CORPORATION OF THE TOWNSHIP OF MCKELLAR

December 5, 2023 – 6:30 p.m.

AGENDA

Topic: Regular Council Meeting
Time: December 5, 2023 6:30 P.M. ***Closed Session Beginning at 5:30 P.M.***

Join Zoom Meeting
https://us06web.zoom.us/j/88919024555

Dial by your location
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23-746 **1st resolution**
2023-78 **1st by-law**

1. CALL TO ORDER

2. ROLL CALL

3. DECLARATIONS OF PECUNIARY AND/OR PERSONAL INTEREST AND GENERAL NATURE THEREOF

4. ADOPTION OF AGENDA

5. CLOSED SESSION

5.1 Minutes of Closed Session – November 21, 2023 & November 24, 2023
5.2 Personal matters about an identifiable individual, including Municipal or local board employees, pursuant to Ontario Municipal Act, Section 239(2)(b) – Staffing
5.3 Litigation or Potential Litigation, pursuant to Section 239(2)(e) – Litigation re. Consent Application Appeal, Ontario Land Tribunal
5.4 Acquisition or Disposition of Land; pursuant to Ontario Municipal Act, Section 239(2)(c) – Land Acquisition

6. CALL TO ORDER – REGULAR SESSION 6:30pm (Public can join via Zoom)

7. RESPECT AND ACKNOWLEDGMENT DECLARATION
In the spirit of reconciliation and co-operation, we wish to acknowledge that the land on which we gather is the traditional territory of the Anishinaabe and Mississauga people. Its boundaries fall within the Robinson-Huron Treaty of 1850 and the Williams Treaty of 1923. We are grateful to live here and we thank all the generations of people who have taken care of this land for thousands of years. To honour the suffering of Indigenous people and the love and wisdom they have carried for thousands of years, we pledge to work in community and

harmony with each other and the environment we inhabit and work towards Truth and Reconciliation.

8. ROLL CALL

9. DECLARATIONS OF PECUNIARY AND/OR PERSONAL INTEREST AND GENERAL NATURE THEREOF

10. PUBLIC MEETING

11. DELEGATIONS AND PRESENTATIONS

11.1 GHD, 2023 Municipal Structure Inventory and Inspection Report
11.2 FoodCycler Science, Municipal Food Waste Diversion Program

12. COMMITTEE OF THE WHOLE

13. MOTION TO REVIEW A PREVIOUS MOTION

14. ADOPTION OF MINUTES OF PREVIOUS MEETING(S)

14.1 November 21, 2023 Regular Meeting of Council and November 24, 2023 Special Meeting of Council Minutes

15. PLANNING MATTERS

15.1 Conditions Met Letter Consent Application No. B02/2023 (Dyment)

16. COMMITTEE/BOARD MINUTES WITH RECOMMENDATIONS FOR APPROVAL

16.1 Board of Health Minutes – September 27, 2023

17. STAFF REPORTS WITH RECOMMENDATIONS FOR APPROVAL

17.1 KPMG Forensic Audit

18. MAYOR'S REPORT

19. CORRESPONDENCE FOR CONSIDERATION

19.1 National Housing Accord's Call to End Canada's Rental Housing Crisis
19.2 Town of Parry Sound Resolution to Request Education Minister to Not Close Rural Schools
19.3 Declare January 2024 as Crime Stoppers Month

20. MOTION AND NOTICE OF MOTION

20.1 Annual Christmas Bonus for Municipal Employees
20.2 St. Stephen's Church Renovations Tender
20.3 Christmas Holiday Hours – Municipal Office and Transfer Station

21. BY-LAWS

21.1 By-law 2023-73 Being a By-law to Impose Charges on Property Owners in a Designated Area (Craigmore Subdivision) for the Provision of Road Upgrades by The Township – Third Reading
21.2 By-law 2023-66 Being a By-law to Regulate the Speed of Motor Vehicles on Certain Highways within the Municipality – Third Reading

22. UNFINISHED BUSINESS

22.1 Unfinished Business as of December 5, 2023

23. NEW BUSINESS

24. PUBLIC NOTICES, ANNOUNCEMENTS, INQUIRIES AND REPORTS BY COUNCIL MEMBERS

25. CONSENT AGENDA – CORRESPONDENCE

25.1 AMO Watchfiles (November 16, 2023 & November 23, 2023)
25.2 Municipality of Shuniah, Unnecessary Noise from Engine Brakes
25.3 Prince Edward County, Guaranteed Livable Wage Income
25.4 Prince Edward County, Stop MECP Proposal to Expand the Use of the Permit-by-Rule to Waste Management Systems, Storm Water & Water Taking Activities
25.5 Town of Orangeville, Ontario Works Financial Assistance Rates
25.6 Municipality of South Bruce, Limitations on Hauled Sewage Disposal Sites
25.7 West Parry Sound Economic Development Collaborative Support
(i) Township of the Archipelago
(ii) Town of Parry Sound
(iii) Township of Carling
25.8 Township of McKellar's Request to be Released from the West Parry Sound Recreation & Cultural Centre Agreement
(i) Township of the Archipelago
(ii) Town of Parry Sound
(iii) Township of Carling
25.9 Municipality of Whitestone, West Parry Sound Recreation & Cultural Centre
25.10 Municipal Finance Officer's Association of Ontario, Federal Fall Economic Update 2023
25.11 Township of Carling, Design Plans for the West Parry Sound Recreation & Cultural Centre
25.12 Town of Goderich, Declaring Intimate Partner Violence an Epidemic
25.13 Township of Coleman, Conservation Officer Reclassification

26. QUESTION/COMMENT PERIOD (RELATED TO ITEMS ON AGENDA)

27. CONFIRMING BY-LAW

27.1 By-law 2023-78 - Confirming the Proceedings of Council

28. ADJOURNMENT

Instructions for Joining the Council Meeting

1. Please try to sign in between 6:20 to 6:30 if possible; you are still welcome to sign in after 6:30 if necessary.

2. Please wait to be let in the ‘meeting room’; this won’t take long.

3. Please have your mic and video on mute unless you are speaking; this ensures there are no distractions or background noise to disrupt the meeting.

4. When you sign in, please sign in with your full name (first and last), not a company name.

5. A question-and-answer opportunity will be available at the end of the meeting, as per normal protocol, or during the Public Meeting.

6. If you have permission to speak please identify yourself (first and last name).

7. Please respect meeting protocol and do not interrupt the meeting. The Municipality reserves the right to remove attendees who are disruptive or disrespect meeting protocol.

SCHEDULE "E"

Township of McKellar
Request for Delegation/Deputation before Council

Pursuant to By-law No. 2023-08, any person wishing to make a deputation before Council shall submit a request in writing to the Clerk no later than 1:00 p.m. on the Tuesday prior to the meeting the following week at which they wish to be heard. The written request shall be a detailed written submission that clearly outlines the matter that the deputation wishes to present to Council including the nature of the business to be discussed and the person(s) named to make the deputation. The detailed written submission, together with this form, shall be circulated with the Council Agenda. Please note that Deputations are limited to ten (10) minutes in length.

PLEASE PRINT

Name of Person to Appear: Dennis Baxter

Address: 300 Water Street, Whitby, Ontario

Phone: _____ **Home** _____ **Cell** 289-356-2881 **Business** 905-429-5010

Name of person requesting appearance:
(if different from the person preparing the request)

Phone: _____ **Home** _____ **Cell** _____ **Business** 905-429-5010

Name of Group or Person(s) being represented (if applicable) GHD Limited

Meeting Date requested to appear before Council 12/5/23

Subject Matter of Deputation: Municipal Structure Inventory and Inspection

Detailed written submission must be attached or submitted to the Clerk (by 1:00 p.m. the Tuesday of the week prior to the Council Meeting).

Signature: Dennis L Baxter Digitally signed by Dennis L Baxter Date: 2023.11.29 10:04:18 -05'00' **Date:** 11/29/23

SCHEDULE "E" continued

Reminder: A signed detailed written submission must be provided to the Clerk's Office by 1:00 p.m. on the Tuesday of the week prior to the meeting the following week. Failure to provide a signed detailed written submission by the Tuesday of the week prior to the Council Meeting will result in the deputation not being placed on Council's Agenda.

Decorum dictates respect for all opinions and individuals are reminded there is zero tolerance for coarse language and inappropriate behaviour. By submitting this Form, you have indicated agreement with this requirement.

Signage shall be posted in the Council Chambers advising deputations, presenters and the Public that the Meeting proceedings are being audio recorded and will be made available on the municipal website. The Township assumes no liability for the recorded comments of the public that may be construed as false, defamatory or slanderous in nature.

Personal Information on this form is collected under the legal authority of the Municipal Act, S.O. 2001, c25, as amended. The information is collected and maintained for the purpose of creating a record that is available to the general public pursuant to Section 27 of the Municipal Freedom of Information and Protection of Privacy Act. Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990, c. M.56 (ontario.ca)

Correspondence to Council:

Be advised that Council and Committee meeting agendas, Minutes and correspondence are public documents and are published on the Township of McKellar website. When corresponding with the Township of McKellar, please be aware that personal correspondence or delegation materials (together with names, addresses, email addresses and phone numbers) may be included on the Council or Committee or Committee of Council meeting agenda and subsequently appear on the corporate website.

If you feel there is a compelling reason that your correspondence to Council should not be included on the agenda and released to the public, please notify the Clerk's office.

Municipal Structure Inventory and Inspection

2023

Township of McKellar

November 20, 2023

→ The Power of Commitment

Project name		Bridge and Culvert Inspections 2023						
Document title		Municipal Structure Inventory and Inspection | 2023						
Project number		12604686						
File name		Township of McKellar Report.docx						
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**			
			Name	**Signature**	**Name**	**Signature**	**Date**	
S4	0	Jeff Parkinson	Dennis Baxter		Benjamin Loucks		11/21/23	

GHD Limited
Contact: Dennis Baxter, P.Eng., Senior Manager Bridges |
65 Sunray Street,
Whitby, Ontario L1N 8Y3, Canada
T 289 356 2881 | **ghd.com**

Executive Summary

The Township of McKellar 2023 Municipal Structure Inventory and Inspection Study provides a summary of structure condition ratings identified during rating surveys conducted by GHD in 2023. All of the Township's structures of 3.0 m span or greater were reviewed in 2023. The Township of McKellar's total inventory of nine (9) structures have been included in this report.

Data collection and structure ratings were completed in accordance with the Municipal Bridge Appraisal and Municipal Culvert Appraisal Manuals and the Ontario Structure Inspection Manual. The scope of the report includes summaries of collected data, with discussion and analysis regarding the same.

A total of seven (7) bridges and two (2) culverts were inspected in 2023. Key items contained within the inspection report are summarized below:

Key items contained within the inspection report are summarized below:

– One (1) bridge has been designated for further engineering investigation to confirm visual repair recommendations at a total cost of ***$15,000***.
– Six (6) bridges require rehabilitation at an estimated cost of ***$1,116,000.***
– One (1) bridge requires guide rail installation, extension or upgrades at a total cost of ***$95,000***. All Now need guide rail requirement costs provided do not include the potential traffic control costs that may be incurred if the guide rail work is undertaken independent of other necessary works.
– A summary of the total structure construction and rehabilitation needs resultant from the 2023 structure inspection for the ten year period is estimated to be ***$1,131,000*** for the existing Township's structure system. Of this total cost ***$170,000*** are Now needs, ***$810,000*** are for structure 1-5 year needs, and ***$151,000*** are for 6-10 year needs.

For new structures, the design lifespan is now 75 years; however, structures constructed prior to 2000 were generally designed for a 50 year lifespan. Accordingly, between 1.5% and 2.0% of the value of the entire structure inventory of ***$14,157,000*** should be budgeted annually to ensure that the structure inventory can be maintained in perpetuity. It is noted that as the structures are replaced, the annual allocation could be reduced to 1.5%.

Based on the aforementioned structure inventory replacement value of ***$14,157,000*** and the data included in this report, for the Township's system the estimated minimum annual capital program for structures should be in the amount of ***$269,000*** (1.9%) per year for the Township of McKellar to maintain the current system adequacy. However, given the average age of the Township's structures inventory, it is quite probable that expenditures on structures will be even higher than estimated over the next decade as the older structures reach a terminal condition.

Rehabilitation and replacement recommendations are provided within this report. The costs associated with these recommendations should be budgeted above and beyond the recommended annual capital program. For the ten-year period, the "Not Adjusted for Owners Share" rehabilitation and replacement needs are estimated to be ***$1,131,000*** for the existing Township's structure system. The annual value of ***$113,100*** associated with these recommendations should be budgeted above and beyond the recommended annual capital program amount of ***$269,000*** as shown above to maximize the service life of the structures. The total forecasted expenditures over ten years are currently valued at ***$382,100*** annually.

All costs contained within the structure appraisal reports include engineering (15%) and contingencies (20%) and are based on 2023 construction dollars.

Completion of the 2023 re-inspection of seven (7) bridges and two (2) culverts on the Township's road system has resulted in reliable and current data being available to the Township to implement a maintenance program ensuring the Township's structures are kept safe and in good repair. Maintenance of the Bridge and Culvert Management Program will require updating of databases on an on-going annual basis to reflect previous year

rehabilitation/replacement project updates. It is recommended that the structures be re-inspected under the direction of a qualified structural engineer every two (2) years.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1 and the assumptions and qualifications contained throughout the Report.

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Attachments

No table of contents entries found.

1. Introduction

1.1 Purpose of this report

The Township of McKellar 2023 Municipal Structure Inventory and Inspection Study provides a summary of structure condition ratings identified during rating surveys conducted by GHD in 2023. The Township of McKellar's total inventory of nine (9) structures are included in this report.

The Province of Ontario passed amendments in 1997 to existing legislation in the Highway Traffic Act (HTA), The Bridge Act (BA) and the Public Transportation and Highway Improvement Act (PTHIA) that required all bridge and culvert structures with a span greater than 3.0 m to be inspected under the direction of a Professional Engineer at no greater than two (2) year intervals. The inspection methodology and reporting must be in accordance with the Ontario Structure Inspection Manual (or equivalent).

Under this regulation municipalities are responsible for ensuring that their bridges are kept safe and in good repair. This should be done through the performance of regular bridge inspections in accordance with the Ontario Structure Inspection Manual, or equivalent. A detailed inspection involves a thorough examination of bridge components, along with an assessment of the overall bridge condition.

This study is intended to provide documentation of the existing condition of the Township's structure inventory and establishment of recommendations and cost estimates for repair and/or upgrading of the structures to provide an economical and cost-effective means of maintaining the current infrastructure.

Data collection and structure ratings were completed in accordance with the Municipal Bridge Appraisal and Municipal Culvert Appraisal Manuals and the Ontario Structure Inspection Manual Revised (May 2018). This study is in accordance with the Municipality's legislative requirements of The Public Transportation and Highway Act – Regulation 104/97.

The scope of the report includes summaries of collected data, with discussion and analysis regarding the same.

Also under the new regulations, municipalities are still responsible for passing load limit bylaws. In place of the MTO review, engineering recommendations to support the load limit and the duration for which it is valid, must now be stamped by two (2) professional engineers.

GHD Limited was retained by the Township of McKellar to inspect a total of seven (7) bridges and two (2) culverts on the Township's road system in 2023 and prioritize the maintenance, repair and replacement works for these structures.

GHD Limited has completed the structure appraisals using WorkTech's Asset Foundation Software.

The procedures used to carry out this 2023 structure inventory are explained in detail in the following manuals published by the Ministry of Transportation and Municipal Engineers Association.

a. Municipal Bridge Appraisal Manual February 1992
b. Municipal Culvert Appraisal Manual August 1993
c. Ontario Structure Inspection Manual 2000 (OSIM) Revised (May 2018)

This report documents the visual inspection and recommendations for the maintenance, repair, or replacement (MR&R) of the structures.

2. Scope and limitations

The assignment included an assessment of seven (7) bridges and two (2) culverts currently identified on the Township of McKellar's road system. The work involved the following tasks:

1. A visual inspection for deficiencies and the recording of any relevant dimensions.
2. An updated photographic inventory of the structure appearance and deficiencies.
3. The compilation of the field review using Worktech Asset Foundation Software.
4. An individual assessment of the condition and state of repair/non-repair of each structure, as well as the recommendation of improvements and estimated costs to bring the existing structures to an acceptable level-of-service.
5. Recommendation of the feasible options and cost-effectiveness of maintaining the existing structure versus possible replacement and the costs and timing of the same.
6. Development of a spreadsheet program to determine various condition and appraisal ratings for each structure. The program includes an algorithm to determine an Overall Condition Rating, Functional Needs Rating and Overall Rating for each structure as outlined in ***Appendix D***. Relative rankings of bridge and culvert needs have also been provided.
7. Calculation of the Current Replacement Value (CRV) for each structure.
8. Identification of specific budget recommendations for detailed condition surveys and bridge rehabilitation/replacement including associated engineering design and supervision and construction estimates.

This report: has been prepared by GHD for Township of McKellar and may only be used and relied on by Township of McKellar for the purpose agreed between GHD and Township of McKellar as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Township of McKellar arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 4 through 7 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

3. State of the Infrastructure

3.1 Structure Categorization

The following definitions were used in the preparation of the Bridge and Culvert appraisal reports:

Bridge - In general, transfers all live loads through a superstructure to a substructure and foundations. Bridges that were originally designed as a bridge and have some depth of fill placed over the deck have been inspected as a bridge.

Box or open type structure having less than 600 mm of cover have been inspected as a bridge and those with more than 600 mm of cover have been inspected as a culvert.

Culvert - In general, transfers all live loads through fill.

3.2 Asset Inventory

The Township of McKellar maintains a total of nine (9) structures of 3.0 m span or greater, with an area totalling ***983 m². Table 1*** below provide a summary of the assets owned by the Township of McKellar. A detailed list of the Township's overall structure inventory has been provided in ***Tables 13 & 14.***

Table 1 Asset Inventory

Asset Category	Count	Area (m²)	Current Replacement Value ($Million)
	9	***983 m²***	***$14,157,000***
Bridge	*7*	*833 m²*	*$11,985,000*
Culvert	*2*	*150 m²*	*$2,172,000*

3.3 Structure Inventory Replacement Value

Table 2 below provides a conservative estimate of current replacement value on a per structure basis for bridges and culverts. The current replacement value (CRV) is the estimated in-kind replacement cost of each structure. The construction cost of a structure is primarily a function of the size of the structure measured in terms of its span and width and represented by the total deck area (plan area = length x span for culverts). As such, the basic replacement cost of the structure is established using the dimensions of the bridge or culvert and a $/m^2 of deck area/plan area unit cost.

