

# THE TOWNSHIP OF CALVIN





# BRIDGE MANAGEMENT STUDY REPORT 6 BRIDGES

**NOVEMBER 2024** 

Report Submitted By:



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# 1.0 INTRODUCTION

The Township of Calvin (the Township) has retained HP Engineering to perform inspections and develop a bridge management study for 6 structures owned and maintained by the Township.

Each structure in the Township's inventory was visually inspected using the Ministry of Transportation of Ontario's (MTO) Structure Inspection Manual. HP Engineering has entered the data from the inspections into individual inspection forms. The data for each structure present visual observations, suggested rehabilitation, further required investigation and budget cost information. Refer to the appendices for individual inspection sheets for bridges and culverts.

The following report summarizes the suggested rehabilitation / replacement costs, engineering investigation costs and replacement values for each structure based on benchmark budget costs.

Appendix A presents summary tables for all structures. The structures are listed in numerical order of structure number, and the rehabilitation / replacement costs (determined from benchmark budget costs) for each structure.

# 2.0 STRUCTURE INSPECTIONS

A total of 6 structures owned and maintained by the Township were visually inspected in accordance with the MTO Structure Inspection Manual. The inspections were performed during the summer of 2024.

For each structure, components were screened for visual signs of deterioration. The components were then given a rating (on the inspection forms) using the MTO extent and severity method, whereby the components are proportioned (in units of m², %, m, etc.) based on their observed conditions (excellent, good, fair, poor). This provides quantitative data as to the extent of the observed deterioration for each component. Explanatory statements accompany each of the components' ratings where deemed applicable by the inspector.

The inspection forms also provide information regarding suggested engineering investigation and repairs and associated budgetary estimates of expected costs. Suggested engineering investigations are subdivided based on time of need. Repairs and associated budgetary estimates are subdivided based on time of need. The basis of selection for budget costs is further discussed in Section 3.0 of this report.

Photographs of each inspected structure are included with the inspection sheets including a minimum of 2 photographs for each structure (approach and elevation). Additional photographs depicting the details of the structure, observed defects or deterioration have also been included.

Individual inspection forms for the structures are included as an attachment where the structures are separated into alphabetical order.

# 3.0 DETERMINATION OF COSTS

# 3.1 Repair, Rehabilitation and Replacement

Given the cursory information obtained during the visual inspections and without the benefit of detailed design information, it is impractical to develop detailed cost estimates for each structure. For these reasons, benchmark budget costs were developed for categories of repair, rehabilitation and replacement. Traditionally, benchmark costs do not necessarily provide accurate costs for individual repairs /

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replacement, but have proven to provide sufficient accuracy for global budgeting purposes when dealing with a large number of structures.

For the purpose of this study, benchmark costs for the rehabilitation and replacement of structures are based on maintaining the existing width, length and alignment of each structure. However, the costs to replace the existing structures with structures meeting current geometric standards are included for comparison. For this purpose, an overall roadway width of 10 metres was used for both bridges and culverts. More accurate costs for each structure would be provided upon further engineering study and design based on exact repair, rehabilitation and replacement needs (including change in geometry). The following benchmark costs have been established for this study following the requirements of the inspection forms.

# Bridge and Culvert Replacement Costs

Budget costs for the replacement of bridges are usually based on the deck surface area of individual structures (m²). Therefore, benchmark replacement costs for this study were determined using the following unit costs including approaches, administration and design costs, based on the spans of individual bridges and taking into account approach roadway costs (which do not vary with bridge span). In addition, the varying widths of bridges were taken into account to provide more realistic unit costs and to avoid large discrepancies in the replacement cost between bridges of different lengths, but similar surface areas.

