	Height:	1.35 (m)			
Material:	Mass Concrete	Count:	2			
Element Type:	Conv. Closed	Total Quantity:	19.71 (sq.m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
				19.21	0.5	00. None
Comments: Some weathering throughout, wide crack in centre of west abutment.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



East Abutment General Arrangement

Element Data

Element Group:	Abutments	Length:	
Element Name:	Ballast Walls	Width:	6.0 (m)
Location:	E/W	Height:	0.51 (m)
Material:	Wood	Count:	2
Element Type:		Total Quantity:	6.12 (sq.m)
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>
Protection System:	Creosote		Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good
			Fair
			Poor*
			Continuing Settlement
Comments:	Severe decay throughout, alarming loss of fill onto bearing, delamination between planks.		
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		Maintenance Needs: 01. N/A
Replace ballast walls.			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year

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Severe Decay in Ballast Wall - Typical

Element Data

Element Group:	Abutments	Length:	
Element Name:	Bearings	Width:	
Location:	Abutment Pier (Wood)	Height:	
Material:	Wood	Count:	3
Element Type:	Timber	Total Quantity:	3.0 (each)
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m <u>(each)</u> % / all	Exc.	Good
			Fair
			Poor*
			3.0
			00. None
Comments: Several gravel buildup. Moderate decay and algae growth on wood bearing timbers.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years		02. Bridge Cleaning <input checked="" type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	
		Clean gravel and sand off bearings annually.	

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Typical bearing plate at east abutment (exterior beams only)

Element Data

Element Group:	Abutments	Length:	
Element Name:	Bearings	Width:	
Location:	Abutment Piers	Height:	
Material:	Steel	Count:	21
Element Type:	Plate	Total Quantity:	21 (Each)
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>
Protection System:			Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good
			Fair
			Poor*
			21
			01.
Comments: Severe corrosion throughout, steel is seperating, some bolts are corroded through. Nuts on anchor bolts are severely corroded and broken in half by hand. Creasote leaking through west abutment cribbing.			
Recommended Work:		Maintenance Needs:	
<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years Replace all bearings and repair webs and flanges of beams.		01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

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Severe Section Loss at Bearing

Element Data

Element Group:	Abutments	Length:	10.6 (m)			
Element Name:	Wingwalls	Width:				
Location:	NW Corner	Height:	1.2 (m)			
Material:	Cast-in-place Concrete	Count:	1			
Element Type:	Reinforced Concrete	Total Quantity:	12.72 (sq.m)			
Environment:	Benign Moderate Severe	Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>			
Protection System:						Perform. Deficiencies
Condition Data:	Units m² / each / % / all	Exc.	Good	Fair	Poor*	
				10.72	2	14.
Comments: NW wingwall separating from west abutment, moderate spalls throughout, some undermining present, wingwall acts as headwall around 2 overflow pipes and light popouts.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Light pop outs and erosion behind concrete headwall. (NW quadrant of bridge)

Element Data

Element Group:	Accessories		Length:			
Element Name:	Signs		Width:			
Location:			Height:			
Material:	Steel		Count:	4		
Element Type:			Total Quantity:	4.0 (each)		
Environment:	Benign / Moderate / <u>Severe</u>		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>(each)</u> % / all	Exc.	Good	Fair	Poor*	
			3		1	00. None
Comments: Delineators are in place. Northeast sign is faded and is no longer reflective.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year 18. Other Replace faded sign for night visibility			

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Element Data

Element Group:	Barriers	Length:	0.2 (m)			
Element Name:	Posts	Width:	0.2 (m)			
Location:	N/S	Height:	1.2 (m)			
Material:		Count:	12			
Element Type:		Total Quantity:	12 (each)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:	Pressure Treated					Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	
			6	6		00. None
Comments: Some offset blocks are rotten, end decay present in the top of some posts.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			09. Timber Repair <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
Clean out rot in top of posts and fill with epoxy to prevent further rot from occurring.						