Table 2 Structure Replacement Value

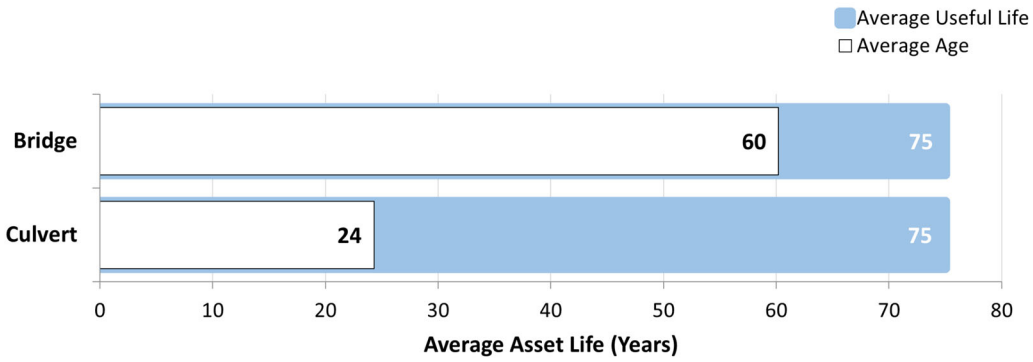
Structure Type	Range of Replacement Values	Average Replacement Value
Bridge	*$873,721 - $3,029,916*	*$1,712,108*
Culvert	*$1,035,740 - $1,135,893*	*$1,085,816*

3.4 Asset Age and Condition

3.4.1 Asset Age

Figure 1 below shows the average age of the Township's roadway assets against the average estimated useful life, in years, by asset category. The average useful life is based on the design life of the structure extended by appropriately timed maintenance and rehabilitation works. Averages are "weighted" by replacement cost to give more importance to assets with more value to avoid skewing the average asset life with over valuing of small structures.

Figure 1 Asset Life Consumed Profile



4. Structure Inventory and Identification of Maintenance, Repair and Replacement Needs

A total of nine (9) bridge and culvert structures were inspected in 2023. The results of our inspection and recommendations are summarized in the Municipal Bridge and Culvert Appraisal Sheets which are provided in ***Appendix E***. A summary of the results of the inspection program for all bridge and culvert structures has been presented in ***Appendices B and C***.

Appendix B contains a list of the seven (7) bridges inventoried and appraised while ***Appendix C*** lists the two (2) culverts.

Based on a review of our inspection findings, recommendations and cost estimates were developed for structures which required maintenance, repair, or replacement as shown in the "Recommended Needs" section of the structure appraisal reports. ***Tables B1 and C1*** included in ***Appendix B*** and ***Appendix C*** summarize basic structure data for all bridge and culvert needs identified through the structure appraisal. The priority ranking of the bridges and culverts based on the results of the Bridge and Culvert Management System are also shown. Of the nine (9) bridge and culvert structures that were appraised in 2023, recommendations are summarized in ***Sections 4.1 to 4.5*** of this report.

All costs contained within the structure appraisal reports include engineering (15%) and contingencies (20%) and are based on 2023 construction dollars.

4.1 Loading or Dimensional Restrictions

4.1.1 Current Service Performance

The following definitions and methodology were used in the identification of the bridges and culverts with loading and dimensional restrictions as per the Municipal Bridge Appraisal Manual (Feb 1992) and the Municipal Culvert Appraisal Manual (Aug 1993):

Loading Restrictions – Any bridge with an approved municipal bylaw and posting which restricts the gross weight of any vehicle or class of vehicle, which may be a single or triple posting in accordance with the Canadian Highway Bridge Design Code (CHBDC).

4.1.1.1 Load Limit Bylaws

L3 postings govern single unit vehicles; L2 postings govern two-unit vehicles; and L1 postings govern vehicle trains. Section 13 of Bill 92 amends Section 123 of the Highway Traffic Act dealing with the load limit by-laws. Municipalities retain the authority to pass load limit by-laws. Two engineer's stamps for all load limit by-law recommendations, including load posting and duration, generally 2 years, are required. Load posting assessments are currently being carried out during the annual bridge inspection updates. Load limit recommendations are summarized in ***Table 3.***

Table 3 Load Limit Recommendations

Load Limit Recommendations							
Structure No.	Location	Existing Load Limit			Recommended Load Limit		
		L3	L2	L1	L3	L2	L1
-	-	-	-	-	-	-	-

4.2 Engineering Investigations

There is one (1) bridge that has been designated for further engineering investigations to confirm visual repair recommendations as summarized in ***Table 4*** at a total cost of ***$15,000***. It is recommended that engineering investigations be completed within 2 to 4 years prior to structure rehabilitations.

Table 4 Engineering Investigations

Engineering Investigations					
Structure No.	**Location**	**Recommended Engineering Investigation**	**Time of Need**	**Cost for Budget Purposes**	**Estimated Rehabilitation/Replacement Cost**
0004	Hurdville Bridge, Hurdville Road, 6.8 km W of Centre Road	Deck Condition Survey	1-5 yrs	$15,000	$658,000

4.3 Structure Removal

– There are no structures recommended for removal at this time, as identified in ***Table 5 & 6***.

4.4 Structure Replacements

– There are structures designated for replacement at this time, as identified in ***Table 7 & 8.***

4.5 Structure Rehabilitations

– Six (6) bridges require rehabilitation, as identified in ***Table 9*** at a total cost of ***$1,116,000.*** They are presented in order as determined from the Bridge Improvement Priority Program.

– There are no culverts that require rehabilitation at this time, as identified in ***Table 10.***

– One (1) bridge requires guide rail installation, extension or upgrades as identified in ***Table 11*** at a total cost of ***$95,000***.

– Overall structure inventory with priority rankings for all bridge and culverts have been identified in ***Table 13 & 14***.

Table 5 Bridge Removal

Bridge Removal - 2023							
Bridge No.	**Priority**	**Location**	**Reason for Improvement**	**Estimated Remaining Service Life**	**Impact of Deferral**	**Interim Works to Extend Life**	**Replacement Cost**
-	-	-	-	-	-	-	-

Table 6 Culvert Removal

Culvert Removal - 2023							
Culvert No.	**Priority**	**Location**	**Reason for Improvement**	**Estimated Remaining Service Life**	**Impact of Deferral**	**Interim Works to Extend Life**	**Replacement Cost**
-	-	-	-	-	-	-	-

Table 7 Bridge Replacements

Bridge Replacements - 2023								
Bridge No.	**Priority**	**Location**	**Reason for Improvement**	**Time of Need**	**Estimated Remaining Service Life**	**Impact of Deferral**	**Interim Works to Extend Life and/or Address Safety Issues**	**Replacement Cost**
-	-	-	-	-	-	-	-	-

Table 8 Culvert Replacements

Culvert Replacements - 2023								
Culvert No.	**Priority**	**Location**	**Reason for Improvement**	**Time of Need**	**Estimated Remaining Service Life**	**Impact of Deferral**	**Interim Works to Extend Life and/or Address Safety Issues**	**Replacement Cost**
-	-	-	-	-	-	-	-	-

Table 9 Structure Rehabilitations - Bridges

Bridge Rehabilitation Needs by Priority Ranking - 2023						
Bridge No.	**Priority**	**Structure Name**	**Location**	**Recommended Work**	**Time of Need**	**Rehabilitation Cost**
Rehabilitations						
0004	1	Hurdville Bridge	Hurdville Road, 6.80 km W of Centre Road	Repair concrete deck, handrails, curbs, deck soffit, T-beams, piers, abutments, wingwalls, replace deck drain, surface approaches, restore embankments and replace approach guide rail. Should consider replacing barrier system (included in costing).	1-5 yrs	$643,000
0008	2	Ford Bridge	Broadbent Road, 8.70 km N of Hurdville Road	Repair parapet walls, T-beams, abutments, wingwalls and restore embankments.	1-5 yrs	$122,000
0005	3	Stewart Park Bridge	Centre Road, 9.80 km S of Highway 124	Install a form and fill groove at the ends of the approach slabs and restore embankments	1-5 yrs	$29,000
0003	4	Grey Owl Bridge	Grey Owl Road, 2.40 km W of Highway 124	Replace retaining walls and repair abutments	6-10 yrs	$128,000
0006	5	Broadbent Bridge	Dickinson Road, 0.20 km W of Broadbent Road	Clean and paint structural steel at the abutments and repair deteriorated stringers at abutments	1-5 yrs	$171,000
0001	6	Veterans Memorial Bridge	Centre Road, 2.70 km E of Highway 124	Repair undermining	6-10 yrs	$23,000

Table 10 Structure Rehabilitations - Culverts

Culvert Rehabilitation Needs by Priority Ranking - 2023						
Culvert No.	**Priority**	**Structure Name**	**Location**	**Recommended Work**	**Time of Need**	**Rehabilitation Cost**
Rehabilitations						
-	-	-	-	-	-	-

4.5.1 Summary of Now Guide Rail Requirements

Older structures often lack approach guide rail or incorporate approach guide rail systems with buried or terminal ends that are considered to be deficient relative to current standards for end treatments. Additionally, railing systems on older structures often require augmentation with guide rail type systems installed in front of the railings. There is one (1) bridge that requires guide rail installation, extension of upgrades as identified in ***Table 11 & 12*** at a total cost of ***$95,000***.

Table 11 *NOW Guide Rail Requirements - Bridges*

Bridge Guide Rail Requirements - 2023					
Bridge No.	**Bridge Name**	**Location**	**Recommended Work**	**Time of Need**	**Estimated Cost**
0004	Hurdville Bridge	Hurdville Road, 6.80 km W of Centre Road	Replace approach guide rail	Now	$95,000

Table 12 *NOW Guide Rail Requirements - Culverts*

Culvert Guide Rail Requirements - 2023					
Culvert No.	**Culvert Name**	**Location**	**Recommended Work**	**Time of Need**	**Estimated Cost**
-	-	-	-	-	-

All guide rail requirement costs provided do not include the potential traffic control costs that may be incurred if the guide rail work is undertaken independent of other necessary works.

Table 13 Overall Bridge Inventory

Bridge Inventory - 2023			
Bridge No.	**Priority**	**Structure Name / Location**	**Current Replacement Value**
0001	6	Veterans Memorial Bridge, Centre Road, 2.70 km E of Highway 124	$3,029,916
0003	4	Grey Owl Bridge, Grey Owl Road, 2.40 km W of Highway 124	$873,721
0004	1	Hurdville Bridge, Hurdville Road, 6.80 km W of Centre Road	$1,642,877
0005	3	Stewart Park Bridge, Centre Road, 9.80 km S of Highway 124	$2,342,665
0006	5	Broadbent Bridge, Dickinson Road, 0.20 km W of Broadbent Road	$1,290,300
0007	7	Inholmes Bridge, Broadbent Road, 7.20 km N of Hurdville Road	$1,589,836
0008	2	Ford Bridge, Broadbent Road, 8.70 km N of Hurdville Road	$1,215,444

Table 14 Overall Culvert Inventory

Culvert Inventory - 2023			
Culvert No.	**Priority**	**Structure Name / Location**	**Current Replacement Value**
0002	1	Squaw Lake Culvert, Balsam Road, 4.8 km N of Centre Road	$1,135,893
0010	2	Blackwater Road Culvert, Blackwater Road, 2.0 km S of Hurdville Road	$1,035,740

4.6 Monitoring

There are no structures at this time that require on-going monitoring to ensure safety and serviceability as presented in ***Table 15***.

Table 15 Monitoring

Monitoring		
Structure No.	**Location**	**Monitoring Requirements**
-	-	-

5. Structure Inventory and Construction Needs Summary

Tables 16 & 17 which follow provide a summary of the total structure construction and rehabilitation needs resultant from the 2023 structure inspections. For the ten-year period, the rehabilitation needs are estimated to be ***$1,131,000*** for the existing Township's structure system. Of this total cost ***$170,000*** are for Now needs, ***$810,000*** are for structure 1-5 year needs and ***$151,000*** are for the 6–10-year needs.

Table 16 Bridge Improvement Needs Summary

Not Adjusted for Owners Share ($)				
	1-5	**6-10**	**Now**	**Total**
Const	0.00	0.00	0.00	**0.00**
Const Extra	0.00	0.00	0.00	**0.00**
Inspection	15,000.00	0.00	0.00	**15,000.00**
Rehab	436,000.00	82,000.00	149,000.00	**667,000.00**
Rehab Extra	359,000.00	69,000.00	21,000.00	**449,000.00**
Total	**810,000.00**	**151,000.00**	**170,000.00**	**1,131,000.00**

Adjusted for Owners Share ($)				
	1-5	**6-10**	**Now**	**Total**
Const	0.00	0.00	0.00	**0.00**
Const Extra	0.00	0.00	0.00	**0.00**
Inspection	15,000.00	0.00	0.00	**15,000.00**
Rehab	436,000.00	82,000.00	149,000.00	**667,000.00**
Rehab Extra	359,000.00	69,000.00	21,000.00	**449,000.00**
Total	**810,000.00**	**151,000.00**	**170,000.00**	**1,131,000.00**

Table 17 Culvert Improvement Needs Summary

Not Adjusted for Owners Share ($)				
	1-5	6-10	Now	Total
Const	0.00	0.00	0.00	**0.00**
Const Extra	0.00	0.00	0.00	**0.00**
Inspection	0.00	0.00	0.00	**0.00**
Rehab	0.00	0.00	0.00	**0.00**
Rehab Extra	0.00	0.00	0.00	**0.00**
Total	**0.00**	**0.00**	**0.00**	**0.00**

Adjusted for Owners Share ($)				
	1-5	6-10	Now	Total
Const	0.00	0.00	0.00	**0.00**
Const Extra	0.00	0.00	0.00	**0.00**
Inspection	0.00	0.00	0.00	**0.00**
Rehab	0.00	0.00	0.00	**0.00**
Rehab Extra	0.00	0.00	0.00	**0.00**
Total	**0.00**	**0.00**	**0.00**	**0.00**

6. Normal Structure Maintenance

A summary of normal structure maintenance for all bridge and culvert structures has been presented in ***Table 18 & 19*** (below) as a result of the 2023 inspections. They have been presented in order of Time of Need (TON).

Table 18 Normal Structure Maintenance Summary - Bridges

Bridge Maintenance - 2023			
Bridge No.	**Location**	**Maintenance Requirements**	**Time of Need**
0003	Grey Owl Bridge, Grey Owl Road, 2.40 km W of Highway 124	Regrade approaches, replace damaged sections of guide rail	Now
0005	Stewart Park Bridge, Centre Road, 9.80 km S of Highway 124	Replace missing barrier rail end cap, replace broken/bent handrail post and reposition guide rail posts	Now
0006	Broadbent Bridge, Dickinson Road, 0.20 km W of Broadbent Road	Repair guide rail end treatments	Now
0008	Ford Bridge, Broadbent Road, 8.70 km N of Hurdville Road	Repair approaches, adjust guide rail, replace leaning hazard markers and unplug deck drains	Now

Table 19 Normal Structure Maintenance Summary - Culverts

Culvert Maintenance - 2023			
Culvert No.	**Location**	**Maintenance Requirements**	**Time of Need**
-	-	-	-

7. Recommended Program Funding Levels

Recommended program funding level calculations are typically based on the length of or number of the infrastructure types and average widths of same within the database.

It should be noted that the budgetary recommendations in this report do not include items in the budget related to development and growth. Those items are in addition to the recommendations in this report and should require another funding source.

7.1 Capital Replacements

Recommended funding for the structures inventory would include sufficient capital expenditures that would allow the replacement of infrastructure as it meets its design life.

For new structures, the design lifespan is now 75 years; however, structures constructed prior to 2000 were generally designed for a 50 year lifespan. Accordingly, between 1.5% and 2.0% of the overall current replacement value of the entire structure inventory of ***$14,157,000*** should be budgeted annually to ensure that the structure inventory can be maintained in perpetuity. It is noted that as the structures are replaced, the annual allocation could be reduced to 1.5%.

Based on the aforementioned structure inventory replacement value of ***$14,157,000*** and the data shown in ***Section 3.2*** of this report, the estimated minimum annual capital program for structures should be in the amount of ***$269,000*** (1.9%) per year for the Township of McKellar to maintain the current system adequacy. However, given the average age of the Township's structures inventory, it is probable that expenditures on structures will be higher than estimated over the next decade as the older structures reach a terminal condition.

Rehabilitation and replacement recommendations are provided within this report. The costs associated with these recommendations should be budgeted above and beyond the recommended annual capital program. For the ten-year period, the "Not Adjusted for Owners Share" rehabilitation and replacement needs are estimated to be ***$1,131,000*** for the existing Township's structure system. The annual value of ***$113,100*** associated with these recommendations should be budgeted above and beyond the recommended annual capital program amount of ***$269,000*** as shown above to maximize the service life of the structures. The total forecasted expenditures over ten years are currently valued at ***$382,100*** annually.

7.2 Major Maintenance

Rehabilitation and replacement recommendations are provided within this report ***(see section 4)***. The costs associated within these recommendations should be budgeted above and beyond the recommended replacement budget suggested in ***Section 7.1*** to maximize the service life of the structures.

8. Conclusion

Completion of the 2023 re-inspection of seven (7) bridges and two (2) culverts on the Township's road system has resulted in reliable and current data being available to the Township to implement a maintenance program ensuring the Township's structures are kept safe and in good repair.

Maintenance of the Bridge and Culvert Management Program will require updating of the database on an on-going annual basis to reflect previous year rehabilitation/replacement project updates. It is recommended that the structures be re-inspected by a qualified structure engineer every two (2) years.

We trust that the foregoing will assist you in implementing a cost-effective structure maintenance, repair, and replacement program.