|                   | Total Bridge Ro | eplacement Unit Costs            |
|-------------------|-----------------|----------------------------------|
| bridge Length (m) | Width (m)       | Unit Replacement Cost<br>(\$/m²) |
| 3-10              | <10 m           | \$8,000.00                       |
|                   | ≥10 m           | \$7,500.00                       |
| 10-20             | <10 m           | \$7,500.00                       |
|                   | ≥10 m           | \$6,500.00                       |
| 20-30             | <10 m           | \$6,500.00                       |
|                   | ≥10 m           | \$5,500.00                       |
| >30               | <10 m           | \$5,500.00                       |
|                   | ≥10 m           | \$4,500.00                       |

In the case of culverts, the plan area (or deck surface area) used in the calculation was ('length of spans' + 1 m) x ('width of roadway' + 1 m). The purpose of using the Total Bridge Replacement Unit Costs table for culverts is to normalize the replacement cost figures. Although culverts are generally less expensive to construct than bridges, it is generally accepted that the expected life span is approximately 50% of a bridge. It is valid therefore, on a life cycle cost basis, to utilize the Total Bridge Replacement Unit Costs table for all structures, whether they are bridge type or culvert type.

# Bridge Repair / Rehabilitation Costs

For budgeting purposes, costs for the rehabilitation of bridges are typically expressed as a percentage of the total replacement costs. Rehabilitation costs for this study are separated into four categories as presented in the table below (including administration and design costs).

| Bridge Rehabilitation Costs |                             |                       |  |  |  |  |
|-----------------------------|-----------------------------|-----------------------|--|--|--|--|
|                             | Category                    | % of Replacement Cost |  |  |  |  |
| 1.                          | Major Bridge Rehabilitation | 50-60                 |  |  |  |  |
| 2.                          | Minor Bridge Rehabilitation | 25-50                 |  |  |  |  |
| 3.                          | Major Item Repair           | 5-25                  |  |  |  |  |
| 4.                          | Minor Item Repair           | 5 or less             |  |  |  |  |

# Culvert Repair / Rehabilitation Costs

It is generally not practical to undertake major rehabilitation work to culvert crossings where significant deterioration or deficiencies exist in the metal liner (barrel). Culvert replacement is normally planned in these circumstances. Repair work identified generally included repairs to the inlet and outlet structures such as headwalls, cut-off walls, retaining walls, restoration of backfill, slope protection at the culvert ends and installation / upgrading of guiderail. In the case of concrete barrels, some repair work to the barrels may be included if the opening is large enough to permit construction access.

# Approach Roadway Repair / Rehabilitation Costs

For this study, approaches are considered to be 30m of roadway from the centre of each individual culvert (60 m total per culvert) and 6m of roadway from the end of the deck for each individual bridge (12m total per bridge). Repair / rehabilitation costs for approach roadways have been separated into three categories as presented in the table below (including administration and design costs).

Separate costs for Approach Roadway Repair / Rehabilitation have been included for Bridge Rehabilitation. For structure replacement costs and repairs, the approach roadway repair / rehabilitation costs have been included in the recommended work costs if applicable.

|    | Approach Roadway Repair/Rehabilita   | ation Costs |
|----|--|-------------|
|    | Category   | Cost        |
| 1. | Capital Projects (Partial / Complete Paving,<br>Guiderail)                         | \$40,000.00 |
| 2. | Minor Repairs / Maintenance (Crack Sealing,<br>Surface Sealing, Guiderail Repairs) | \$14,000.00 |
| 3. | Crack Sealing Only   | \$7,000.00  |



# Construction Detour Costs

Several alternatives exist to maintain the flow of traffic when a bridge or culvert undergoes major rehabilitation or replacement. These include the construction of a detour structure adjacent to the existing structure, a detour route around (avoiding) the structure, and the staging of the construction to allow traffic on the structure during construction. The construction of a detour structure is the most costly option and is usually recommended only when the other options are not possible. The detour route is the least expensive option, but is often not practical due to the length of the detour route and the inconvenience to residents near the structure. The most frequently recommended option is the staging of rehabilitation work to allow the passage of traffic.