Rev2008

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Typical decay of barrier posts

Element Data

Element Group:	Barriers	Length:	1.9 (m)			
Element Name:	Railing Systems	Width:				
Location:		Height:	0.55 (m)			
Material:	Steel	Count:	10			
Element Type:	Metal Railing	Total Quantity:	19.0 (m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>	Limited <input type="checkbox"/>
Protection System:	Galvanized					Perform. Deficiencies
Condition Data:	Units m ² (m) each / % / all	Exc.	Good	Fair	Poor*	
			19.0			00. None
Comments: End terminals have apparent impact damage.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Typical steel guiderail general arrangement

Element Data

Element Group:	Beams/MLE		Length:	9.71 (m)		
Element Name:	Girders		Width:	0.173 (m)		
Location:			Height:	0.358 (m)		
Material:	Steel		Count:	7		
Element Type:	I-type		Total Quantity:	83.9 (sq. m)		
Environment:	Benign Moderate Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m² / each / % / all	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ² / each / % / all	0	0	43.9	40	01. Load Capacity
Comments: Severe section loss due to corrosion present with pitting and flaking, center girder 20% section loss throughout with 50% at bearings, 2nd, 3rd and 4th girder from the South at the West bearing has corroded through the web and flange. The 4th girder has perforation through the web at bearing.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				01. N/A		
Steel girders to be replaced. Temporary stiffeners/repairs needed in the center girder, east span as soon as possible.				<input checked="" type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		



Severe corrosion in bottom flange, predominantly on centerline girder only

Element Data

Element Group:	Decks		Length:	9.71 (m)		
Element Name:	Deck Top		Width:	6.175 (m)		
Location:			Height:	0.15 (m)		
Material:	Wood		Count:	0		
Element Type:	Laminated - transverse.		Total Quantity:	60 (sq. m)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc. 0	Good 0	Fair 60	Poor* 0	00. None
Comments: Light to moderate decay throughout the deck.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

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Element Data

Element Group:	Decks	Length:	9.71 (m)			
Element Name:	Wearing Surface	Width:	6.1 (m)			
Location:		Height:	0.15 (m)			
Material:	Gravel	Count:	0			
Element Type:		Total Quantity:	60.0 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m² / each / % / all	Exc.	Good	Fair	Poor*	
				50	10	00. None
Comments: Potholes present in deck wearing surface						
Recommended Work:			Maintenance Needs: 12. Bridge Surface Repair			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year Regrade bridge surface and remove grass and vegetation			

Rev2008

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Typical Deck Wearing Surface

Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Embankments		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:	Rock/Vegetation					Perform. Deficiencies
Condition Data:	Units m ² / m (each) % / all	Exc.	Good	Fair	Poor*	
			4			00. None
Comments:						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

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Northeast embankment

Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Slope Protection		Width:			
Location:			Height:			
Material:			Count:	4		
Element Type:			Total Quantity:	4 (each)		
Environment:	Benign <u>Moderate</u> Severe		Inspected:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Limited <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m <u>each</u> % / all	Exc.	Good 4	Fair	Poor*	00. None
Comments: Vegetation present at each embankment with rock protection.						
Recommended Work:				Maintenance Needs:		
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years				01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		

Rev2008

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Element Data

Element Group:	Embankments and Streams		Length:			
Element Name:	Streams and Waterways		Width:			
Location:			Height:			
Material:			Count:	1		
Element Type:			Total Quantity:	1 (all)		
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/> No <input type="checkbox"/> Limited <input checked="" type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² / m / each / % / all	Exc. 0	Good 1	Fair 0	Poor* 0	00. None
Comments: Waterway is generally unobstructed with no evidence of scour.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year 01. N/A			

Rev2008

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Element Data

Element Group:	Piers	Length:	0.45 (m)			
Element Name:	Shafts/Columns/Pile Bents	Width:	7.3 (m)			
Location:	Center Support	Height:	0.9 (m)			
Material:	Cast-in-place	Count:	1			
Element Type:		Total Quantity:	20.5 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc. 0	Good 0	Fair 19.5	Poor* 1.0	00. None
Comments: Wide vertical crack at centreline, both sides.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



Pier general arrangement, looking east

Element Data

Element Group:	Sidewalks/Curbs	Length:	9.71 (m)			
Element Name:	Curbs	Width:	0.15 (m)			
Location:	N/S	Height:	0.15 (m)			
Material:	Wood	Count:	2			
Element Type:		Total Quantity:	5.83 (sq. m)			
Environment:	Benign / Moderate / Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:	Pressure Treated					Perform. Deficiencies
Condition Data:	Units m ² / each / % / all	Exc.	Good	Fair	Poor*	
		0	5.83	0	0	00. None
Comments: Excessive gravel/debris buildup against curb.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year 02. Bridge Cleaning Clean excess gravel/debris from curb annually.			