Appendices

Type text here

Appendix A

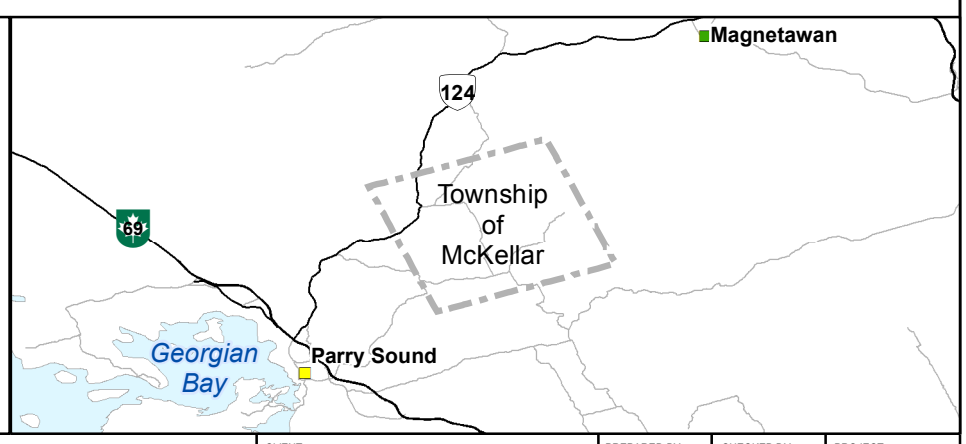
Key Plan

NORTH

Lodge Lake
Lorimer Lake
GREY OWL ROAD
0003
Grey Owl Lake
McEwen Lake
Ryan Lake
BALSAM ROAD
0002
Manson Lake
124
Stewart Lake
Moffat Lake
McKellar Lake
Blackberry Lake
Clear Lake
Armstrong Lake
0001
Brownley Lake
Fresque Lake
124
Mary Jane Lake
CENTRE ROAD
Pirie Lake
Ford Lake
Oliver Lake
Manitouwabing Lake
0008
Little Ruebottom Lake
Hydes Lake
Killeen Lake
Manitouwabing River
0007
Wetmore Lake
0004
HURDVILLE ROAD
0005
DICKINSON ROAD
BROADBENT ROAD
0006
HURDVILLE ROAD
Belfry Lake
Proud Lake
Shanty Lake
BLACKWATER ROAD
Loney Lake
Dutcher Lake
0010
Blackwater Lake

Legend

- Bridge (With Inventory No.)
- Culvert (With Inventory No.)
- Provincial Highway
- Major Road
- Local Road
- Waterbody
- Watercourse
- Municipal Boundary



GHD

PROJECT: 2023 STRUCTURE INSPECTIONS

DRAWING: **STRUCTURE LOCATIONS**

CLIENT: Township of McKellar

PREPARED BY:	CHECKED BY:	PROJECT:
R. GALOS	W. BALDIN	12604686
DESIGNED BY:	APPROVED BY:	MAP:
---	J. PARKINSON	1
SCALE: 1:56,000	DATE: April 2023	

Appendix B

Bridge Improvement Needs

Township of McKellar
Bridge Improvement Needs

Data Last Refreshed November 16, 2023
2:01:14PM

Bridge No.	Priority	Bridge Name	Road Name	Location	Const. Yr Sub/ Super	Ex. Load Posting L3t	L2t	L1t	Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost ($)	Improvement Recommendations Category	Type	TON	Cost(1)
0004	1.00	Hurdville Bridge	Hurdville Road	6.80 km W of Centre Road	1930 1930	0	0	0	O-WAT, Over	4	24.40	5.00	DCS 15,000	Rehab	IAG	NOW	95,000
														Rehab	RIR	NOW	54,000
														Rehab Extra	brMB	NOW	7,000
														Rehab Extra	brTCP	NOW	14,000
															Total Cost	**NOW**	**170,000**
														Rehab	CDS	1-5	20,000
														Rehab	EIR	1-5	68,000
														Rehab	RCS	1-5	14,000
														Rehab	RSB	1-5	122,000
														Rehab	RSP	1-5	27,000
														Rehab	WSR	1-5	14,000
														Rehab Extra	brAPP	1-5	68,000
														Rehab Extra	brENV	1-5	20,000
														Rehab Extra	brMB	1-5	11,000
														Rehab Extra	brTCP	1-5	14,000
														Rehab Extra	brWPTF	1-5	41,000
														Rehab Extra	UNW	1-5	54,000
															Total Cost	**1-5**	**473,000**
															Total Cost		**643,000**
															Municipal %		100
															MunicipalCost		**643,000**

Notes:
1. Cost includes engineering and contigency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const. Yr Sub/ Super	Ex. Load Posting L3t	L2t	L1t	Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost ($)	Improvement Recommendations Category	Type	TON	Cost(1)
0008	2.00	Ford Bridge	Broadbent Road	8.70 km N of Hurdville Road	1930 1930	0	0	0	O-WAT, Over	1	13.10	5.70		Maintenance	OTH	NOW	0
															Total Cost	**NOW**	**0**
														Rehab	EIR	1-5	20,000
														Rehab	RIR	1-5	14,000
														Rehab	RSB	1-5	14,000
														Rehab	RSP	1-5	20,000
														Rehab Extra	brMB	1-5	6,000
														Rehab Extra	brTCP	1-5	14,000
														Rehab Extra	brWPTF	1-5	34,000
															Total Cost	**1-5**	**122,000**
															Total Cost		**122,000**
															Municipal %		100
															MunicipalCost		**122,000**
0005	3.00	Stewart Park Bridge	Centre Road	9.80 km S of Highway 124	1992 1992	0	0	0	O-WAT, Over	1	21.00	9.40		Maintenance	OTH	NOW	0
															Total Cost	**NOW**	**0**
														Rehab	EIR	1-5	14,000
														Rehab Extra	brAPP	1-5	7,000
														Rehab Extra	brMB	1-5	1,000
														Rehab Extra	brTCP	1-5	7,000
															Total Cost	**1-5**	**29,000**
															Total Cost		**29,000**
															Municipal %		100
															MunicipalCost		**29,000**
0003	4.00	Grey Owl Bridge	Grey Owl Road	2.40 km W of Highway 124	1984 1984	0	0	0	O-WAT, Over	1	7.00	5.10		Maintenance	OTH	NOW	0
															Total Cost	**NOW**	**0**
														Rehab	RRW	6-10	54,000
														Rehab	RSB	6-10	14,000
														Rehab Extra	brENV	6-10	10,000
														Rehab Extra	brMB	6-10	2,000
														Rehab Extra	brTCP	6-10	14,000
														Rehab Extra	UNW	6-10	34,000
															Total Cost	**6-10**	**128,000**
															Total Cost		**128,000**
															Municipal %		100
															MunicipalCost		**128,000**

Notes:
1. Cost includes engineering and contigency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const. Yr Sub/ Super	Ex. Load Posting L3t	L2t	L1t	Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost ($)	Improvement Recommendations Category	Type	TON	Cost(1)
0006	5.00	Broadbent Bridge	Dickinson Road	0.20 km W of Broadbent Road	1910 2008	0	0	0	O-WAT, Over	1	17.30	4.10		Maintenance	OTH	NOW	0
															Total Cost	**NOW**	**0**
														Rehab	CSS	1-5	81,000
														Rehab	RSP	1-5	8,000
														Rehab Extra	brDET	1-5	14,000
														Rehab Extra	brENV	1-5	20,000
														Rehab Extra	brMB	1-5	7,000
														Rehab Extra	brWPTF	1-5	41,000
															Total Cost	**1-5**	**171,000**
															Total Cost		**171,000**
															Municipal %		100
															MunicipalCost		**171,000**
0001	6.00	Veterans Memorial Bridge	Centre Road	2.70 km E of Highway 124	2010 2010	0	0	0	O-WAT, Over	1	25.90	9.10		Rehab	EIR	6-10	14,000
														Rehab Extra	brMB	6-10	2,000
														Rehab Extra	brTCP	6-10	7,000
															Total Cost	**6-10**	**23,000**
															Total Cost		**23,000**
															Municipal %		100
															MunicipalCost		**23,000**
0007	-	Inholmes Bridge	Broadbent Road	7.20 km N of Hurdville Road	1920 2023	0	0	0	O-WAT, Over	2	19.55	4.93					

Total Cost of Recommended Improvements (2)

Notes:
1. Cost includes engineering and contigency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

BRIDGE IMPROVEMENT NEEDS

The bridges of span 3.0 m and greater under the jurisdiction of the Township of McKellar which were inventoried and appraised are listed in the following table. The bridge inventory section table is arranged numerically by bridge number and provides the following information:

- Local bridge number
- Priority Ranking
- The bridge name
- The bridge locations
- The year of substructure and superstructure construction
- Existing Load Limit Postings
- The crossing type
- The number of spans
- The deck length and deck width
- The requirement for any engineering investigation, year and cost
- The recommended type and time of improvement
- The construction cost of the recommended improvement and the total project cost including engineering and contingency allowances

The following abbreviations are used in Table B1:

bc - Bridge Construction

br - Bridge Rehabilitation

Crossing Type

O-WAT - Over Water

U-RWY - Under Railway

O-RWY - Over Railway

Engineering Investigations

SEI – Seismic Investigation

UI – Underwater Investigation

RDI - Routine Detailed Inspection

STI - Structure Investigation

RRA - Rehabilitate/Replace Analysis

LCE – Load Capacity Evaluation

C/S - Condition Survey of Other Components

C/I - Condition Inspection

DART - DART Survey

DCCS - Detail Coating Condition Survey

DCS - Deck Condition Survey

FI - Fatigue Investigation

GEOMOR - Geomorphic Investigation

GEOTEC - Geotechnical Investigation

Type of Improvements

Capital Improvements / Construction Extra

NEW - New Bridge

RBC - Replace Bridge with Culvert

REB - Remove Existing Bridge

RNL - Replace Bridge - New location

RSL – Replace Bridge Same Location

TEB – Twin Existing Bridge

bcApp - Approaches

bcTCP - Traffic Control / Protection

bcUTI - Utility Relocation

bcROW - Right of Way Costs

bcENV - Environmental Study Cost

bcDET - Detours

bcMOB - Mobilization

bcWPTF – Work Platform / Access

brUNW - Unwatering

Bridge Rehabilitation Improvements / Rehabilitation Extra

RSP - Rehabilitate Superstructure

RSB - Rehabilitate Substructure

RRW - Rehabilitate/Replace Retaining Walls

RIR - Railing Improvement/Replacement

Deck Rehabilitation Improvements

WSR - Wearing Surface Rehabilitation

CDR - Complete Deck Replacement

OWP - Overlay, Waterproof and Pave

PWP - Patch, Waterproof and Asphalt Paving

CDS - Concrete Deck Soffit Repairs

CR - Concrete Repairs

PDR - Partial Deck Replacement

RCS - Rehabilitation/Replacement of Safety Curbs/Sidewalk

TJM - Transverse Exp Joint Modification

TJR - Transverse Expansion Joint Replacement

TJS - Transverse Expansion Joint Seal Replacement

LMC - Latex Modified Concrete Overlay

LJM - Longitudinal Exp Joint Modification

LJR - Longitudinal Exp Joint Replacement

LJS - Longitudinal Exp Joint Seal Replacement

Bridge Coating Improvements

CSR - Coating Steel Railings

CSS - Coating Structural Steel

Stream/Waterway Improvements

SPI - Scour Protection Improvements

C/I - Channel Improvements

C/R - Channel Realignment

EIR - Embankment Improvement/Rehab

Safety Improvements

IAG - Installation of Approach Guide rail

IAB - Install Approach Safety Shape Barrier

Non Standard Improvements

OTHm - Maintenance Improvements

OTHr - Rehabilitation Improvements

Costing Category

PC - Preliminary Cost Estimate

Appendix C

Culvert Improvement Needs

Township of McKellar
Culvert Improvement Needs

Data Last Refreshed November 16, 2023
2:08:10PM

Culvert No.	Priority	Culvert Name	Road Name	Location	Const Yr	Ex. Load Posting			Crossing Type	No. of Cells	Total Span (m)	Culvert Length (m)	Eng. Invest.	Improvement Recommendations			
						L3t	L2t	L1t					Type/ Cost ($)	Category	Type	TON	Cost(1)
0002	-	Squaw Lake Culvert	Balsam Road	4.8 km N of Centre Road	1982	0	0	0	O-WAT, Over	1	6.10	13.80					
0010	-	Blackwater Road Culvert	Blackwater Road	2.0 km S of Hurdville Road	2017	0	0	0	O-WAT, Over	1	4.37	15.00					

Total Cost of Recommended Improvements (2)

Notes:
1. Individual item costs include engineering and contigency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

CULVERT IMPROVEMENT NEEDS

The culverts of span 3.0 m and greater under the jurisdiction of the Township of McKellar which were inventoried and appraised are listed in the following table. The culvert inventory section table is arranged numerically by culvert number and provides the following information:

- Local culvert number
- Priority ranking
- The culvert name
- The culvert road name
- The culvert location
- The year of construction
- The year extended
- Load limit postings
- The crossing type
- The number of cells
- The total span in metres
- The culvert length
- The requirement for any engineering investigation, year and cost
- The recommended type and time of improvement
- The construction cost of the recommended improvement and the total project cost including engineering and contingency allowances

The following abbreviations are used in Table C1:

c - Culvert

cc - Culvert Construction

cr - Culvert Rehabilitation

Crossing Type

O-WAT - Over Water

O-PED - Over Pedestrian Walkway

Culvert Type

CPS-PA/ - Corrugated Plate Steel Pipe Arch

CPS-PR/ - Corrugated Plate Steel Pipe Round

CPS-PAS - Corrugated Plate Steel Pipe Arch with Stiffener and/or Buttress

CPS-PHS - Corrugated Plate Steel Pipe Horizontal Ellipse with Stiffener and/or Buttress

CPS-PHE - Corrugated Plate Steel Pipe Horizontal Ellipse

CPR-OTH - Cast-in-Place Reinforced Concrete Other

CPR-BOX - Cast-in-Place Reinforced Concrete Box

CPR-FRA - Cast-in-Place Replacement Concrete Frame

PCC-PR/ - Precast Concrete Pipe Round

CST-PA/ - Corrugated Steel Pipe Arch

CST-PR/ - Corrugated Steel Pipe Round

Engineering Investigations

cUI – Underwater Investigation

cRDI - Routine Detailed Inspection

cRRA - Rehabilitate/Replace Analysis

cLCE – Load Capacity Evaluation

cC/S - Condition Survey of other Components

cC/I - Condition Inspection

cENV - Environmental Study Cost

cGEOMOR - Geomorphic Investigation

cGEOTEC - Geotechnical Investigation

Type of Improvements

Capital Improvements / Construction Extra

cREC - Remove Existing Culvert

cRSL - Replace Culvert, Same Location

ccAPP - Approaches

ccDET - Detours

ccTCP - Traffic Control / Protection

ccUTI - Utility Relocation

ccROW - ROW Costs

ccENV - Environmental Study

ccMOB - Mobilization

ccWPTF – Work Platform / Access

ccUNW - Unwatering

Rehabilitation Improvements / Rehabilitation Extra

cRRW - Rehabilitate/Replace Retaining Walls/Wingwalls

cRSP - Rehabilitate Superstructure

cRSB - Rehabilitate Substructure

cRIO - Rehabilitate Inlet/Outlet Treatment

cRCF - Rehabilitate Culvert Floor/Invert

crAPP - Approaches

crDET - Detours

crTCP - Traffic Control / Protection

crUTI - Utility Relocation

crROW - ROW Costs

crENV - Environmental Study

Stream/Waterway Improvements

cEIR - Embankment Improvements/Rehabilitation

cSPI - Scour Protection Improvements

cC/R - Channel Realignment

cCH/I - Channel Improvements

Safety Improvements

cIAG - Installation of Approach Guide Rail

Costing Category

cPC - Preliminary Cost Estimate

Appendix D

Bridge and Culvert Management Program

BRIDGE AND CULVERT MANAGEMENT SYSTEM

In order to provide the Township of McKellar with a means to evaluate future maintenance, repair and replacement needs based on updated inspection information, a Bridge & Culvert Management System was developed. The results produced by the program were determined from the following input data for each structure:

– Bridge (or Culvert) Needs ratings (MCR and PCR) identified in Section G of the Municipal Bridge (or Culvert) Appraisal Sheets.
– Functional needs identified in Section H of the Municipal Bridge (or Culvert) Appraisal Sheets.
– Load posting.
– Vehicular traffic at the structure site (AADT).

The following discusses the methodology used in the Bridge & Culvert Management System to determine various condition and appraisal ratings:

Material Condition and Performance Condition Ratings (MCR & PCR) in Section G of the Appraisal reports for bridges and culverts have been input for each structure. The Ontario Structure Inspection Manual (published by the Ministry of Transportation, Ontario), requires that inspectors assign condition ratings from 1 to 6 with 6 representing the best condition as identified below in ***Table 20***. Additional ratings of 9, 0 and Y may also be used.

Table 20 Material Condition and Performance Condition Ratings (MCR & PCR)

MCR & PCR RATINGS	RATING VALUE
6 – Very Good	6
5 – Satisfactory	5
4 – Fair	4
3 – Poor	3
2 – Inadequate – urgent	2
1 – Inadequate - critical	1
9 - Component cannot be inspected	6
0 - Component does not exist; Need does not exist	6
Y - Component does not exist; Need exists	1.5

The Functional Needs information is included in Section H of the Municipal Bridge and Culvert Appraisal sheets. In cases where data is missing, the program assumes values. Rating values are determined by comparing the Existing Condition information with the Minimum Tolerable requirement. ***Table 21*** presents the ratings assigned by the program for bridges, when the Existing Condition is worse than the Minimum Tolerable. ***Table 22*** presents the assigned rating values for culverts.