Since most bridge projects would consist of rehabilitation and not replacement, the staging of work would be the most frequently used option to maintain traffic during construction. Therefore, the benchmark costs for detours are based on staging of the work as per the following. These costs are based on additional costs incurred from staging of the work during construction (extra effort, time). Traffic control costs would be separate from detour costs and are presented later in this section.

| Detour During Construction Costs |  |              |  |  |  |  |  |
|----------------------------------|--|--------------|--|--|--|--|--|
|                                  | Category   | Cost         |  |  |  |  |  |
| 1.                               | Detour - Minor Rehabilitation / Major<br>Rehabilitation of Bridges Less than 10m Long /<br>Culvert Replacement | \$30,000.00  |  |  |  |  |  |
| 2.                               | Detour - Major Rehabilitation / Bridge<br>Replacement  | \$100,000.00 |  |  |  |  |  |

# Traffic Control Costs

In addition to performing the work in stages to accommodate traffic, the safety of traffic passing on the bridge or over the culvert during construction must also be ensured. The costs of traffic control during staged projects would be as follows:

|    | Traffic Control Costs                  |             |
|----|--|-------------|
|    | Category                               | Cost        |
| 1. | Traffic Control- Minor Rehabilitation  | \$30,000.00 |
| 2. | Traffic Control - Major Rehabilitation | \$50,000.00 |

# Utilities / Right of Way Costs

Most bridge or culvert rehabilitation / replacement projects do not require substantial expenses for the installation or modification of existing utilities. Similarly, most of these projects do not require an increase in right of way. Therefore, specific benchmark budget costs for these items were not developed.

# **Environmental Study Costs**

Since bridge or culvert replacements / rehabilitations typically do not involve a change in alignment or a reduction in clearances under the structure, these projects usually fall under the Schedule A or A+ Environmental Assessment for Ontario Highways. This type of environmental assessment does not require detailed environmental and mitigation plans, but typically requires written application with, and permission from, the appropriate environmental agencies (Ontario Ministry of Natural Resources, Ontario Ministry of the Environment, Local Conservation Authorities (Permit To Take Water)). Therefore, the benchmark budget cost for environmental study would be as follows (based on the requirement of Schedule A or A+ Environmental Assessment):

|    | Environmental Study Cost  | S          |
|----|---|------------|
|    | Category  | Cost       |
| 1. | Bridge / Culvert Replacement, Minor and<br>Major Rehabilitation | \$9,500.00 |

# Other Costs

Any other costs not specified in the above (site specific requirements) are deemed to be covered in the total benchmark costs. Therefore, no specific amount for other work is specified in this report.

# **Contingency Costs**

The benchmark costs used for budgeting purposes are based only on information obtained from visual inspections. Because of this, contingency allowances are already built into the benchmark costs. Therefore, specific amounts for contingencies will not be included in this report.

### Recommended Replacement Costs

For the purposes of this report, when a structure (bridge or culvert) replacement has been recommended, all associated costs (approaches, detours, traffic control, utilities, right of way, environmental studies and contingency) have been included in the replacement cost provided in the 'Repair and Rehabilitation Required' table on the inspection forms.

# 3.2 Engineering Investigation

Further engineering investigation is recommended for several of the bridges and culverts as indicated on individual inspection forms. Benchmark budget costs for engineering investigation work are presented in the table below:



| Engineering Investigation  |   |  |             |  |  |  |  |
|--|---|--|-------------|--|--|--|--|
|  | Category  | Type of Structure  | Cost        |  |  |  |  |
| Access to the control of the control |   | Truss  | \$27,500.00 |  |  |  |  |
| 1.   | Detailed Inspection / Rehabilitation<br>Study - Full Bridge | Others   | \$22,000.00 |  |  |  |  |
|  | Stady Tun Brings  | Traffic Barrier Only *   | \$5,500.00  |  |  |  |  |
|  |   | Exposed Deck   | \$5,500.00  |  |  |  |  |
|  | Detailed Deck Condition Survey                              | Asphalt Paved Deck   | \$8,800.00  |  |  |  |  |
| 2.   |   | Concrete Culvert with<br>Height of Fill Less than<br>500 mm ** | \$5,500.00  |  |  |  |  |
|  |   | Truss  | \$16,500.00 |  |  |  |  |
| 3.   | Structure Evaluation  | Others   | \$11,000.00 |  |  |  |  |
| 4.   | Underwater Investigation                                    | All Bridges  | \$11,000.00 |  |  |  |  |