Rev2008

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Element Data

Element Group:	Decks	Length:	5.71 (m)			
Element Name:	Soffit	Width:	2.75 (m)			
Location:	Interior	Height:	-			
Material:	Wood	Count:	2			
Element Type:		Total Quantity:	31.4 (sq. m)			
Environment:	Benign <u>Moderate</u> Severe	Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition Data:	<u>m²</u> m / each / % / all	Exc.	Good	Fair	Poor*	
				31.4		00. None
Comments: Active wet areas and water staining on deck.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



Typical interior soffit

Element Data

Element Group:	Decks	Length:	5.71 (m)			
Element Name:	Soffit	Width:	2.0 (m)			
Location:	Exterior	Height:	-			
Material:	Wood	Count:	2			
Element Type:		Total Quantity:	22.84 (m)			
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ² m / each / % / all			22.84		00. None
Comments: Active wet areas and water staining throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



Typical exterior soffit

Element Data

Element Group:	Decks	Length:	2.0 (m)			
Element Name:	Soffit	Width:	2.75 (m)			
Location:	Ends	Height:				
Material:		Count:	2			
Element Type:		Total Quantity:	11.0 (sq. m)			
Environment:	Benign / Moderate / Severe		Inspected:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Limited <input checked="" type="checkbox"/>
Protection System:						Perform. Deficiencies
Condition Data:	Units m ² m / each / % / all	Exc.	Good	Fair	Poor*	
				11.0		00. None
Comments: Active wet areas and water staining throughout.						
Recommended Work:			Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years			01. N/A <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Rev2008

Rev2008



Typical end soffit

Municipal Structure Inspection Form

MTO Site Number: MTO 49-47

Repair and Rehabilitation Required:		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	
Girders	Steel girders, bearings, ballast wall to be replaced			X		\$150,000.00
Abutments	Add bearing stiffeners to girders				X	\$10,000.00
Wing walls	Repair concrete spalls and undermining		X			\$3,000.00
Bearings	Clean gravel and sand off bearings				X	\$3,000.00
Total Cost						\$166,000.00

Associated Work:	Comments	Estimated Cost
Approaches:		
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	Eng. Design and Supervision (20%)	\$30,000.00
Contingencies:	10%	\$16,000.00
Total Cost		\$46,000.00

Justification:

Steel girders, bearings and ballast walls are in poor condition and should be replaced/repared within 1 year. If funding is not immediately available to replace the girders, the bearings should be cleaned and bearing stiffeners added to temporarily reinforce the bridge until the girders and bearings can be replaced. Annual cleaning of the bearings is required on all bridges.

ADDITIONAL PHOTOS



Looking West Across The Structure



Looking East Across The Structure



North Elevation



South Elevation



Wide crack in west abutment



Severe debris build up at bearings



Looking Upstream (Northeast)



Looking Upstream (Northwest)



Severe corrosion of bottom flange and web at the west abutment.



Sag in overflow pipe in obvert and dent at centerline

APPENDIX C

Bridge Sufficiency Index Ratings

BRIDGE REPLACEMENT COSTING & PRIORITIZATION
2022 Municipality of Central Manitoulin - Replacement Costs/Repair Prioritization

The replacement costing below has grouped the structures into the following categories and assumes that the structure is being replaced with an equivalent size structure (wider structures will increase the overall replacement costs):

1. Culvert structures (replacement costing based on \$6,500 / m2 of deck area)
2. Smaller bridges (less than 18m span) - have replacement costing based on \$7,500 / m2 of deck area.
3. Larger bridges (greater than 18m span) - have replacement costing based on \$10,000 / m2 of deck area
4. Pedestrian bridges - have a replacement costing based on \$4,000 /m2 of deck area
5. Replacement estimates assume full foundation re-build in the replacement costing
6. Towline Road Bridge is costed for full replacement at a lower rate because of the shallow abutments and lack of requirement for deep foundations.