Table 21 Functional Needs Ratings for Bridges

Functional Needs	Ratings	
	If Adequate	If Not Adequate
Road Over		
Travel Deck Width	6	2
Level of Service	6	2
Min.Vert. Clearance	6	1
Sidewalks	6	2

Functional Needs	Ratings	
Road Under		
Surface Width	6	2
Level of Service	6	2
Min.Vert. Clearance	6	1
Sidewalks	6	2

Table 22 Functional Needs Ratings for Culverts

Functional Needs	Ratings	
	If Adequate	If Not Adequate
Road Over		
Platform Width	6	2
Level of Service	6	2
Roadside Safety	6	1
Road Through		
Surface Width	6	2
Level of Service	6	2
Min Vertical Clearance	6	1
Sidewalks	6	2

For each rated structural component, an Overall Component Condition Rating is calculated by the program, using the following weight factors for the input MCR and PCR as shown in ***Table 23.***

Table 23 Overall Component Condition Rating Weights

Overall Component Condition Rating Weights	
MCR	0.4
PCR	0.6

Load Posting Ratings are assigned using the following comparisons, as shown in ***Table 24.***

Table 24 Load Posting Ratings

Condition	Assigned Load Posting Rating
If Load Posting is greater than 20 tonnes	6
If Load Posting >18 tonnes and # 20 tonnes	5
If Load Posting >16 tonnes and # 18 tonnes	4.5
If Load Posting >14 tonnes and # 16 tonnes	4
If Load Posting >12 tonnes and # 14 tonnes	3
If Load Posting >10 tonnes and # 12 tonnes	2
If Load Posting # 10 tonnes	1

Appendix E

Structure Appraisal Reports

MUNICIPAL BRIDGE APPRAISAL

A. IDENTIFICATION

Bridge Name: Veterans Memorial Bridge
Bridge No.: 0001
Road Name: Centre Road
Road Section No.
Location: 2.70 km E of Highway 124
MTO Site No.: 044-0083-
Roadside Env.: R
Posting Sign: t t t
Crossing Type: O-WAT, Over Water
BL Posting: t t t
Low Clear Sign: Narrow Structure Sign:
Federal Navigable Waterway: Yes
Bylaw No.:
Easting: 17 586843
Bridge Value: $ 3,030,000
Bylaw Exp. Date:
Northing: 5040449
Old ID:

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:
Original Board Order Number:
Railway Company:
Date:
Railway Subdivision:
Current Board Order Number:
Subdivision Mileage:
Date:
Transport Canada Crossing No.:
Seniority:
Number of Tracks: 0

C. JURISDICTION

Owner: 86613
Special Designation:
Local / Area Municipality (Upper Tier Only)
Owner Share: 100.00 %
Designation 2
MunicA
☐ Shared?
Adjacent Bridge No.:
MunicB
Shared With:
Patrol:
Heritage Status: R

D. EXISTING CONDITIONS

Substructure Yr: 2010
Span Length: 23.0 m
Longitudinal Joints: 0
Superstructure Yr: 2010
Deck Type: CC - Concrete, Cast in Place
Transverse Joints: 0
Bridge Type: W - IB - S
Deck Length: 25.9 m
Number of Bearings: 8
Crossing Skew: -00 °
Deck Width: 9.1 m
Soil Condition: U
Number of Spans: 1
Deck Area: 235.7 m^2
Abutment and Foundation Type: Closed - PC

ROAD OVER BRIDGE

Existing Road Class: 200
No. of Lanes: 2.0
Barrier Walls/Railings: CP
Operational Status: 2W - OAT
Median Type/Width: m
Min Vertical Clearance: m
Wearing Surface: A
Safety Curb/ (A) N E 0.0 m
Travel Deck Width: 8.50 m
Sidewalk and Curb (B) N / W 0.0 m

ROAD UNDER BRIDGE

Existing Road Class:
No. of Lanes:
Traffic Barrier:
Operational Status: -
Median Type/Width: m
Min Vertical Clearance: m
Opening Under: m
Safety Curb/ (A) m
Surface Width: m
Sidewalk and Curb (B) / m

E. TRAFFIC DATA

Legal Speed Limit: 80

Route Designations
☐ Bus ☐ Truck Route
☒ School ☐ Bike Route

Source:
Bridge 0001 Asset Master

	Traffic Count	10 Year Traffic Forecast
Year:	A-2002-E	2012
AADT:	100	110
DHV Factor:	%	%
DHV:	vph	vph
Trucks:	%	%
Peak Directional Split:	%	Capacity: 0 vph
10 Year Growth Factor:	1.10	20 Year AADT: 121

F. INSPECTIONS

Date: 9/28/2023
Inspected By: Jeff Parkinson
Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar
Bridge No.: 0001

G. BRIDGE NEEDS

Field	MCR	PCR	TON	Comments
Superstructure	5	6	6-10	
Wearing Surface	5	5	6-10	
Deck Condition	5	6	6-10	
Expansion Joints	0	0	ADEQ	
Railings	5	6	6-10	
Substructure	5	6	6-10	
Coating	6	6	ADEQ	
Streams/Waterways	5	5	6-10	
Curb/Sidewalk	0	0	ADEQ	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Bridge				
RO-Trav. Deck Width	8.5	6.5	ADEQ	Proj Class: 200, 110 (10 YR, 100*1.1)
RO-LOS	A	E	ADEQ	
RO-Min. Vertical Clear.		4.5	ADEQ	No value for: Min Vertical Clearance
RO-Sidewalks	N	N	ADEQ	

Recommended Needs

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total
Rehab	EIR	Embankment Improvement/Rehab	6-10	0	10,000	4,000	14,000
			Rehab Subtotal:		10,000	4,000	14,000
Rehab Extra	brMB	Mobilization / Bonds / Permits	6-10	0	2,000	0	2,000
Rehab Extra	brTCP	Traffic Control/Protection	6-10	0	5,000	2,000	7,000
			Rehab Extra Subtotal:		7,000	2,000	9,000

I. ENGINEERING RECOMMENDATIONS

Bridge Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date:
Closure Type:
Monitoring Interval:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Operational Status: -
Abutment Type:
Design Deck Width:
Design Deck Length:

K. IMPROVEMENT COSTS

Total Construction/Rehab	23,000
Total Inspection	0
TOTAL	23,000
86613 share @100%	23,000

INSPECTION NOTES

Bridge No.: 0001

Bridge No. 0001, Veterans Memorial Bridge, Centre Road, Lot 22, Concession XI, 2.70 km South of Highway 124, Township of McKellar:

- Structure is not posted with a load limit.
- 23m +/- single span weathering steel girder bridge with a concrete deck and asphalt wearing surface.
- Concrete parapet walls are in generally good condition with light abrasions on the Northeast and Southwest end posts, narrow stained and unstained cracks, hairline stained map cracking, light scaling.
- Steel handrailings over parapet walls are in generally good condition with 4 missing bolts, loose railing on South side, 3 posts exhibit collision damage.
- Asphalt deck wearing surface is in generally good condition with light ravelling, sealed cracks and narrow cracks.
- Concrete deck soffit is in good condition.
- Concrete fascias are in generally good condition with narrow stained cracks and surface rust stains.
- Steel girders are in generally good condition with large deflection noted, light flaking of patina, birds nests and deflection noted (reverse camber).
- Ends of girders are coated and are in good condition with several birds nests noted.
- Elastomeric bearings are in generally good condition with loss of contact (<5%) noted at all bearings on the west abutment and two bearings on east abutment, minor bulging and unevenly loaded bearings at the west end.
- Concrete abutments are in generally good condition with narrow cracks on the ballast wall and surface rust stains.
- Concrete wingwalls are in generally good condition with surface rust stains and wet areas.
- Steel beam guide rails are in generally good condition with minor collision damage. Moderate collision damage to the channel at the Southeast.
- Eccentric loader end treatments are provided in all four quadrants and are in good condition.
- Vegetated and gravel embankments are in good condition. Moderate undermining of the wingwall at the Northwest.
- Watercourse is unobstructed with no evidence of scour.
- Gabion basket retaining walls are provided in all quadrants except the southwest and are in good condition.
- Asphalt approach wearing surface is in generally good condition with light ravelling and minor settlement beyond the approaches.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.
- Should repair undermining.

L. HISTORY/ GENERAL

Bridge No.: 0001

Comments: LOOKING WEST AT BRIDGE
Path: P:\McKellar\2023\P1080126.jpg

Comments: LOOKING EAST AT BRIDGE
Path: P:\McKellar\2023\P1080127.jpg

Comments: NORTH ELEVATION
Path: P:\McKellar\2023\P1080128.jpg

Comments: SOUTH ELEVATION
Path: P:\McKellar\2023\P1080129.jpg

Comments: COLLISION DAMAGE APPROACH GUIDE RAIL
Path: P:\McKellar\2023\P1080130.jpg

Comments: TYPICAL WEARING SURFACE
Path: P:\McKellar\2023\P1080131.jpg

Comments: NARROW TRANSVERSE CRACK IN WEARING SURFACE
Path: P:\McKellar\2023\P1080132.jpg

Comments: NARROW TRANSVERSE CRACK IN WEARING SURFACE
Path: P:\McKellar\2023\P1080149.jpg

Comments: COLLISION DAMAGE PARAPET HAND RAILING
Path: P:\McKellar\2023\P1080133.jpg

Comments: MISSING BOLT PARAPET HAND RAILING
Path: P:\McKellar\2023\P1080134.jpg

Comments: NARROW STAINED CRACK IN INTERIOR PARAPET WALL
Path: P:\McKellar\2023\P1080135.jpg

Comments: ABRASION PARAPET END POST
Path: P:\McKellar\2023\P1080136.jpg

Comments: TYPICAL WEST ABUTMENT
Path: P:\McKellar\2023\P1080138.jpg

Comments: TYPICAL EAST ABUTMENT
Path: P:\McKellar\2023\P1080139.jpg

Comments: TYPICAL ABUTMENT BEARING
Path: P:\McKellar\2023\P1080137.jpg

Comments: MINOR LOSS OF CONTACT ABUTMENT BEARING
Path: P:\McKellar\2023\P1080146.jpg

Comments: NARROW VERTICAL CRACK EAST ABUTMENT
Path: P:\McKellar\2023\P1080151.jpg

Comments: NARROW VERTICAL CRACK EAST BALLAST WALL
Path: P:\McKellar\2023\P1080152.jpg

Comments: TYPICAL SOFFIT
Path: P:\McKellar\2023\P1080140.jpg

Comments: NARROW STAINED CRACK EXTERIOR SOFFIT
Path: P:\McKellar\2023\P1080147.jpg

Comments: REVERSE CAMBER ON EXTERIOR GIRDER
Path: P:\McKellar\2023\P1080143.jpg

Comments: NARROW STAINED CRACK EXTERIOR PARAPET WALL
Path: P:\McKellar\2023\P1080148.jpg

Comments: WATER STAINING ON WINGWALL
Path: P:\McKellar\2023\P1080150.jpg

Comments: MODERATE UNDERMINING BELOW WINGWALL
Path: P:\McKellar\2023\P1080145.jpg

Comments: WATERCOURSE UNDER BRIDGE
Path: P:\McKellar\2023\P1080141.jpg

Comments: LOOKING SOUTH DOWNSTREAM
Path: P:\McKellar\2023\P1080142.jpg

Comments: LOOKING NORTH UPSTREAM
Path: P:\McKellar\2023\P1080144.jpg

Comments:
Path:

MUNICIPAL BRIDGE APPRAISAL

A. IDENTIFICATION

Bridge Name:	Grey Owl Bridge			Bridge No.:	0003
Road Name:	Grey Owl Road			Road Section No.	
Location:	2.40 km W of Highway 124			MTO Site No.:	044-0219-
Roadside Env.:	R	Posting Sign:	t t t	Crossing Type:	O-WAT, Over Water
BL Posting:	t t t	Low Clear Sign:	Narrow Structure Sign:	Federal Navigable Waterway:	
Bylaw No.:		Easting:	17 582370	Bridge Value:	$ 874,000
Bylaw Exp. Date:		Northing:	5042218	Old ID:	

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:		Original Board Order Number:	
Railway Company:		Date:	
Railway Subdivision:		Current Board Order Number:	
Subdivision Mileage:	0.00	Date:	
Transport Canada Crossing No.:		Seniority:	
Number of Tracks:	0		

C. JURISDICTION

Owner:	86613	Special Designation:	**Local / Area Municipality (Upper Tier Only)**
Owner Share:	100.00 %	Designation 2	MunicA
☐ Shared?		Adjacent Bridge No.:	MunicB
Shared With:			Patrol:
Heritage Status:	R		

D. EXISTING CONDITIONS

Substructure Yr:	1984	Span Length:	5.9 m	Longitudinal Joints:	0
Superstructure Yr:	1984	Deck Type:	TL - Transverse Lam. Timber	Transverse Joints:	0
Bridge Type:	S - IB - S	Deck Length:	7.0 m	Number of Bearings:	0
Crossing Skew:	-00 °	Deck Width:	5.1 m	Soil Condition:	U
Number of Spans:	1	Deck Area:	35.7 m^2	Abutment and Foundation Type:	Closed - SF

ROAD OVER BRIDGE

Existing Road Class:	100	No. of Lanes:	1.0	Barrier Walls/Railings:	FB
Operational Status:	2W - OAT	Median Type/Width:	0.0 m	Min Vertical Clearance:	m
Wearing Surface:	T	Safety Curb/ (A)	N N 0.2 m		
Travel Deck Width:	4.70 m	Sidewalk and Curb (B)	N / S 0.2 m		

ROAD UNDER BRIDGE

Existing Road Class:		No. of Lanes:	0	Traffic Barrier:	
Operational Status:	-	Median Type/Width:	0.0 m	Min Vertical Clearance:	m
Opening Under:	m	Safety Curb/ (A)	m		
Surface Width:	m	Sidewalk and Curb (B)	/ m		

E. TRAFFIC DATA

Legal Speed Limit: 40

Route Designations

☐ Bus ☐ Truck Route

☐ School ☐ Bike Route

Source:
Bridge 0003 Asset Master

	Traffic Count	10 Year Traffic Forecast
Year:	A-2002-E	2012
AADT:	10	10
DHV Factor:	%	%
DHV:	vph	vph
Trucks:	%	%
Peak Directional Split:	%	Capacity: 0 vph
10 Year Growth Factor:	1.00	20 Year AADT: 10

F. INSPECTIONS

Date: 9/28/2023 Inspected By: Jeff Parkinson Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar Bridge No.: 0003

G. BRIDGE NEEDS

Field	MCR	PCR	TON	Comments
Superstructure	5	5	6-10	
Wearing Surface	4	5	1-5	
Deck Condition	4	5	1-5	
Expansion Joints	0	0	ADEQ	
Railings	5	5	6-10	
Substructure	5	5	6-10	
Coating	0	0	ADEQ	
Streams/Waterways	5	5	6-10	
Curb/Sidewalk	5	5	6-10	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Bridge				
RO-Trav. Deck Width	4.7	6.5	NOW	
RO-LOS	A	E	ADEQ	
RO-Min. Vertical Clear.		4.5	ADEQ	No value for: Min Vertical Clearance
RO-Sidewalks	N	N	ADEQ	

Recommended Needs

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total
Maintenance	OTH	Maintenance Improvement	NOW	0	0	0	0
			Maintenance Subtotal:		0	0	0
Rehab	RRW	Rehabilitate /Replace Retaining Walls	6-10	0	40,000	14,000	54,000
Rehab	RSB	Rehabilitate Substructure	6-10	0	10,000	4,000	14,000
			Rehab Subtotal:		50,000	18,000	68,000
Rehab Extra	brENV	Environmental Study Costs	6-10	0	10,000	0	10,000
Rehab Extra	brMB	Mobilization / Bonds / Permits	6-10	0	2,000	0	2,000
Rehab Extra	brTCP	Traffic Control/Protection	6-10	0	10,000	4,000	14,000
Rehab Extra	UNW	Unwatering	6-10	0	25,000	9,000	34,000
			Rehab Extra Subtotal:		47,000	13,000	60,000

I. ENGINEERING RECOMMENDATIONS

Bridge Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date:
Closure Type:
Monitoring Interval:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Operational Status: -
Abutment Type:
Design Deck Width:
Design Deck Length:

K. IMPROVEMENT COSTS

Total Construction/Rehab	128,000
Total Inspection	0
TOTAL	128,000
86613 share @100%	128,000

INSPECTION NOTES

Bridge No.: 0003

Bridge No. 0003, Grey Owl Bridge, Grey Owl Road, Lot 31, Concession XIV, 2.40 km West of Highway 124, Township of McKellar:

- Structure is not posted with a load limit.
- 5.9 m+\- single span structural steel girder bridge with a timber deck.
- Steel guide rail on steel posts provided over the deck and on the approaches. Terminal end treatments provided in all four quadrants. Minor collision damage and a small tear at the Southeast.
- Timber curbs are in generally good condition and have recently been replaced. Curbs exhibit light checks and abrasions.
- Transverse timber deck is in generally good condition with light to medium wear and localized severe wear, wheel track rutting, minor rotation of boards at the east end, water ponding and localized light to severe splits on the ends and protruding nails at the west end.
- Structural steel girders are in generally good condition with light to severe flaking of patina, light to medium pitting. The girders are bearing on the back crib members, loss of contact at abutment crib.
- Pressure treated timber crib abutments are in generally good condition with light to severe checks and splits and light to medium rot at the waterline of both abutment cribs (2.0m², poor). It is noted that rock within the timber crib abutments is only placed to mid height.
- Gabion basket retaining walls are provided in all four quadrants of the structure and are in generally fair to good condition with loss of fill at the bottom baskets due to severe corrosion. Some outward movement was noted at base of Northwest quadrant.
- Embankment slopes are in good condition.
- Gravel approach roads are in generally good condition with light potholes.
- Watercourse is unobstructed with no evidence of scour.
- Hazard markers provided in all four quadrants.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.
- Should replace retaining walls and repair abutments.
- Should regrade approaches, replace damaged sections of guide rail as part of regular structure maintenance.
- Not costed for replacement for travel deck width deficiency due to low traffic volume.