- \* Requirements for traffic barriers on bridges and culverts were determined using the Canadian Highway Bridge Design Code, MTO Standards and good engineering practice. The evaluation of existing traffic barriers was based on assumed values of AADT and good engineering practice. For structures with existing approach guiderail, a review of the required approach / leaving end length of guiderail and end treatments (as per the MTO's Roadside Safety Manual) was not carried out.
- \*\* Deck condition survey on concrete culvert includes cores with no corrosion potential survey. Deck condition surveys on concrete culverts with a height of fill greater than 500 mm are not practical.

The benchmark budget costs for a Structure Evaluation and Detailed Deck Condition Survey would be reduced to 50% of that shown in the table above when any one these are performed simultaneously with a Detailed Inspection / Rehabilitation Study.

Other investigations such as fatigue and seismic investigations would be included with the Detailed Inspection and Structure Evaluation (respectively), if deemed necessary by the engineer. Detailed coating condition surveys are typically only required where a failure of coating systems have occurred other than normal deterioration. A DART (Deck Assessment by Radar Technology) survey is not a commonly used investigation method. Detailed deck condition surveys are the most commonly used method of deck inspection. Therefore, individual costs for the various types of investigation described above are not provided.

# 4.0 BRIDGE CONDITION INDICES (BCI)

Bridge Condition Index (BCI) values were derived using MTO's standard methods as outlined in their document entitled 'Bridge Condition Index, an Overall Measure of Bridge Condition' (July 2009). Based on this document, we utilize an excel spreadsheet (developed based on the parameters outlined in the document) that, after inputting the inspection data for each element (condition ratings), automatically calculates the BCI value.

With the calculated BCI values for each structure, an *overall* picture of the general condition of the Municipality's structures inventory as a whole can then be presented by summarizing BCI ranges (good, fair, poor) and counting the overall percentage of structures in each category. This is the methodology that the MTO currently utilizes and it is generally an effective tool to determine where the Township stands in terms of the overall condition and maintenance needs for their structure inventory. This information can be used to compare the overall condition of various structures, to assist in prioritizing structures for future rehabilitation and assist in the funding application process.

The BCI ranges that are normally included in this summary table are as follows:

- Good (BCI Range 70-100); for this range, maintenance is not usually required with the next five years.
- Fair (BCI Range 60-70); for this range, maintenance work is usually required / scheduled within the next five years. Carrying out work within this timeframe (next five years) is typically considered the ideal time to get the most out of bridge spending.
- Poor (BCI Less than 60); for this range, maintenance work is usually required / schedule with the next year.

For the Township's inventory (6 structures total), the current summary of BCI ranges is presented as follows (individual structure BCI values are presented in the tables in *Appendix A*):

| BCI Range    | Number of Structures in Range | Percent of Structures in Range |
|--------------|-------------------------------|--------------------------------|
| 70-100       | 5                             | 83.3                           |
| 60-70        | 1                             | 16.7                           |
| Less than 60 | 0                             | 0.0                            |



# 5.0 ROUTINE MAINTENANCE

As part of the Township's overall bridge management program, a program of routine maintenance should be implemented and up-kept for all structures. Maintaining this program will assist in minimizing the potential for premature deterioration of structural elements; and, when combined with a program of bridge rehabilitation, will assist in maximizing the useful service life of the Township's structure inventory.