Priority Rank	Bridge No. & Description	Bridge Type/Description	Year Built	BCI - Bridge Condition Index	BSI - Bridge Sufficiency Index	Deck Area (m2)	Replacement Cost Est (/m2)	2022 Replacement Construction Cost	2022 Total Replacement Cost (Including Engineering and Contingency)	Comments / Repair & Maintenance Recommendations	Further Investigation(s) Required	Load Posting (Tonnes)	Year Built	Urgent (Within 1 Year)	1-5 Years	6-10 Years	Maintenance
1	Townline Road Bridge	Steel Girders with Timber Deck	1970	30	27	60	\$ 4,500	\$ 270,000	\$ 364,500	Steel girders, bearings and ballast wall to be replaced, add bearing stiffeners to girders, repair concrete spalls and undermining in wingwalls, clean gravel and sand off of bearings.		10	1970	\$ 13,000	\$ 153,000	-	-
2	Beaver Road West	Timber Stringers with Timber Deck	Unknown	43	38	50	\$ 7,500	\$ 375,000	\$ 506,250	Replace guiderail post system and repair undermining/loss of fill in cribs.		10	Unknown	\$ -	\$ 32,500	-	-
3	Beaver Road East	Timber Stringers with Timber Deck	Unknown	40	35	50	\$ 7,500	\$ 377,250	\$ 509,288	Replace guiderail post system and repair undermining/loss of fill in cribs.		10	Unknown	\$ -	\$ 32,500	-	-
4	Cranston Road Culvert	Arch Culvert	2010	56	53	32	\$ 6,500	\$ 210,600	\$ 284,310	Place rock protection to prevent further scour, weld rebar to prevent further cracking at bolt cracks, replace broken guiderail posts and tighten cables, install guiderail delineators, cutback encroaching vegetation around embankments, tighten loose nuts		-	2012	\$ 6,000	\$ 55,000	-	\$ 500
5	Learmont Culvert	Ellipse Culvert	Unknown	70	67	16	\$ 6,500	\$ 104,000	\$ 140,400	Repair minor washout and erosion at the northeast embankment		-	Unknown	\$ -	\$ 500	-	-
6	Sanfield Pedestrian Bridge	Cambered Steel Truss	Unknown	70	70	22	\$ 4,000	\$ 86,760	\$ 117,126	Clear bearings of debris and restore lost bearing material and stabilize abutments.		-	Unknown	-	\$ 7,500	-	-
7	Providence Bay Pedestrian Bridge	Cambered Steel Truss	Unknown	71	71	55	\$ 4,000	\$ 219,600	\$ 296,460	Replace broken railing pickets, touch up paint, pound down popped up fasteners, and add additional support at south boardwalk		-	Unknown	\$ 1,700	-	-	-
8	Case Road Bridge	Steel Girders with Timber Deck	Unknown	81	78	84	\$ 7,500	\$ 631,500	\$ 852,525	Replace missing delineator signs, remove overburden gravel on bridge deck, replace broken spacer blocks on guiderail and clean off bearings.		-	Unknown	\$ 500	\$ 6,000	-	-
9	Monument Road Bridge	Solid Slab	2006	88	85	85	\$ 7,500	\$ 634,500	\$ 856,575	Seal cracking in bridge deck wearing surface and cut back encroaching vegetation around the embankments		-	2006	\$ 1,500	-	-	-
10	Blue Road Bridge	Steel Girders with Concrete Deck	2005	89	86	84	\$ 7,500	\$ 631,500	\$ 852,525	Replace decayed posts and spacer blocks, monitor scour of downstream banks		-	2005	\$ 1,500	-	-	-
11	Ketchankookem Trail Bridge	Rectangular Voided Slab	2012	94	90	109	\$ 7,500	\$ 817,500	\$ 1,103,625	Route and seal cracks in approach sidewalk, clean curbs and barrier joints of sand and debris, route and seal cracks in approach wearing surfaces.		-	2010	\$ 2,000	-	-	-
12	McAllister Bridge	Concrete Arch Culvert	2012	91	90	176	\$ 7,500	\$ 1,316,250	\$ 1,776,938	Remove gravel windrow built up under the barriers and seal bridge deck and approach cracks.		-	2012	\$ 1,500	-	-	\$ 500