L. HISTORY/ GENERAL

Bridge No.: 0003

Year: 2016, IAG Install Approach Guiderail, Est Cost: 0

Year: 2016, RCS Rehabilitation/Replacement of safety curbs, Est Cost: 0

Comments: LOOKING WEST AT BRIDGE
Path: P:\McKellar\2023\P1080096.jpg

Comments: LOOKING EAST AT BRIDGE
Path: P:\McKellar\2023\P1080097.jpg

Comments: SOUTH ELEVATION
Path: P:\McKellar\2023\P1080098.jpg

Comments: NORTH ELEVATION
Path: P:\McKellar\2023\P1080099.jpg

Comments: LIGHT POTHOLE IN EAST APPROACH
Path: P:\McKellar\2023\P1080105.jpg

Comments: TEAR IN GUIDE RAIL ON APPROACH
Path: P:\McKellar\2023\P1080106.jpg

Comments: TYPICAL WEARING SURFACE
Path: P:\McKellar\2023\P1080100.jpg

Comments: MEDIUM WHEEL TRACK RUTTING IN TIMBER DECK
Path: P:\McKellar\2023\P1080102.jpg

Comments: PROTRUDING NAILS IN TIMBER DECK MEMBERS
Path: P:\McKellar\2023\P1080103.jpg

Comments: LOCALIZED SEVERE ROT OF TIMBER DECK MEMBER
Path: P:\McKellar\2023\P1080104.jpg

Comments: SEVERE WEATHERING OF TIMBER DECK MEMBERS
Path: P:\McKellar\2023\P1080107.jpg

Comments: ROTATION OF TIMBER DECK MEMBERS EAST APPROACH
Path: P:\McKellar\2023\P1080108.jpg

Comments: SEVERE SPLIT IN TIMBER DECK MEMBER EAST APPROACH
Path: P:\McKellar\2023\P1080109.jpg

Comments: MINOR ABRASION IN TIMBER CURB
Path: P:\McKellar\2023\P1080101.jpg

Comments: TYPICAL WEST ABUTMENT
Path: P:\McKellar\2023\P1080110.jpg

Comments: TYPICAL EAST ABUTMENT
Path: P:\McKellar\2023\P1080121.jpg

Comments: TYPICAL SOFFIT
Path: P:\McKellar\2023\P1080113.jpg

Comments: MEDIUM ROT OF TIMBER CRIB MEMBER
Path: P:\McKellar\2023\P1080111.jpg

Comments: MEDIUM ROT OF TIMBER CRIB MEMBERS EAST ABUTMENT
Path: P:\McKellar\2023\P1080112.jpg

Comments: MEDIUM ROT OF TIMBER CRIB MEMBERS WEST ABUTMENT
Path: P:\McKellar\2023\P1080120.jpg

Comments: SEVERE CHECK IN TIMBER CRIB MEMBER
Path: P:\McKellar\2023\P1080124.jpg

Comments: SEVERE FLAKING OF STEEL BALLAST WALL WEST ABUTMENT
Path: P:\McKellar\2023\P1080125.jpg

Comments: SEVERE FLAKING OF STEEL GIRDER FLANGE
Path: P:\McKellar\2023\P1080117.jpg

Comments: SEVERE FLAKING OF STEEL GIRDER FLANGE
Path: P:\McKellar\2023\P1080122.jpg

Comments: LOSS OF ROCK FILL GABION BASKET RETAINING WALL
Path: P:\McKellar\2023\P1080123.jpg

Comments: LOSS OF ROCK FILL GABION BASKET RETAINING WALL
Path: P:\McKellar\2023\P1080119.jpg

Comments: WATERCOURSE UNDER BRIDGE
Path: P:\McKellar\2023\P1080114.jpg

Comments: LOOKING NORTH DOWNSTREAM
Path: P:\McKellar\2023\P1080115.jpg

Comments: LOOKING SOUTH UPSTREAM
Path: P:\McKellar\2023\P1080116.jpg

Comments:
Path:

MUNICIPAL BRIDGE APPRAISAL

A. IDENTIFICATION

Bridge Name:	Hurdville Bridge	Bridge No.:	0004
Road Name:	Hurdville Road	Road Section No.	
Location:	6.80 km W of Centre Road	MTO Site No.:	044-0110-
Roadside Env.:	R	Posting Sign: t t t	Crossing Type: O-WAT, Over Water
BL Posting:	t t t	Low Clear Sign: Narrow Structure Sign:	Federal Navigable Waterway:
Bylaw No.:		Easting: 17 584374	Bridge Value: $ 1,643,000
Bylaw Exp. Date:		Northing: 5032529	Old ID:

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:		Original Board Order Number:	
Railway Company:		Date:	
Railway Subdivision:		Current Board Order Number:	
Subdivision Mileage:	0.00	Date:	
Transport Canada Crossing No.:		Seniority:	
Number of Tracks:	0		

C. JURISDICTION

Owner:	86613	Special Designation:	**Local / Area Municipality (Upper Tier Only)**
Owner Share:	100.00 %	Designation 2	MunicA
☐ Shared?		Adjacent Bridge No.:	MunicB
Shared With:			Patrol:
Heritage Status:	D		

D. EXISTING CONDITIONS

Substructure Yr:	1930	Span Length:	6.1 m	Longitudinal Joints:	0
Superstructure Yr:	1930	Deck Type:	CC - Concrete, Cast in Place	Transverse Joints:	1
Bridge Type:	C - TB - H	Deck Length:	24.4 m	Number of Bearings:	0
Crossing Skew:	-00 °	Deck Width:	5.0 m	Soil Condition:	G
Number of Spans:	4	Deck Area:	122.0 m^2	Abutment and Foundation Type:	Closed - SF

ROAD OVER BRIDGE

Existing Road Class:	200	No. of Lanes:	1.0	Barrier Walls/Railings:	CB
Operational Status:	2W - OAT	Median Type/Width:	0.0 m	Min Vertical Clearance:	m
Wearing Surface:	C	Safety Curb/ (A)	N E 0.2 m		
Travel Deck Width:	4.00 m	Sidewalk and Curb (B)	N / W 0.2 m		

ROAD UNDER BRIDGE

Existing Road Class:		No. of Lanes:	0	Traffic Barrier:	
Operational Status:	-	Median Type/Width:	0.0 m	Min Vertical Clearance:	m
Opening Under:	m	Safety Curb/ (A)	m		
Surface Width:	m	Sidewalk and Curb (B)	/ m		

E. TRAFFIC DATA

Legal Speed Limit: 80

Route Designations

☐ Bus ☐ Truck Route

☐ School ☐ Bike Route

Source:
Bridge 0004 Asset Master

Traffic Count		10 Year Traffic Forecast	
Year:	A-2002-E	Year:	2012
AADT:	100	AADT:	110
DHV Factor:	%	DHV Factor:	%
DHV:	vph	DHV:	vph
Trucks:	%	Trucks:	%
Peak Directional Split:	%	Capacity:	0 vph
10 Year Growth Factor:	1.10	20 Year AADT:	121

F. INSPECTIONS

Date: 9/28/2023 Inspected By: Jeff Parkinson Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar Bridge No.: 0004

G. BRIDGE NEEDS

Field	MCR	PCR	TON	Comments
Superstructure	4	5	1-5	
Wearing Surface	3	4	1-5	
Deck Condition	4	5	1-5	
Expansion Joints	0	0	ADEQ	
Railings	4	2	NOW	
Substructure	3	4	1-5	
Coating	0	0	ADEQ	
Streams/Waterways	5	5	6-10	
Curb/Sidewalk	5	5	6-10	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Bridge				
RO-Trav. Deck Width	4	6.5	NOW	
RO-LOS	A	E	ADEQ	
RO-Min. Vertical Clear.		4.5	ADEQ	No value for: Min Vertical Clearance
RO-Sidewalks	N	N	ADEQ	

Inspection

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total
Inspection	DCS	Deck Condition Survey	1-5	0	15,000	0	15,000
			Inspection Subtotal:		15,000	0	15,000

Recommended Needs

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total
Rehab	CDS	Concrete Deck Soffit Repairs	1-5	0	15,000	5,000	20,000
Rehab	EIR	Embankment Improvement/Rehab	1-5	0	50,000	18,000	68,000
Rehab	RCS	Rehabilitation/Replacement of safety curbs	1-5	0	10,000	4,000	14,000
Rehab	RSB	Rehabilitate Substructure	1-5	0	90,000	32,000	122,000
Rehab	RSP	Rehabilitate Superstructure	1-5	0	20,000	7,000	27,000
Rehab	WSR	Wearing Surface Rehabilitation	1-5	0	10,000	4,000	14,000
Rehab	IAG	Install Approach Guiderail	NOW	0	70,000	25,000	95,000
Rehab	RIR	Railing Improvement/Replacement	NOW	0	40,000	14,000	54,000
			Rehab Subtotal:		305,000	109,000	414,000
Rehab Extra	UNW	Unwatering	1-5	0	40,000	14,000	54,000
Rehab Extra	brAPP	Approaches	1-5	0	50,000	18,000	68,000
Rehab Extra	brENV	Environmental Study Costs	1-5	0	20,000	0	20,000
Rehab Extra	brMB	Mobilization / Bonds	1-5	0	8,000	3,000	11,000
Rehab Extra	brTCP	Traffic Control/Protection	1-5	0	10,000	4,000	14,000
Rehab Extra	brWPTF	Work Platforms	1-5	0	30,000	11,000	41,000
Rehab Extra	brMB	Mobilization / Bonds / Permits	NOW	0	5,000	2,000	7,000
Rehab Extra	brTCP	Traffic Control/Protection	NOW	0	10,000	4,000	14,000
			Rehab Extra Subtotal:		173,000	56,000	229,000

I. ENGINEERING RECOMMENDATIONS

Bridge Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date:
Closure Type:
Monitoring Interval:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Operational Status: -
Abutment Type:
Design Deck Width:
Design Deck Length:

K. IMPROVEMENT COSTS

Total Construction/Rehab		643,000
Total Inspection		15,000
TOTAL		658,000
86613	share @100%	658,000

INSPECTION NOTES

Bridge No.: 0004

Bridge No. 0004, Hurdville Bridge, Hurdville Road, Lot 35, Concession IV, 6.8 km West of Centre Road, Township of McKellar:

- Structure is not posted with a load limit.
- Four span (6.05 m+\-, 6.05 m+\-, 3.2 m+\-, 5.97 m+\-) concrete T-beam bridge with a concrete deck and exposed concrete wearing surface.
- A control dam structure is located immediately adjacent to the East side of the structure.
- Concrete wearing surface is in fair condition with narrow to wide cracks, light to severe scaling, asphalt patches and light delamination at the west end (5.0m², poor).
- Concrete expansion joint (transverse) is in fair condition with light to medium scaling.
- Concrete balustrade barrier wall is in fair to generally poor condition with narrow to wide cracking, concrete patches, overall light scaling and light abrasions, severe scalinig and a severe spalling. There are nine missing balustrades on the east side that have been covered with an 8 ft length of steel flex beam. There are three loose balustrades on the west side (12.0m², poor)
- Concrete curbs are in generally good condition with overall light scaling, surface rust stains, narrow to wide cracking, light to severe delaminations and concrete patches (3.0m², poor). Curb upstand was measured to be 150 mm.
- Deck drainage is accommodated by 12 - 50 mm deck drains. Deck drains have been extended below the deck soffit with PVC piping. There are four missing deck drains (4, poor).
- Concrete deck soffit is in fair to generally good condition with light to severe delaminations and spalls, exposed corroded rebar, narrow to medium cracks with efflorescence, light scaling, wet areas and surface rust stains (5.0 m² - poor).
- Concrete T-beams are in generally good condition with localized light to severe delaminations and spalls, light scaling, narrow to medium cracks, wet areas and rust staining (1.0m², poor).
- Concrete abutments are in fair condition with narrow to wide horizontal cracks, light to severe delaminations and spalls, light to severe scaling, efflorescence, water staining, light to medium erosion, severe erosion adjacent to the dam structure allowing infiltration of water, and loss of bearing surface exterior girder south abutment (6.0 m² - poor). The deck has separated from abutment at the north end.
- Concrete piers are in poor to fair condition with overall light to severe scaling, efflorescence, encrustation, narrow to wide horizontal cracks, water staining, very severe erosion at the waterline and localized light to severe delaminations and severe spalls adjacent to the dam structure allowing the infiltration of water. (22.0 m² - poor)
- Concrete wingwalls are in fair condition with narrow to wide cracks, light to medium scaling, localized spalling and delaminations, light to severe erosion & efflorescence (2.0 m², poor).
- Surface treated approach roads are in generally good condition with narrow to wide cracks, asphalt patches, localized minor pothole adjacent to structure and minor settlement (1.0m², poor).
- Steel beam guide rail has been provided on the approaches with terminal end treatments. The approach guide rail is not connected to the barrier walls. Guide rail exhibits localized collision damage and outward rotation in the southeast and southwest quadrants Intermediate guide rail posts have not been provided. Timber posts exhibit light to medium top rot and light to severe checks and splits.
- Hazard markers are provided in all four quadrants. All hazard markers are leaning.
- Roadway embankments are in fair to generally good condition with minor erosion in all quadrants. Severe erosion at the end of the approach guide rail at the Southwest.
- Watercourse is obstructed on the upstream side by a control dam.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.
- Should repair concrete deck, handrails, curbs, deck soffit, T-beams, piers, abutments, wingwalls, replace deck drain, surface approaches, restore embankments and replace approach guide rail. Should consider replacing barrier system (included in costing).
- Requires a detailed deck condition survey.
- Not costed for replacement for travel deck width deficiency due to low traffic volume.

L. HISTORY/ GENERAL

Bridge No.: 0004

Comments: LOOKING NORTH AT BRIDGE
Path: P:\McKellar\2023\P1080263.jpg

Comments: LOOKING SOUTH AT BRIDGE
Path: P:\McKellar\2023\P1080264.jpg

Comments: WEST ELEVATION
Path: P:\McKellar\2023\P1080265.jpg

Comments: EAST ELEVATION
Path: P:\McKellar\2023\P1080266.jpg

Comments: COLLISION DAMAGE TO NORTHEAST GUIDE RAIL
Path: P:\McKellar\2023\P1080267.jpg

Comments: BROKEN OFFSET BLOCK
Path: P:\McKellar\2023\P1080268.jpg

Comments: OUTWARD ROTATION OF APPROACH GUIDE RAIL SOUTHEAST QUADRANT
Path: P:\McKellar\2023\P1080270.jpg

Comments: WIDE TRANSVERSE CRACK APPROACH
Path: P:\McKellar\2023\P1080272.jpg

Comments: TYPICAL WEARING SURFACE
Path: P:\McKellar\2023\P1080274.jpg

Comments: WIDE CRACKS IN CONCRETE DECK
Path: P:\McKellar\2023\P1080275.jpg

Comments: GAP AT MIDSPAN OF DECK
Path: P:\McKellar\2023\P1080276.jpg

Comments: SEVERE SCALING OF CONCRETE DECK
Path: P:\McKellar\2023\P1080277.jpg

Comments: DELAMINATION NORTH END OF CONCRETE DECK
Path: P:\McKellar\2023\P1080278.jpg

Comments: WIDE CRACK IN CONCRETE CURB
Path: P:\McKellar\2023\P1080280.jpg

Comments: DELAMINATION IN CONCRETE CURB
Path: P:\McKellar\2023\P1080281.jpg

Comments: MISSING BALUSTRADE WEST RAILING
Path: P:\McKellar\2023\P1080269.jpg

Comments: MISSING BALUSTRADES ON EAST RAILING
Path: P:\McKellar\2023\P1080271.jpg

Comments: WIDE CRACKS IN BALUSTRADE
Path: P:\McKellar\2023\P1080273.jpg

Comments: SPALLING OF BALUSTRADE RAILING
Path: P:\McKellar\2023\P1080295.jpg

Comments: WIDE CRACK IN NORTHWEST WINGWALL
Path: P:\McKellar\2023\P1080283.jpg

Comments: WIDE VERTICAL CRACK IN WINGWALL
Path: P:\McKellar\2023\P1080302.jpg

Comments: WIDE CRACK IN EXTERIOR FASCIA
Path: P:\McKellar\2023\P1080290.jpg

Comments: TYPICAL NORTH ABUTMENT
Path: P:\McKellar\2023\P1080284.jpg

Comments: SEPARATION OF DECK AT NORTH ABUTMENT
Path: P:\McKellar\2023\P1080306.jpg

Comments: TYPICAL SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080297.jpg

Comments: SEVERE SCOURING OF SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080299.jpg

Comments: SEVERE DELAMINATIONS SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080300.jpg

Comments: LOSS OF BEARING SURFACE BELOW EXTERIOR GIRDER SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080301.jpg

Comments: TYPICAL PIER
Path: P:\McKellar\2023\P1080282.jpg

Comments: SEVERE DELAMINATIONS PIER
Path: P:\McKellar\2023\P1080291.jpg

Comments: SEVERE SCOURING OF PIER
Path: P:\McKellar\2023\P1080292.jpg

Comments: SEVERE SCOURING OF PIER AT WATERLINE
Path: P:\McKellar\2023\P1080303.jpg

Comments: WIDE HORIZONTAL CRACK IN PIER
Path: P:\McKellar\2023\P1080304.jpg

Comments: DELAMINATION INTERIOR SOFFIT
Path: P:\McKellar\2023\P1080288.jpg

Comments: SPALLING INTERIOR SOFFIT
Path: P:\McKellar\2023\P1080289.jpg

Comments: SEVERE DELAMINATIONS INTERIOR SOFFIT
Path: P:\McKellar\2023\P1080296.jpg

Comments: SEVERE DELAMINATIONS INTERIOR SOFFIT
Path: P:\McKellar\2023\P1080298.jpg

Comments: MISSING DECK DRAIN
Path: P:\McKellar\2023\P1080305.jpg

Comments: SEVERE EROSION OF ROADWAY EMBANKMENT SOUTHWEST QUADRANT
Path: P:\McKellar\2023\P1080308.jpg