Overall routine maintenance needs will vary depending on the type of structure, location, traffic volumes, winter maintenance procedures (sanding vs. salting, etc.), size of the structure, vintage and previous maintenance / rehabilitation carried out on the structure in the past. The following presents a general summary of routine maintenance operations that are considered applicable for the structures present within the Township's inventory:

- Periodic bridge cleaning; this would include power-washing of all components exposed to roadway
  traffic and areas where debris accumulation is prevalent. This would include asphalt wearing
  surfaces, expansion joint gaps, edges of roadway, bearing seats, truss bottom chords, etc. Typically
  this operation would be carried out on an annual basis, most likely each spring after winter sanding /
  salting operations have ceased; however, in some cases (i.e. gravel approach roadways, etc.), an
  increase in the number of cleanings per year may be required.
- Concrete spot repairs; this would generally include localized patching of small concrete spalls and
  delaminations located in areas within the roadway splash zones (top of deck, curbs, expansion joint
  block-outs, etc.). Completing these repairs will assist in preventing accelerated deterioration of
  concrete in these areas by reducing the ingress of chlorides, etc. There is no specific timing for these
  types of repairs and they are generally performed on an as-needed basis.
- Steel spot repairs / spot coating; this would generally include localized touch-ups to steel coatings
  located in areas within the roadway splash zones (truss bottom chords, exterior floor beams /
  stringers, etc.) as well as localized spot repairs in areas of appreciable section loss / corrosion. There
  is no specific timing for these types of repairs and they are generally performed on an as-needed
  basis.
- Clearing of debris in waterway; this would include clearing of trapped debris in the vicinity of the structure (upstream / downstream). This operation would typically be carried out on an annual basis, after the spring run-off period.
- Asphalt surface repairs / rout and seal; this would include cold patch asphalt repairs, routing and sealing of wide cracks in asphalt. This operation would typically be carried out an annual basis, after winter clearing operations have ceased.
- Re-grading of approach roadways (gravel roadway surfaces); this would include placing and grading
  fresh granular material on roadway surfaces. The timing of this work would depend on the overall
  volume and type of traffic typically traversing the roadway (truck haul route, summer cottage traffic
  route, etc.). Typically this work would be carried out on an annual or bi-annual basis.
- Bridge deck drainage; this would include maintaining existing deck drains free of debris and maintaining them in an un-plugged condition. This operation would typically be carried out an annual basis, after winter clearing operations have ceased.

- Clearing of debris / vegetation from approach guiderail; this would involve removing debris and
  vegetation from in front of approach guiderail. Although this is mainly a safety measure (to ensure
  proper performance of the guiderail), it also assists in prolonging the lifespan of the guiderail
  (accumulation of debris can accelerate rot on wooden posts, corrosion on steel guiderail, etc.).
- Surface sealing of exposed concrete surfaces; this would include cleaning and applying a concrete sealer on concrete surfaces exposed within the splash zone (exposed concrete decks, curbs, sidewalks and barrier walls); this operation is not typically required on an annual basis and would typically be completed in 3-5 year intervals. Sealing concrete surfaces periodically assists in minimizing the migration of chlorides into the concrete.

# 6.0 ASSET MANAGEMENT INFORMATION

As previously mentioned, all structures were visited and inspected in conformance with the requirements of the Ontario Structure Inspection Manual (2008 Revision). Based on the results of the inspections, repair / rehabilitation needs and budgetary costs for these were identified. In addition, additional engineering inspections and studies were also recommended.

Although OSIM inspections (generally performed every 2 years) are a useful screening tool to identify upcoming bridge maintenance needs and costs, these inspections solely rely on visual evidence of deterioration and do not take into account the age (life cycles) of individual structures, nor do they take into account the potential for hidden deterioration (which could be revealed with further investigations such as detailed bridge condition surveys, rehabilitation studies, etc.).

In order to provide the Township with a more useful planning tool for structure maintenance, rehabilitation and replacement, all of the information gathered from the OSIM inspections was summarized in an Asset Information Summary table.

### Asset Management Summary

This set of tables presents basic asset information for the structures such as structure name, type of structure and basic geometry. The replacement value for each structure (based on current and widened geometry, in the case where the width of the existing structures are deficient) is also provided. These values are presented in 2024 dollars. The BCI calculated for each structure is also provided.