Comments: WATERCOURSE UNDER BRIDGE
Path: P:\McKellar\2023\P1080293.jpg

Comments: LOOKING WEST DOWNSTREAM
Path: P:\McKellar\2023\P1080294.jpg

Comments: LOOKING EAST UPSTREAM
Path: P:\McKellar\2023\P1080307.jpg

MUNICIPAL BRIDGE APPRAISAL

A. IDENTIFICATION

Bridge Name: Stewart Park Bridge
Bridge No.: 0005
Road Name: Centre Road
Road Section No.
Location: 9.80 km S of Highway 124
MTO Site No.: 044-0111-
Roadside Env.: R
Posting Sign: t t t
Crossing Type: O-WAT, Over Water
BL Posting: t t t
Low Clear Sign: Narrow Structure Sign:
Federal Navigable Waterway:
Bylaw No.:
Easting: 17 589335
Bridge Value: $ 2,343,000
Bylaw Exp. Date:
Northing: 5034729
Old ID:

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:
Original Board Order Number:
Railway Company:
Date:
Railway Subdivision:
Current Board Order Number:
Subdivision Mileage: 0.00
Date:
Transport Canada Crossing No.:
Seniority:
Number of Tracks: 0

C. JURISDICTION

Owner: 86613
Special Designation:
Local / Area Municipality (Upper Tier Only)
Owner Share: 100.00 %
Designation 2
MunicA
☐ Shared?
Adjacent Bridge No.:
MunicB
Shared With:
Patrol:
Heritage Status: R

D. EXISTING CONDITIONS

Substructure Yr: 1992
Span Length: 20.0 m
Longitudinal Joints: 0
Superstructure Yr: 1992
Deck Type: CC - Concrete, Cast in Place
Transverse Joints: 2
Bridge Type: P - IB - S
Deck Length: 21.0 m
Number of Bearings: 8
Crossing Skew: -00 °
Deck Width: 9.4 m
Soil Condition: F
Number of Spans: 1
Deck Area: 197.4 m^2
Abutment and Foundation Type: Open - SF

---------- ROAD OVER BRIDGE ----------

Existing Road Class: 200
No. of Lanes: 2.0
Barrier Walls/Railings: NJ
Operational Status: 2W - OAT
Median Type/Width: 0.0 m
Min Vertical Clearance: m
Wearing Surface: A
Safety Curb/ (A) N E 0.0 m
Travel Deck Width: 6.50 m
Sidewalk and Curb (B) N / W 0.0 m

---------- ROAD UNDER BRIDGE ----------

Existing Road Class:
No. of Lanes: 0
Traffic Barrier:
Operational Status: -
Median Type/Width: 0.0 m
Min Vertical Clearance: m
Opening Under: m
Safety Curb/ (A) m
Surface Width: m
Sidewalk and Curb (B) / m

E. TRAFFIC DATA

Legal Speed Limit: 80

Route Designations

☐ Bus ☐ Truck Route
☒ School ☐ Bike Route

Source:
Bridge 0005 Asset Master

	Traffic Count	10 Year Traffic Forecast
Year:	A-2002-E	2012
AADT:	80	88
DHV Factor:	%	%
DHV:	vph	vph
Trucks:	%	%
Peak Directional Split:	%	Capacity: 0 vph
10 Year Growth Factor:	1.10	20 Year AADT: 96

F. INSPECTIONS

Date: 9/28/2023
Inspected By: Jeff Parkinson
Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar
Bridge No.: 0005

G. BRIDGE NEEDS

Field	MCR	PCR	TON	Comments
Superstructure	5	5	6-10	
Wearing Surface	5	5	6-10	
Deck Condition	5	5	6-10	
Expansion Joints	5	5	6-10	
Railings	4	5	1-5	
Substructure	5	5	6-10	
Coating	0	0	ADEQ	
Streams/Waterways	4	5	1-5	
Curb/Sidewalk	0	0	ADEQ	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Bridge				
RO-Trav. Deck Width	6.5	6.5	ADEQ	Proj Class: 200, 88 (10 YR, 80*1.1)
RO-LOS	A	E	ADEQ	
RO-Min. Vertical Clear.		4.5	ADEQ	No value for: Min Vertical Clearance
RO-Sidewalks	N	N	ADEQ	

Recommended Needs

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total
Maintenance	OTH	Maintenance Improvement	NOW	0	0	0	0
			Maintenance Subtotal:		0	0	0
Rehab	EIR	Embankment Improvement/Rehab	1-5	0	10,000	4,000	14,000
			Rehab Subtotal:		10,000	4,000	14,000
Rehab Extra	brAPP	Approaches	1-5	0	5,000	2,000	7,000
Rehab Extra	brMB	Mobilization / Bonds	1-5	0	1,000	0	1,000
Rehab Extra	brTCP	Traffic Control/Protection	1-5	0	5,000	2,000	7,000
			Rehab Extra Subtotal:		11,000	4,000	15,000

I. ENGINEERING RECOMMENDATIONS

Bridge Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date:
Closure Type:
Monitoring Interval:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Operational Status: -
Abutment Type:
Design Deck Width:
Design Deck Length:

K. IMPROVEMENT COSTS

Total Construction/Rehab	29,000
Total Inspection	0
TOTAL	29,000
86613 share @100%	29,000

INSPECTION NOTES

Bridge No.: 0005

Bridge No. 0005, Stewart Park Bridge, Centre Road, Lot 22, Concession IV/V, 9.8 km South of Highway 124, Township of McKellar:

- Structure is not posted with a load limit.
- 20.0 m+\- single span precast concrete girder bridge with a concrete deck and asphalt wearing surface.
- Asphalt wearing surface is in generally good condition with narrow cracks and water ponding on the deck.
- Concrete barrier walls are in generally good condition with localized map cracking, narrow stained and unstained cracks and light abrasions.
- Steel barrier handrails are provided on top of the concrete barrier walls and are in fair to good condition with minor to moderate collision damage of nine (9) anchor brackets, cracking, light corrosion and 7 missing bolts. The east railing is loose and the posts are leaning. End caps are missing in northeast and southwest quadrants (6.0m, poor).
- Deck drainage is accommodated by 6 - 200 mm diameter galvanized deck drains that outlet flush with the bottom of the girders.
- Armoured expansion joints are in generally good condition with light corrosion, minor scrape damage and filled with debris.
- Concrete end dams are in generally good condition with narrow transverse cracks, light scaling and surface rust staining. The end dams have been paved over.
- Concrete deck soffit is in generally good condition with light to medium honeycombing in the Northwest quadrant and localized hairline stained crack in Southeast quadrant.
- Concrete diaphragms are in good condition.
- Elastomeric abutment bearing pads are in good condition.
- Precast concrete girders are in good condition with bird nests.
- Concrete abutments and ballast walls are in generally good condition with water staining, rust staining, narrow to medium vertical stained and unstained cracks, light erosion at the waterline and localized light abrasion.
- Concrete wingwalls are in generally good condition with narrow stained and unstained cracks.
- Asphalt paved approach roads are in generally good condition with narrow cracks at ends.
- Concrete curbs are in generally good condition with light scaling.
- Roadway embankments are in generally good condition with minor erosion at the Northeast quadrant, moderate erosion at the Northwest quadrant. Severe erosion with undermining at Southwest. Rip rap slope protection in front of the abutments and wingwalls is in good condition.
- Steel beam guide rail is provided in all four quadrants of the structure and is in good condition. Eccentric loader end treatments have been provided in all quadrants. Timber posts exhibit light to medium splits and checks with localized top rot.
- Watercourse is unobstructed with no evidence of scour.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.
- Should install a form and fill groove at the ends of the approach slabs and restore embankments.
- Should replace missing barrier rail end cap, replace broken/bent handrail post and reposition guide rail posts as part of regular structure maintenance.

L. HISTORY/ GENERAL

Bridge No.: 0005

Comments: LOOKING NORTH AT BRIDGE
Path: P:\McKellar\2023\P1080234.jpg

Comments: LOOKING SOUTH AT BRIDGE
Path: P:\McKellar\2023\P1080235.jpg

Comments: EAST ELEVATION
Path: P:\McKellar\2023\P1080236.jpg

Comments: WEST ELEVATION
Path: P:\McKellar\2023\P1080237.jpg

Comments: COLLISION DAMAGE APPROACH GUIDE RAIL
Path: P:\McKellar\2023\P1080238.jpg

Comments: CENTRE ROT OF TIMBER GUIDE RAIL POST
Path: P:\McKellar\2023\P1080239.jpg

Comments: MEDIUM CHECK IN TIMBER GUIDE RAIL POST
Path: P:\McKellar\2023\P1080262.jpg

Comments: TYPICAL WEARING SURFACE
Path: P:\McKellar\2023\P1080243.jpg

Comments: NARROW CRACKS IN DECK WEARING SURFACE
Path: P:\McKellar\2023\P1080245.jpg

Comments: LIGHT CORROSION OF ARMOURING ANGLE
Path: P:\McKellar\2023\P1080244.jpg

Comments: NARROW STAINED CRACKS INTERIOR PARAPET WALL
Path: P:\McKellar\2023\P1080240.jpg

Comments: LIGHT ABRASION INTERIOR PARAPET WALL
Path: P:\McKellar\2023\P1080246.jpg

Comments: LIGHT ABRASION PARAPET END POST
Path: P:\McKellar\2023\P1080247.jpg

Comments: MISSING END CAP SOUTHWEST QUADRANT
Path: P:\McKellar\2023\P1080241.jpg

Comments: COLLISION DAMAGE TO HANDRAIL POST
Path: P:\McKellar\2023\P1080242.jpg

Comments: NARROW STAINED CRACK EXTERIOR PARAPET WALL
Path: P:\McKellar\2023\P1080251.jpg

Comments: NARROW STAINED CRACK IN WINGWALL
Path: P:\McKellar\2023\P1080254.jpg

Comments: TYPICAL SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080248.jpg

Comments: TYPICAL ABUTMENT BEARING
Path: P:\McKellar\2023\P1080250.jpg

Comments: MEDIUM VERTICAL CRACK SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080261.jpg

Comments: LIGHT EROSION OF SOUTH ABUTMENT AT WATERLINE
Path: P:\McKellar\2023\P1080258.jpg

Comments: TYPICAL NORTH ABUTMENT
Path: P:\McKellar\2023\P1080257.jpg

Comments: TYPICAL SOFFIT
Path: P:\McKellar\2023\P1080259.jpg

Comments: MEDIUM HONEYCOMBING EXTERIOR GIRDER
Path: P:\McKellar\2023\P1080255.jpg

Comments: WATERCOURSE UNDER BRIDGE
Path: P:\McKellar\2023\P1080252.jpg

Comments: LOOKING EAST UPSTREAM
Path: P:\McKellar\2023\P1080253.jpg

Comments: LOOKING WEST DOWNSTREAM
Path: P:\McKellar\2023\P1080260.jpg

Comments: EROSION IN SOUTHWEST QUADRANT
Path: P:\McKellar\2023\P1080256.jpg

MUNICIPAL BRIDGE APPRAISAL

A. IDENTIFICATION

Bridge Name:	Broadbent Bridge	Bridge No.:	0006
Road Name:	Dickinson Road	Road Section No.	
Location:	0.20 km W of Broadbent Road	MTO Site No.:	044-0112-
Roadside Env.:	R	Posting Sign: t t t	Crossing Type: O-WAT, Over Water
BL Posting:	t t t	Low Clear Sign: Narrow Structure Sign:	Federal Navigable Waterway:
Bylaw No.:		Easting: 17 591513	Bridge Value: $ 1,290,000
Bylaw Exp. Date:		Northing: 5035361	Old ID:

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:		Original Board Order Number:	
Railway Company:		Date:	
Railway Subdivision:		Current Board Order Number:	
Subdivision Mileage:	0.00	Date:	
Transport Canada Crossing No.:		Seniority:	
Number of Tracks:	0		

C. JURISDICTION

Owner:	86613	Special Designation:	**Local / Area Municipality (Upper Tier Only)**
Owner Share:	100.00 %	Designation 2	MunicA
☐ Shared?		Adjacent Bridge No.:	MunicB
Shared With:			Patrol:
Heritage Status:	R		

D. EXISTING CONDITIONS

Substructure Yr:	1910	Span Length:	16.3 m	Longitudinal Joints:	0
Superstructure Yr:	2008	Deck Type:	SP - Steel Plate, Non-composit	Transverse Joints:	0
Bridge Type:	W - IB - S	Deck Length:	17.3 m	Number of Bearings:	4
Crossing Skew:	-00 °	Deck Width:	4.1 m	Soil Condition:	G
Number of Spans:	1	Deck Area:	71.0 m^2	Abutment and Foundation Type:	Open - SF

ROAD OVER BRIDGE

Existing Road Class:	100	No. of Lanes:	1.0	Barrier Walls/Railings:	OT
Operational Status:	2W - OAT	Median Type/Width:	0.0 m	Min Vertical Clearance:	m
Wearing Surface:	A	Safety Curb/ (A)	N N 0.0 m		
Travel Deck Width:	4.00 m	Sidewalk and Curb (B)	N / S 0.0 m		

ROAD UNDER BRIDGE

Existing Road Class:		No. of Lanes:	0	Traffic Barrier:	
Operational Status:	-	Median Type/Width:	0.0 m	Min Vertical Clearance:	m
Opening Under:	m	Safety Curb/ (A)	m		
Surface Width:	m	Sidewalk and Curb (B)	/ m		

E. TRAFFIC DATA

Legal Speed Limit: 80

Route Designations

☐ Bus ☐ Truck Route

☐ School ☐ Bike Route

Source:
Bridge 0006 Asset Master

	Traffic Count	10 Year Traffic Forecast
Year:	A-2002-E	2012
AADT:	10	11
DHV Factor:	%	%
DHV:	vph	vph
Trucks:	%	%
Peak Directional Split:	%	Capacity: 0 vph
10 Year Growth Factor:	1.10	20 Year AADT: 12

F. INSPECTIONS

Date: 9/28/2023 Inspected By: Jeff Parkinson Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar Bridge No.: 0006

G. BRIDGE NEEDS

Field	MCR	PCR	TON	Comments
Superstructure	3	4	1-5	
Wearing Surface	5	5	6-10	
Deck Condition	5	5	6-10	
Expansion Joints	0	0	ADEQ	
Railings	5	5	6-10	
Substructure	5	6	6-10	
Coating	0	0	ADEQ	
Streams/Waterways	5	6	6-10	
Curb/Sidewalk	0	0	ADEQ	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Bridge				
RO-Trav. Deck Width	4	6.5	NOW	
RO-LOS	A	E	ADEQ	
RO-Min. Vertical Clear.		4.5	ADEQ	No value for: Min Vertical Clearance
RO-Sidewalks	N	N	ADEQ	

Recommended Needs

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total
Maintenance	OTH	Maintenance Improvement	NOW	0	0	0	0
			Maintenance Subtotal:		0	0	0
Rehab	CSS	Coating Structural Steel	1-5	0	60,000	21,000	81,000
Rehab	RSP	Rehabilitate Superstructure	1-5	0	6,000	2,000	8,000
			Rehab Subtotal:		66,000	23,000	89,000
Rehab Extra	brDET	Detours	1-5	0	10,000	4,000	14,000
Rehab Extra	brENV	Environmental Study Costs	1-5	0	20,000	0	20,000
Rehab Extra	brMB	Mobilization / Bonds / Permits	1-5	0	5,000	2,000	7,000
Rehab Extra	brWPTF	Work Platforms / Access	1-5	0	30,000	11,000	41,000
			Rehab Extra Subtotal:		65,000	17,000	82,000

I. ENGINEERING RECOMMENDATIONS

Bridge Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date:
Closure Type:
Monitoring Interval:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Operational Status: -
Abutment Type:
Design Deck Width:
Design Deck Length:

K. IMPROVEMENT COSTS

Total Construction/Rehab	171,000
Total Inspection	0
TOTAL	171,000
86613 share @100%	171,000

INSPECTION NOTES

Bridge No.: 0006

Bridge No. 0006, Broadbent Bridge, Dickinson Road, Lot 16, Conc IV, 0.20 km West of Broadbent Road, Township of McKellar:

- Structure is not posted with a load limit.
- 16.3m +/- single span weathering steel girder bridge with steel deck.
- Thrie beam guide rail is in generally good condition with minor collision damage and light corrosion.
- Steel plate deck is in generally good condition, light to medium corrosion and localized severe corrosion at ends.
- Asphalt wearing surface is in good condition.
- Steel girders and stringers are in generally good condition with light to medium flaking of patina and rust jacking of stringer at the north abutment. Three stringers at the north abutment exhibit severe perforations and section loss. (1.0m², poor)
- Steel diaphragms are in generally good condition with light flaking of patina, medium flaking of patina at ends.
- Elasometric bearings are in generally good condition and are covered in debris. One bearing pad at the north abutment is displaced.
- Concrete ballast walls are in generally good condition with light scaling, exposed rebar at the south end and a wide vertical crack at the north end.
- Stone masonry abutments are in generally good condition with efflorescence staining, wet areas and a broken section in the northwest quadrant (1.0m², poor).
- Stone masonry wingwalls are in generally good condition with efflorescent stained cracks.
- Watercourse is unobstructed with no evidence of scour.
- Asphalt paved approach roads are in good condition.
- Roadway embankments are in generally good condition with minor erosion at Northwest.
- Steel beam guide rails are provided on the approaches and are in generally good condition with four posts not attached to the guide rail. Extruder end treatments have been provided in all four quadrants. Both end treatments are the North exhibit light to medium collision damage. The northwest end treatment is missing hazard marker cover.
- No serious evidence of structural distress.
- Not costed for replacement for travel deck width deficiency due to low traffic volume.
- Should repair guide rail end treatments as part of structure maintenance.
- Should clean and paint structural steel at the abutments and repair deteriorated stringers at abutments

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L. HISTORY/ GENERAL

Bridge No.: 0006

Year: 2008, , Est Cost: 0
Work Summary: 2008 Superstructure replacement

Year: 2022, WSR Wearing Surface Rehabilitation, Est Cost: 0

Comments: LOOKING NORTH AT BRIDGE
Path: P:\McKellar\2023\P1080206.jpg

Comments: LOOKING SOUTH AT BRIDGE
Path: P:\McKellar\2023\P1080207.jpg

Comments: EAST ELEVATION
Path: P:\McKellar\2023\P1080214.jpg

Comments: WEST ELEVATION
Path: P:\McKellar\2023\P1080221.jpg

Comments: MISSING END TREATMENT HAZARD MARKER NW QUADRANT
Path: P:\McKellar\2023\P1080208.jpg

Comments: COLLISION DAMAGE NORTHEAST END TREATMENT POST
Path: P:\McKellar\2023\P1080209.jpg

Comments: GUIDE RAIL DISCONNECTED GUIDE RAIL NORTH APPROACH
Path: P:\McKellar\2023\P1080210.jpg

Comments: TYPICAL WEARING SURFACE
Path: P:\McKellar\2023\P1080211.jpg

Comments: MINOR COLLISION DAMAGE THRIE BEAM GUIDE RAIL
Path: P:\McKellar\2023\P1080233.jpg

Comments: COLLISION DAMAGE GUIDE RAIL C-CHANNEL
Path: P:\McKellar\2023\P1080212.jpg

Comments: BROKEN SECTION OF NORTHWEST WINGWALL
Path: P:\McKellar\2023\P1080227.jpg

Comments: EFFLORESCENT STAINING NORTHWEST WINGWALL
Path: P:\McKellar\2023\P1080228.jpg

Comments: TYPICAL NORTH ABUTMENT
Path: P:\McKellar\2023\P1080215.jpg

Comments: WIDE VERTICAL CRACK NORTH BALLAST WALL
Path: P:\McKellar\2023\P1080230.jpg

Comments: TYPICAL SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080216.jpg

Comments: EFFLORESCENT STAINING SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080222.jpg

Comments: EFFLORESCENT STAINING SOUTH ABUTMENT CAP
Path: P:\McKellar\2023\P1080223.jpg

Comments: DISPLACED ELASTOMERIC BEARING PAD NORTH ABUTMENT
Path: P:\McKellar\2023\P1080231.jpg

Comments: TYPICAL SOFFIT
Path: P:\McKellar\2023\P1080217.jpg

Comments: LIGHT FLAKING OF PATINA GIRDER
Path: P:\McKellar\2023\P1080226.jpg

Comments: MEDIUM FLAKING OF STEEL GIRDER BOTTOM FLANGE
Path: P:\McKellar\2023\P1080232.jpg

Comments: SEVERE CORROSION WITH SECTION LOSS FLOOR BEAM NORTH ABUTMENT
Path: P:\McKellar\2023\P1080229.jpg

Comments: WATERCOURSE UNDER BRIDGE
Path: P:\McKellar\2023\P1080218.jpg

Comments: LOOKING EAST UPSTREAM
Path: P:\McKellar\2023\P1080219.jpg

Comments: LOOKING WEST DOWNSTREAM
Path: P:\McKellar\2023\P1080220.jpg

Comments:
Path:

MUNICIPAL BRIDGE APPRAISAL

A. IDENTIFICATION

Bridge Name: Inholmes Bridge
Bridge No.: 0007
Road Name: Broadbent Road
Road Section No.
Location: 7.20 km N of Hurdville Road
MTO Site No.: 044-0113-
Roadside Env.: R
Posting Sign: t t t
Crossing Type: O-WAT, Over Water
BL Posting: t t t
Low Clear Sign: Narrow Structure Sign:
Federal Navigable Waterway:
Bylaw No.:
Easting: 17 594092
Bridge Value: $ 1,590,000
Bylaw Exp. Date: 2/01/2010
Northing: 5038592
Old ID:

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:
Original Board Order Number:
Railway Company:
Date:
Railway Subdivision:
Current Board Order Number:
Subdivision Mileage: 0.00
Date:
Transport Canada Crossing No.:
Seniority:
Number of Tracks: 0

C. JURISDICTION

Owner: 86613
Special Designation:
Local / Area Municipality (Upper Tier Only)
Owner Share: 100.00 %
Designation 2
MunicA
☐ Shared?
Adjacent Bridge No.:
MunicB
Shared With:
Patrol:
Heritage Status: R

D. EXISTING CONDITIONS

Substructure Yr: 1920
Span Length: 9.3 m
Longitudinal Joints: 0
Superstructure Yr: 2023
Deck Type: CC - Concrete, Cast in Place
Transverse Joints: 0
Bridge Type: S - IB - S
Deck Length: 19.6 m
Number of Bearings: 16
Crossing Skew: -00 °
Deck Width: 4.9 m
Soil Condition: G
Number of Spans: 2
Deck Area: 96.4 m^2
Abutment and Foundation Type: Closed - SF

---------- ROAD OVER BRIDGE ----------

Existing Road Class: 200
No. of Lanes: 1.0
Barrier Walls/Railings: FB
Operational Status: 2W - OAT
Median Type/Width: 0.0 m
Min Vertical Clearance: m
Wearing Surface: A
Safety Curb/ (A) N E 0.0 m
Travel Deck Width: 4.80 m
Sidewalk and Curb (B) N / W 0.0 m

---------- ROAD UNDER BRIDGE ----------

Existing Road Class:
No. of Lanes: 0
Traffic Barrier:
Operational Status: -
Median Type/Width: 0.0 m
Min Vertical Clearance: m
Opening Under: m
Safety Curb/ (A) m
Surface Width: m
Sidewalk and Curb (B) / m

E. TRAFFIC DATA

Legal Speed Limit: 80

Route Designations

☐ Bus ☐ Truck Route
☐ School ☐ Bike Route

Source:
Bridge 0007 Asset Master

	Traffic Count	10 Year Traffic Forecast
Year:	A-2002-E	2012
AADT:	50	55
DHV Factor:	%	%
DHV:	vph	vph
Trucks:	%	%
Peak Directional Split:	%	Capacity: 0 vph
10 Year Growth Factor:	1.10	20 Year AADT: 60

F. INSPECTIONS

Date: 9/28/2023
Inspected By: Jeff Parkinson
Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar
Bridge No.: 0007

G. BRIDGE NEEDS

Field	MCR	PCR	TON	Comments
Superstructure	6	6	ADEQ	
Wearing Surface	6	6	ADEQ	
Deck Condition	6	6	ADEQ	
Expansion Joints	0	0	ADEQ	
Railings	6	6	ADEQ	
Substructure	5	5	6-10	
Coating	6	6	ADEQ	
Streams/Waterways	5	5	6-10	
Curb/Sidewalk	0	0	ADEQ	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Bridge				
RO-Trav. Deck Width	4.8	6.5	NOW	
RO-LOS	A	E	ADEQ	
RO-Min. Vertical Clear.		4.5	ADEQ	No value for: Min Vertical Clearance
RO-Sidewalks	N	N	ADEQ	

Recommended Needs

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total

There are no needs identified in this inspection.

I. ENGINEERING RECOMMENDATIONS

Bridge Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date:
Closure Type:
Monitoring Interval:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Operational Status: -
Abutment Type:
Design Deck Width:
Design Deck Length:

K. IMPROVEMENT COSTS

Total Construction/Rehab	0
Total Inspection	0
TOTAL	0
86613 share @100%	0

INSPECTION NOTES

Bridge No.: 0007

Bridge No. 0007, Inholmes Bridge, Broadbent Road, Lot 7, Concession VI, 7.20 km North of Hurdville Road, Township of McKellar:

- Structure is not posted with a load limit.
- Two span (9.5 m+\- each) structural steel girder bridge with a concrete deck and asphalt wearing surface.
- Steel flex beam guide rail over the structure is in excellent conidtion.
- Asphalt wearing surface is in excellent condition.
- Steel stay in place deck soffit is in excellent condition.
- Structural steel girders are in excellent condition.
- Structural steel floor beams are in excellent condition.
- Structural steel diaphrams are in excellent condition.
- Stone masonry abutments are in generally good condition with new concrete bearing surfaces and have been tuck pointed. The mortar is loose and missing in some areas. The South abutment wall has two missing stones. Abutment footings exhibit light to severe erosion (1.0m², poor).
- Stone masonry pier is in generally good condition with new concrete bearing surface. Stone masonry pier has been tuck pointed but has some loose and missing mortar joints.
- Steel pier nosing is in generally good condition with overall surface corrosion, light pitting.
- Structural steel bearings at the abutments and pier are in excellent condition.
- Stone masonry wingwalls are in generally good condition with vertical cracks and localized loss of mortar. Southwest wingwall has a wide vertical crack and is showing signs of outward rotation at the Southwest.
- Asphalt approach roads are in excellent condition.
- Steel beam guide rail has been provided on the approaches as is in good condition. Eccentric loader end treatments have been provided in each quadrant.
- Hazard markers are located in all four quadrants of the structure.
- Roadway embankments are in good condition, rock protection has been provided in the southwest quadrant.
- Watercourse is unobstructed with no evidence of scour.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.

L. HISTORY/ GENERAL

Bridge No.: 0007

Year: 2023, RSP Rehabilitate Superstructure, Est Cost: 0

Year: 2023, RSB Rehabilitate Substructure, Est Cost: 0

Comments: LOOKING SOUTH AT BRIDGE
Path: P:\McKellar\2023\P1080184.jpg

Comments: LOOKING NORTH AT BRIDGE
Path: P:\McKellar\2023\P1080185.jpg

Comments: WEST ELEVATION
Path: P:\McKellar\2023\P1080191.jpg

Comments: EAST ELEVATION
Path: P:\McKellar\2023\P1080202.jpg

Comments: TYPICAL WEARING SURFACE
Path: P:\McKellar\2023\P1080186.jpg

Comments: MINOR DETERIORATION OF ASPHALT AT DECK END
Path: P:\McKellar\2023\P1080188.jpg

Comments: NEW GUIDE RAIL INSTALLED OVER DECK
Path: P:\McKellar\2023\P1080187.jpg

Comments: TYPICAL SOUTH ABUTMENT
Path: P:\McKellar\2023\P1080199.jpg

Comments: TYPICAL NORTH ABUTMENT
Path: P:\McKellar\2023\P1080201.jpg

Comments: TYPICAL ABUTMENT BEARING
Path: P:\McKellar\2023\P1080198.jpg

Comments: TYPICAL PIER
Path: P:\McKellar\2023\P1080192.jpg

Comments: TYPICAL PIER
Path: P:\McKellar\2023\P1080200.jpg

Comments: TYPICAL PIER BEARINGS
Path: P:\McKellar\2023\P1080203.jpg

Comments: TYPICAL SOFFIT
Path: P:\McKellar\2023\P1080193.jpg

Comments: ROCK PROTECTION PROVIDED IN SOUTHWEST QUADRANT
Path: P:\McKellar\2023\P1080190.jpg

Comments: WATERCOURSE UNDER BRIDGE
Path: P:\McKellar\2023\P1080194.jpg

Comments: LOOKING WEST DOWNSTREAM
Path: P:\McKellar\2023\P1080195.jpg

Comments: LOOKING EAST UPSTREAM
Path: P:\McKellar\2023\P1080196.jpg

MUNICIPAL BRIDGE APPRAISAL

A. IDENTIFICATION

Bridge Name:	Ford Bridge			Bridge No.:	0008
Road Name:	Broadbent Road			Road Section No.	
Location:	8.70 km N of Hurdville Road			MTO Site No.:	044-0114-
Roadside Env.:	R	Posting Sign:	t t t	Crossing Type:	O-WAT, Over Water
BL Posting:	t t t	Low Clear Sign:	Narrow Structure Sign:	Federal Navigable Waterway:	
Bylaw No.:		Easting:	17 595039	Bridge Value:	$ 1,215,000
Bylaw Exp. Date:		Northing:	5039564	Old ID:	

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:		Original Board Order Number:	
Railway Company:		Date:	
Railway Subdivision:		Current Board Order Number:	
Subdivision Mileage:	0.00	Date:	
Transport Canada Crossing No.:		Seniority:	
Number of Tracks:	0		

C. JURISDICTION

Owner:	86613	Special Designation:	**Local / Area Municipality (Upper Tier Only)**
Owner Share:	100.00 %	Designation 2	MunicA
☐ Shared?		Adjacent Bridge No.:	MunicB
Shared With:			Patrol:
Heritage Status:	R		

D. EXISTING CONDITIONS

Substructure Yr:	1930	Span Length:	12.2 m	Longitudinal Joints:	0
Superstructure Yr:	1930	Deck Type:	CC - Concrete, Cast in Place	Transverse Joints:	0
Bridge Type:	C - TB - H	Deck Length:	13.1 m	Number of Bearings:	0
Crossing Skew:	-00 °	Deck Width:	5.7 m	Soil Condition:	G
Number of Spans:	1	Deck Area:	74.7 m^2	Abutment and Foundation Type:	Closed - SF

ROAD OVER BRIDGE

Existing Road Class:	200	No. of Lanes:	1.0	Barrier Walls/Railings:	CP
Operational Status:	2W - OAT	Median Type/Width:	0.0 m	Min Vertical Clearance:	m
Wearing Surface:	A	Safety Curb/ (A)	N N 0.2 m		
Travel Deck Width:	4.70 m	Sidewalk and Curb (B)	N / S 0.2 m		

ROAD UNDER BRIDGE

Existing Road Class:		No. of Lanes:	0	Traffic Barrier:	
Operational Status:	-	Median Type/Width:	0.0 m	Min Vertical Clearance:	m
Opening Under:	m	Safety Curb/ (A)	m		
Surface Width:	m	Sidewalk and Curb (B)	/ m		

E. TRAFFIC DATA

Legal Speed Limit: 80

Route Designations

☐ Bus ☐ Truck Route

☐ School ☐ Bike Route

Source:
Bridge 0008 Asset Master

	Traffic Count	10 Year Traffic Forecast
Year:	A-2002-E	2012
AADT:	50	55
DHV Factor:	%	%
DHV:	vph	vph
Trucks:	%	%
Peak Directional Split:	%	Capacity: 0 vph
10 Year Growth Factor:	1.10	20 Year AADT: 60

F. INSPECTIONS

Date: 9/28/2023 Inspected By: Jeff Parkinson Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar Bridge No.: 0008

G. BRIDGE NEEDS

Field	MCR	PCR	TON	Comments
Superstructure	4	5	1-5	
Wearing Surface	4	5	1-5	
Deck Condition	4	5	1-5	
Expansion Joints	0	0	ADEQ	
Railings	4	5	1-5	
Substructure	4	5	1-5	
Coating	0	0	ADEQ	
Streams/Waterways	5	5	6-10	
Curb/Sidewalk	5	5	6-10	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Bridge				
RO-Trav. Deck Width	4.7	6.5	NOW	
RO-LOS	A	E	ADEQ	
RO-Min. Vertical Clear.		4.5	ADEQ	No value for: Min Vertical Clearance
RO-Sidewalks	N	N	ADEQ	

Recommended Needs

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total
Maintenance	OTH	Maintenance Improvement	NOW	0	0	0	0
			Maintenance Subtotal:		0	0	0
Rehab	EIR	Embankment Improvement/Rehab	1-5	0	15,000	5,000	20,000
Rehab	RIR	Railing Improvement/Replacement	1-5	0	10,000	4,000	14,000
Rehab	RSB	Rehabilitate Substructure	1-5	0	10,000	4,000	14,000
Rehab	RSP	Rehabilitate Superstructure	1-5	0	15,000	5,000	20,000
			Rehab Subtotal:		50,000	18,000	68,000
Rehab Extra	brMB	Mobilization / Bonds	1-5	0	4,000	2,000	6,000
Rehab Extra	brTCP	Traffic Control/Protection	1-5	0	10,000	4,000	14,000
Rehab Extra	brWPTF	Work Platforms	1-5	0	25,000	9,000	34,000
			Rehab Extra Subtotal:		39,000	15,000	54,000

I. ENGINEERING RECOMMENDATIONS

Bridge Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date:
Closure Type:
Monitoring Interval:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Operational Status: -
Abutment Type:
Design Deck Width:
Design Deck Length:

K. IMPROVEMENT COSTS

Total Construction/Rehab	122,000
Total Inspection	0
TOTAL	122,000
86613 share @100%	122,000

INSPECTION NOTES

Bridge No.: 0008

Bridge No. 0008, Ford Bridge, Broadbent Road, Lot 4, Concession VII, 8.70 km North of Hurdville Road, Township of McKellar:

- Structure is not posted with a load limit.
- 1.2 m+\- single span concrete T-beam bridge with a concrete deck and an asphalt wearing surface.
- Asphalt wearing surface is in generally good condition with light ravelling, narrow cracks and light flushing.
- Concrete barrier walls are in fair to generally good condition with narrow to medium cracks, patched cracks, localized wide cracks, surface rust stains, light to severe scaling, abrasions, concrete patches, debonded concrete patches, effflorescence and narrow stained cracks (2.0m², poor).
- Concrete curbs are in generally good condition with overall light to medium scaling and concrete patches. Curb upstand was measured to be 75 mm.
- Deck drainage is accommodated by 9 - 50 mm deck drains that outlet through the structure, two drains are covered with sand.
- Concrete deck fascias are in generally good condition with concrete patches, delaminations, overall light scaling and localized severe scaling of the South side (1.0m², poor).
- Concrete deck soffit is in generally good condition with light scaling, localized narrow stained cracks, localized wet areas and moderate scaling noted at the deck drain outlets (1.0m², poor).
- Concrete T-beams are in fair to generally good condition with surface rust staining, wet areas, light to severe scaling, efflorescence, light to severe spalling and delaminations, narrow to wide cracks, concrete patch (7.0m², poor).
- Concrete abutments are in generally good condition with light to severe erosion, light to medium scaling, water staining, efflorescence, concrete patches, localized wide cracks in the west abutment, timber work left in place, light spall (2.0m², poor). The top of the footings are exposed and are in generally fair condition with overall light to medium erosion.
- Concrete wingwalls are in fair to generally good condition with concrete patches, debonded concrete patches, narrow stained and unstained cracks, efflorescence, light to severe scaling, localized wide cracks and localized severe spall at Southwest (3.0m², poor).
- Asphalt paved approach roads are in generally fair condition with asphalt patches, minor to moderate settlement at both approaches, light to severe alligator cracking, narrow cracks (1.0m², poor).
- Steel beam guide rail is in generally good condition. Approach guide rail is not properly connected to the strucutrre. Rail is not sitting on some of the angle clips. Eccentric loader end treatments are provided in all four quadrants and are in good condition. Hazard markers are provided in all four quadrants. Northwest hazard markers is leaning slightly.
- Roadway embankments are in generally poor to fair condition with moderate erosion in Southwest and Southeast, and severe erosion in Northeast and Northwest quadrants.
- Watercourse is unobstructed with no evidence of scour.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.
- Should repair parapet walls, T-beams, abutments, wingwalls and restore embankments.
- Should repair approaches, adjust guide rail, replace leaning hazard markers and unplug deck drains as part of regular structure maintenance.
- Not costed for replacement for travel deck width deficiency due to low traffic volume.