The BCI values were calculated using the method established by the Ministry of Transportation of Ontario. This method takes into account the quantities for poor, fair, good and excellent for each of the elements and determines the cost of the rehabilitation needs. The BCI is determined by dividing the remaining value of the bridge (value of the bridge less cost of the rehabilitation needs) by its initial value (in new condition).

# 7.0 DISCUSSION

This Bridge Management Asset Study was developed to provide the Township of Calvin with the necessary information required to project budgets and set priorities for future bridge and culvert rehabilitation / replacement programs. The attached inspection sheets should be updated accordingly as repairs and rehabilitations are carried out.



Replacement, rehabilitation and engineering investigation budget costs were provided for 6 of the Township's structure based on visual biennial inspections performed by HP Engineering (during the summer of 2024).

The costs for individual structures are presented on inspection forms and were based on benchmark costs developed for this study. These should be used for budgeting purposes only. More accurate cost estimates for each structure's needs would be provided based on more detailed scopes of work developed during the design engineering stages.

The estimated replacement value of the Township's bridge and culvert inventory (based on 6 structures in the inventory) is approximately 5.8 million dollars. The estimated value of all the bridges and culverts (based on 6 structures in the inventory) if reconstructed to current geometric standards would be approximately 7.5 million dollars.

Immediate repair / rehabilitation costs for the 6 structures inspected are estimated to be a total of approximately 130 thousand dollars. The longer term repair / rehabilitation costs (1-5 years or 6-10 years) for the 6 structures inspected are estimated to be 161 thousand dollars.

The costs associated with recommended further Engineering Investigations for the 6 structures inspected was estimated to be a total of approximately 40 thousand dollars.

Respectfully Submitted, November 8, 2024





Tashi Dwivedi, P.Eng. Principal

# APPENDIX A

# ASSET MANAGEMENT SUMMARY (6 STRUCTURES)

2024 Biennial Inspection

# Appendix A: Asset Information Summary - Bridges

|  |                              | diture per  | Total<br>(\$000)             |  | 0.00 | 162.00   | 8  | 0.00          | 86.50              | 000           | 63.00                                   |                      | 312  |        |
|--|------------------------------|---|------------------------------|--|------|--|--|---------------|--------------------|---------------|---|----------------------|------|--------|
| Work   |                              | Work Expe   | 2028                         |  |      |  |  |               |                    |               |   |                      | 0    |        |
| laor Capital                                 |                              | Estimated Major / Minor Capital Work Expenditure per<br>Year (8000) | 2027                         |  |      | 1620   |  |               |                    |               | の語の形式を                                  |                      | 162  |        |
| Prioritization of Major / Minor Capital Work |                              | l Major / Mi  | 2026                         |  |      |  |  |               | 86.5               |               | September 1                             |                      | 87   |        |
|  |                              |   | 2025                         |  |      | SECTION ASSOCIATION AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRES | STATE WAS A STATE OF  |               |                    |               | 63.0                                    |                      | 63   |        |
| Ē  |                              | Prioritize Year of<br>Need -  | Major/Minor<br>Capital Works |  | N/N  |  | •  | N/A           | 2                  | VVV           |   |                      |      |        |
| Costs  | Engineering<br>Investigation | Costs<br>(\$000)  | Normal                       |  | c    |  | 10   | 10            | 5.0                | -             | 46                                      | 2                    | UV . |        |
| Benchmark Budget Costs                       | Costs                        |   | 6-10 Years                   |  | •    |  | 0  | 0             | U                  |               |   | 0                    |      | 0      |
| Benchn                                       | habilitation                 | (8000)  | <1 year 1-5 Years 6-10 Years |  | 4    | 0  | 161  | 0             | C Carrier          | ,             |   | 0                    | 191  |        |
|  |                              | i<br>Ig   | <1 year                      |  | 1    |  | 0 22   | 0 22          | 1                  |               | 3                                       | 70 48                | 120  | ner    |
|  |                              | Standards<br>(S000)   |                              | W. C. Transport Control of the Contr |      | 373  | 2,587  | 2 100         | 26 110 20 20 20 20 |               | 100000000000000000000000000000000000000 | 069                  |      | 7,334  |
|  | Replacement Cost -           | Existing Geometry<br>(S000)   |                              |  |      | 232  | 1,595  | 1 000         | 766,1              | 208           | 1,206                                   | 009                  |      | 5,772  |
|  |                              | Area<br>(m²)  |                              |  |      | 29   | 290  |               | 429                | 28            | 191                                     | 80                   |      |        |
|  | Roadway                      | Width (m)   |                              |  |      | 5.50   | 4.50   |               | 8.60               | 4.75          | 7.90                                    | 8.50                 |      |        |
|  | Width                        | (Perpendicular to<br>roadway)<br>(m)                                |                              |  |      | 6.30   | 5.60   |               | 10.10              | 5.30          | 8.70                                    | 10.00                |      |        |
|  | Total Length                 | (Parallel to<br>Roadway)<br>(m)                                     |                              |  |      | 4.60   | 54 RD  | 3             | 42.50              | 4.90          | 18.48                                   | 8.00                 |      |        |
|  | Number<br>of<br>Spans        |   |                              |  |      | -  | AND DESCRIPTION OF THE PERSON  | •             | 1                  |               | -                                       |                      |      |        |
|  | Year<br>of<br>Last<br>Rehab  |   |                              |  |      |  | Consequent/Conse   |               |                    |               |   |                      |      |        |
|  | Year<br>Built<br>(Ago)       |   |                              |  |      | 2018   | ALC: NO PERSONS AND ADDRESS OF THE PERSONS AND ADDRESS AND ADDRESS OF THE PERSONS AND ADDRESS AN | •             | 1988               |               | 2012                                    | 1983                 |      |        |
|  | Bridge<br>Type               |   |                              |  |      | Concrete Rivid Frame   | Collecte Lagrange  | Steel Girder  | Steel Girder       | Timber Girder | Steel Girder                            | Concrete Rigid Frame |      |        |
|  | Bridge<br>Name               |   |                              |  |      | Hackanhooks Bridge   | Hackenbloke Blidge   | Walley Bridge | Crothers Bridge    | -             |   | Crosses Bridge       |      | TS     |
|  | Site<br>No                   |   |                              |  |      | ā  | g  | 82            | B3                 | 84            |   | 180                  | 8    | TOTALS |

# NOTES:

1. BCI as calculated by HP Engineering.

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# ATTACHMENT 1

# OSIM INSPECTION REPORTS & BCI FORMS

# **BRIDGES**

# Structure Condition Summary Form

Structure Name Hackenbroke Bridge
Structure Number B1
Date of Inspection August 9, 2024
Project No.
Consultant HP Engineering Inc.