L. HISTORY/ GENERAL

Bridge No.: 0008

Year: 2009, IAG Install Approach Guiderail, Est Cost: 0

Comments: LOOKING EAST AT BRIDGE
Path: P:\McKellar\2023\P1080153.jpg

Comments: LOOKING WEST AT BRIDGE
Path: P:\McKellar\2023\P1080154.jpg

Comments: SOUTH ELEVATION
Path: P:\McKellar\2023\P1080155.jpg

Comments: NORTH ELEVATION
Path: P:\McKellar\2023\P1080156.jpg

Comments: MINOR COLLISION DAMAGE GUIDE RAIL
Path: P:\McKellar\2023\P1080157.jpg

Comments: SEVERE MAP CRACKING APPROACH WEARING SURFACE
Path: P:\McKellar\2023\P1080158.jpg

Comments: SETTLEMENT OF WEST APPROACH
Path: P:\McKellar\2023\P1080166.jpg

Comments: TYPICAL DECK WEARING SURFACE
Path: P:\McKellar\2023\P1080159.jpg

Comments: LIGHT FLUSHING OF DECK WEARING SURFACE
Path: P:\McKellar\2023\P1080160.jpg

Comments: SEVERE SPALL BARRIER WALL
Path: P:\McKellar\2023\P1080161.jpg

Comments: DEBONDED CONCRETE PATCH BARRIER WALL
Path: P:\McKellar\2023\P1080162.jpg

Comments: WIDE CRACK IN CONCRETE CURB
Path: P:\McKellar\2023\P1080164.jpg

Comments: MEDIUM SCALING ALONG CURB LINE
Path: P:\McKellar\2023\P1080165.jpg

Comments: SEVERE SCALING SOUTHWEST WINGWALL
Path: P:\McKellar\2023\P1080173.jpg

Comments: WIDE VERTICAL CRACK SOUTHWEST WINGWALL
Path: P:\McKellar\2023\P1080174.jpg

Comments: WIDE VERTICAL CRACK NORTHWEST WINGWALL
Path: P:\McKellar\2023\P1080178.jpg

Comments: TYPICAL EAST ABUTMENT
Path: P:\McKellar\2023\P1080167.jpg

Comments: TYPICAL WEST ABUTMENT
Path: P:\McKellar\2023\P1080168.jpg

Comments: TYPICAL SOFFIT
Path: P:\McKellar\2023\P1080169.jpg

Comments: WIDE VERTICAL CRACK WEST ABUTMENT
Path: P:\McKellar\2023\P1080176.jpg

Comments: SEVERE DELAMINATION EXTERIOR FASCIA
Path: P:\McKellar\2023\P1080181.jpg

Comments: SEVERE DELAMINATION T-BEAM GIRDER
Path: P:\McKellar\2023\P1080183.jpg

Comments: SPALLING OF T-BEAM GIRDER
Path: P:\McKellar\2023\P1080175.jpg

Comments: SEVERE DELAMINATION T-BEAM GIRDER
Path: P:\McKellar\2023\P1080177.jpg

Comments: SEVERE SPALLING OF T-BEAM GIRDER
Path: P:\McKellar\2023\P1080179.jpg

Comments: WATER STAINING INTERIOR SOFFIT
Path: P:\McKellar\2023\P1080180.jpg

Comments: SEVERE EROSION OF EMBANKMENT NE QUADRANT
Path: P:\McKellar\2023\P1080163.jpg

Comments: SEVERE EROSION NORTHEAST QUADRANT
Path: P:\McKellar\2023\P1080182.jpg

Comments: WATERCOURSE UNDER BRIDGE
Path: P:\McKellar\2023\P1080170.jpg

Comments: LOOKING NORTH UPSTREAM
Path: P:\McKellar\2023\P1080171.jpg

Comments: LOOKING SOUTH DOWNSTREAM
Path: P:\McKellar\2023\P1080172.jpg

Comments:
Path:

MUNICIPAL CULVERT APPRAISAL

A. IDENTIFICATION

Culvert Name:	Squaw Lake Culvert			Culvert No.:	0002
Road Name:	Balsam Road			Road Section No.	
Location:	4.8 km N of Centre Road			MTO Site No.:	044-0206-
Roadside Env.:	R	Posting Sign:	t t t	Crossing Type:	O-WAT, Over Water
Posting:	t t t	Low Clearnc Sign:	Narrow Structure Sign:	Federal Nav. Waterway:	No
Bylaw No.:		Easting:	17 587627	Culvert Value:	$1,136,000
Bylaw Exp. Date:		Northing:	5044284	Old ID:	

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:		Original Board Order Number:	
Railway Company:		Date:	
Railway Subdivision:		Current Board Order Number:	
Subdivision Mileage:	0	Date:	
Transport Canada Crossing No.:		Seniority:	
Number of Tracks:	0		

C. JURISDICTION

Owner:	86613	Special Designation:	**Local / Area Municipality (Upper Tier Only)**
Owner Share:	100.00 %	Designation 2	MunicA
☐ Shared?		Adjacent Culvert No.:	MunicB
Shared With:			Patrol:
Heritage Status:	R		

D. EXISTING CONDITIONS

Year Consrtucted:	1982	Cell/Span Wdth/Dia.:	6.1	m	End Treatment:	**A**	**B** **C** **D**
Year Extended:		Total Width/Dia:	6.1	m	Upstream:	H	W
Material/ Type:	CPS - ACH	Max Height:	8.0	m	Downstream:	H	W
Crossing Skew:	-00 °	Length:	13.8	m	Soil Condition:	G	
No of Cells/Spans:	1	Type/Depth of Fill: E	0.8	m	Foundation Type:	SF - Spread footings	
		Culvert Floor:	EA				

ROAD OVER CULVERT

Existing Road Class:	200	Platform Width:	8.6	m	Safety Curb/ Sidewalk and Curb	(A)	N / N 0.0 m
Operational Status:	2W - OAT	Surface Width:	6.0	m		(B)	N / S 0.0 m
Surface Type:	LCB	No. of Lanes:	2.0		Roadside Safety:	(A)	N FB
						(B)	S FB

ROAD THROUGH CULVERT

Existing Road Class:		No. of Lanes:	0		Traffic Barrier:	
Operational Status:	-	Median Type/Width:	0		Min Vertical Clearance:	m
Opening Width:	m	Safety Curb/	/	m		
Surface Width:	m	Sidewalk and Curb	/	m		

E. TRAFFIC DATA

Legal Speed Limit: 80

Route Designations

☐ Bus ☐ Truck Route
☒ School ☐ Bicycle

Source:
Culvert 0002 Asset Master

	Traffic Count	10 Year Traffic Forecast
Year:	A-2002-E	2012
AADT:	80	88
DHV Factor:	%	%
DHV:	vph	vph
Trucks:	%	%
Peak Directional Split:	%	Capacity: 0 vph
10 Year Growth Factor:	1.10	20 Year AADT: 96

F. INSPECTIONS

Date: 9/28/2023 Inspected By: Jeff Parkinson Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar Culvert No.: 0002

G. CULVERT NEEDS

Field	MCR	PCR	TON	Comments
Barrel	5	5	6-10	
Foundations	5	5	6-10	
Guiderail/Barrier	5	5	6-10	
Inlet Component	5	5	6-10	
Outlet Component	5	5	6-10	
Streams/Waterways	5	5	6-10	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Culvert				
RO-Platform Width	8.6	6.5	ADEQ	Proj Class: 200, 88 (10 YR, 80*1.1)
RO-Level of Service	A	E	ADEQ	
RO-Roadside Safety	8.8	3	ADEQ	Rdside Safety: 2

Recommended Needs

Impr.Class	Improvement Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total

There are no identified improvements in this inspection.

I. ENGINEERING RECOMMENDATIONS

Culvert Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date/Type:
Closure Type:
Monitoring:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Design Platform Width:
Material/Type: -
Width/Diameter:
Maximum Height:
Culvert Length:
No. of Culverts:
Depth of Fill:

K. IMPROVEMENT COSTS

Total Construction/Rehab	0
Total Inspection	0
TOTAL	0
86613 share @100%	0

INSPECTION NOTES

Culvert No.: 0002

Culvert No. 0002, Squaw Lake Culvert, Lot 17, Concession XIV, Balsam Road, 4.80 km North of Centre Road, Township of McKellar:

- Structure is not posted with a load limit.
- 6.1 m+\- single span steel multi-plate arch culvert.
- Surface treated roadway and approach roads over culvert are in good condition.
- Steel beam guide rail has been provided in all four quadrants and across structure and are in generally good condition with minor collision damage. Terminal end treatments are provided in all four quadrants. Gabion basket retaining walls are provided in the Northeast, Northwest and Southwest quadrants and are in good condition.
- Steel multiplate arch culvert is in generally good condition with light corrosion, localized medium corrosion and encrustation at one bolt location. Improper bolt layout on West side and one bolt has been improperly installed and is loose.
- Concrete headwalls are in generally good condition with narrow stained and unstained cracks.
- Concrete wingwalls are in generally good condition with light to medium honeycombing, water staining and narrow stained and unstained cracks.
- Concrete footings are in generally good condition with light to medium erosion, localized severe erosion in the Southwest quadrant, surface rust stains, narrow to medium stained and unstained cracks, localized wide crack (1.0m², poor).
- Watercourse is obstructed with a beaver dam with no evidence of scour.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.

L. HISTORY/ GENERAL

Culvert No.: 0002

Year: 2018, cIAG Install Approach Guiderails, Est Cost: 0

Comments: LOOKING EAST AT ROADWAY OVER CULVERT
Path: P:\McKellar\2023\P1080081.jpg

Comments: LOOKING WEST AT ROADWAY OVER CULVERT
Path: P:\McKellar\2023\P1080082.jpg

Comments: SOUTH ELEVATION
Path: P:\McKellar\2023\P1080086.jpg

Comments: NORTH ELEVATION
Path: P:\McKellar\2023\P1080094.jpg

Comments: MINOR COLLISION DAMAGE GUIDE RAIL
Path: P:\McKellar\2023\P1080084.jpg

Comments: TYPICAL WEARING SURFACE
Path: P:\McKellar\2023\P1080083.jpg

Comments: VEGETATION ALONG ROADWAY
Path: P:\McKellar\2023\P1080085.jpg

Comments: LOOKING NORTH THROUGH BARREL
Path: P:\McKellar\2023\P1080089.jpg

Comments: BEAVER DAM IN WATERCOURSE
Path: P:\McKellar\2023\P1080091.jpg

Comments: MEDIUM CORROSION OF EAST BARREL WALL AT FOOTING
Path: P:\McKellar\2023\P1080092.jpg

Comments: ENCRUSTATION AT BOLT LOCATION
Path: P:\McKellar\2023\P1080093.jpg

Comments: NARROW STAINED CRACK IN WINGWALL
Path: P:\McKellar\2023\P1080087.jpg

Comments: SEVERE EROSION OF CONCRETE FOOTING
Path: P:\McKellar\2023\P1080090.jpg

Comments: LOOKING SOUTH DOWNSTREAM
Path: P:\McKellar\2023\P1080088.jpg

Comments: LOOKING NORTH UPSTREAM
Path: P:\McKellar\2023\P1080095.jpg

Comments:
Path:

MUNICIPAL CULVERT APPRAISAL

A. IDENTIFICATION

Culvert Name: Blackwater Road Culvert
Road Name: Blackwater Road
Location: 2.0 km S of Hurdville Road
Roadside Env.: R
Posting: t t t
Bylaw No.:
Bylaw Exp. Date:
Posting Sign: t t t
Low Clearnc Sign: Narrow Structure Sign:
Easting: 17 592189
Northing: 5031755
Culvert No.: 0010
Road Section No.
MTO Site No.:
Crossing Type: O-WAT, Over Water
Federal Nav. Waterway: Unknown
Culvert Value: $1,036,000
Old ID:

B. RAILWAY OVERPASS/UNDERPASS

Railway Level Crossing Number:
Railway Company:
Railway Subdivision:
Subdivision Mileage:
Transport Canada Crossing No.:
Number of Tracks:
Original Board Order Number:
Date:
Current Board Order Number:
Date:
Seniority:

C. JURISDICTION

Owner: 86613
Owner Share: 100.00 %
☐ Shared?
Shared With:
Heritage Status: R
Special Designation:
Designation 2
Adjacent Culvert No.:

Local / Area Municipality (Upper Tier Only)
MunicA
MunicB
Patrol:

D. EXISTING CONDITIONS

Year Consrtucted: 2017
Year Extended:
Material/ Type: CST - PA
Crossing Skew: 0 °
No of Cells/Spans: 1
Cell/Span Wdth/Dia.: 4.4 m
Total Width/Dia: 4.4 m
Max Height: 2.9 m
Length: 15.0 m
Type/Depth of Fill: E 1.0 m
Culvert Floor: SC
End Treatment: **A B C D**
Upstream: H R
Downstream: H R
Soil Condition: G
Foundation Type: BD- Bedding

ROAD OVER CULVERT

Existing Road Class: 200
Operational Status: 2W - OAT
Surface Type: A
Platform Width: 8.0 m
Surface Width: 6.0 m
No. of Lanes: 2.0
Safety Curb/ Sidewalk and Curb (A) N / N 0.0 m
(B) N / S 0.0 m
Roadside Safety: (A) N FB
(B) S FB

ROAD THROUGH CULVERT

Existing Road Class:
Operational Status: -
Opening Width: m
Surface Width: m
No. of Lanes:
Median Type/Width:
Safety Curb/ / m
Sidewalk and Curb / m
Traffic Barrier:
Min Vertical Clearance: m

E. TRAFFIC DATA

Legal Speed Limit: 80

Route Designations
☐ Bus ☐ Truck Route
☐ School ☐ Bicycle

Source:
Culvert 0010 Asset Master

Traffic Count		10 Year Traffic Forecast	
Year:	2002	Year:	2012
AADT:	80	AADT:	
DHV Factor:	%	DHV Factor:	%
DHV:	vph	DHV:	vph
Trucks:	%	Trucks:	%
Peak Directional Split:	%	Capacity:	0 vph
10 Year Growth Factor:		20 Year AADT:	0

F. INSPECTIONS

Date: 9/28/2023 Inspected By: Jeff Parkinson
Approved By: D. Baxter, P.Eng.

Municipality: Township of McKellar
Culvert No.: 0010

MUNICIPAL CULVERT APPRAISAL

G. CULVERT NEEDS

Field	MCR	PCR	TON	Comments
Barrel	5	6	6-10	
Foundations	6	6	ADEQ	
Guiderail/Barrier	6	6	ADEQ	
Inlet Component	6	6	ADEQ	
Outlet Component	6	6	ADEQ	
Streams/Waterways	6	6	ADEQ	

H. FUNCTIONAL NEEDS

Field	Existing	Min Tolerable	Time of Need	Comments
Road Over Culvert				
RO-Platform Width	8	6.5	ADEQ	Proj Class: 200, 80 (10 YR, 80*1)
RO-Level of Service	A	E	ADEQ	
RO-Roadside Safety	3.9	3	ADEQ	Rdside Safety: 2

Recommended Needs

Impr.Class	Improvement	Description	Time of Need	Year	Base/ Const Cost	Eng/Cont	Total

There are no identified improvements in this inspection.

I. ENGINEERING RECOMMENDATIONS

Culvert Drawings:
Estimated Posting: t
Evaluated Posting: t t t
Closure Date/Type:
Closure Type:
Monitoring:
Monitoring Component:

J. DESIGN PARAMETERS

Design Class:
Design Platform Width:
Material/Type: -
Width/Diameter:
Maximum Height:
Culvert Length:
No. of Culverts:
Depth of Fill:

K. IMPROVEMENT COSTS

Total Construction/Rehab	0
Total Inspection	0
TOTAL	0
86613 share @100%	0

INSPECTION NOTES

Culvert No.: 0010

Culvert No. 0010, Blackwater Road Culvert, Lot 18, Concession I, Blackwater Road, 2.0 km South of Hurdville Road, Township of McKellar:

- Structure is not posted with a load limit.
- 4.37m+/- single span steel pipe arch culvert.
- Asphalt paved roadway over the culvert is in good condition.
- Steel beam guide rail on steel posts has been provided over the structure and on the approaches and is in good condition.
- Rip rap roadway embankments are in generally good condition with minor erosion.
- Gabion basket head wall and retaining walls are in excellent condition.
- Steel pipe arch culvert is in good condition with light corrosion at the waterline.
- Watercourse is unobstructed with no evidence of scour.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.

L. HISTORY/ GENERAL

Culvert No.: 0010

Year: 2017, cRBC Replace bridge with culvert, Est Cost: 0

Comments: LOOKING WEST AT ROADWAY OVER CULVERT
Path: P:\McKellar\2023\P1080309.jpg

Comments: LOOKING EAST AT ROADWAY OVER CULVERT
Path: P:\McKellar\2023\P1080310.jpg

Comments: SOUTH ELEVATION
Path: P:\McKellar\2023\P1080312.jpg

Comments: NORTH ELEVATION
Path: P:\McKellar\2023\P1080319.jpg

Comments: MINOR EROSION OF EMBANKMENT
Path: P:\McKellar\2023\P1080311.jpg

Comments: LOOKING NORTH THROUGH BARREL
Path: P:\McKellar\2023\P1080313.jpg

Comments: LOOKING SOUTH DOWNSTREAM
Path: P:\McKellar\2023\P1080314.jpg

Comments: LOOKING SOUTH THROUGH BARREL
Path: P:\McKellar\2023\P1080316.jpg

Comments: LOOKING NORTH UPSTREAM
Path: P:\McKellar\2023\P1080317.jpg

Comments: LIGHT CORROSION OF BARREL AT WATERLINE
Path: P:\McKellar\2023\P1080315.jpg


GHD