| Maintenance<br>Need                                    | 8     | 00             | 00              | 00              | 00                    | 00                  | 00                       |
|--|-------|----------------|-----------------|-----------------|-----------------------|---------------------|--------------------------|
| Performance<br>Deficiency                              | 00    | 00             | 00              | 00              | 00                    | 00                  | 00                       |
| Element<br>Condition<br>Index                          | 75    | 75             | 75              | 75              | 75                    | 75                  | 17                       |
| Current<br>Element<br>Value<br>(CEV)                   | 31725 | 459            | 3750            | 10631           | 9817                  | 759                 | 21219                    |
| Total<br>Replacement<br>Value (TRV)                    | 42300 | 612            | 2000            | 14175           | 13090                 | 1013                | 29925                    |
| Element<br>Quantity in<br>Poor<br>Condition<br>(0)     | 0.00  |                | 00.0            | 00.0            | 0.00                  | 00.0                | 0.00                     |
| Element<br>Quantity in<br>Fair<br>Condition<br>(0.4)   | 000   | 00.0           | 8 6             | 8.0             | 000                   | 00.0                | 10.00                    |
| Element<br>Quantity in<br>Good<br>Condition<br>(0.75)  | 47.00 | 00 00          | 25.00           | 40.50           | 37.40                 | 07:75               | 75.50                    |
| Element<br>Oty. in<br>Excellent<br>Condition<br>(1.00) | 000   | 9 6            | 0.00            | 0.00            | 00:0                  | 900                 | 0.00                     |
| Total<br>Element<br>Quantity                           | 00 74 | 47.00          | 102.00          | 75.00           | 27.40                 | 04.70               | 85.50                    |
| Unit Price<br>(MTO)                                    | 00000 | 900.00         | 900             | 200.00          | 350.00                | 350.00              | 350.00                   |
| Unit<br>(Qty.)   | ,     | æ:bs           | Sq.m            | Ε,              | E.P.                  | E-bs                | 8. E. P.S.               |
| Element Group Element Name                             |       | Abutment Walls | Wearing Surface | Railing Systems | Deck Top - Thick Slab | Soffit - Thick Slab | Wearing Surface<br>Walls |
| Element Group  |       | Abutment       | Approaches      | Barriers        |                       | Decks               | Retaining Walls          |

|                                 |   | Importance Factor for Traffic | Importance Factor for Economic Impacts | Importance Factor for Bridge Width | Importance Factor for Bridge Profile or Alignment |  |
|---------------------------------|---|-------------------------------|--|------------------------------------|---|--|
| 74                              |   | 0                             | 0                                      | 0                                  | 0   |  |
| Bridge Condition<br>Index (BCI) | • | _=                            |  | _*                                 |   |  |

BRIDGE

| Road Name: Peddlers Drive  Structure Location Latitude  Owner(s)  Township of Calvin  Heritage Designation Desig./not List Desig. & List Desig./not List Desig | Main Hwy/Road # Peddlers Drive   | Structure Name        | Hackenbroke Bridge      |      |           |                                   |                 |               |           |
|--|--|-----------------------|-------------------------|------|-----------|-----------------------------------|-----------------|---------------|-----------|
| Road Name:   Peddlers Drive   Structure: Rail   Road   Pedestrian   Other  | Road Name:   Peddlers Drive   Structure: Rail   Road   Pedestrian   Other  | Main Hwy/Road #       | 9                       |      | (-(,,,)   |                                   |                 |               |           |
| Latitude 46° 14′ 10″ N Longitude 78° 56′ 31″ W  Owner(s) Township of Calvin Heritage Designation Desig. Act List Desig. Act Li | Latitude   | Road Name:            | Peddlers Drive          |      |           | Rail Roa                          | ad Pedestr      | rian Other    |           |
| Owner(s) Township of Calvin  | Owner(s)  Township of Calvin  Beritage Designation Desig/not List Desig, & List Desig, List Desig, Arterial Collector Loc MTO Region  Road Class: Freeway Arterial Collector Loc MTO District Posted Speed No. of Lanes  Concrete Rigid Frame Detour Length Around Structure Designation Structure  Detour Length Around Structure  Concrete Rigid Frame Detour Length Around Structure  Detour Length Around Structure  Company Width Company | Structure Location    | 0.96 km West of Beckett | Ln   |           |                                   |                 |               |           |
| Designation Desig/not List Desig. & List MITO Region - Road Class: Freeway Arterial Collector Local MITO District - Posted Speed - No. of Lanes 2 Old County - AADT - % Trucks - Geographic Twp Special Routes Transit Truck School Bicycle Structure Type Concrete Rigid Frame Detour Length Around Structure - (km) Total Deck Length 4.6 (m) Fill on Structure - (m) Overall Str. Width 6.3 (m) Skew Angle - (Degrees) Total Deck Area 29 (m²) Direction of Structure East/West Roadway Width 5.5 (m) No. of Spans 1 Span Lengths 3.6 (m)  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 2022 Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Last Evaluation - Last Evaluation - Last Underwater Inspection - Last Underwater       | MTO Region - Road Class: Freeway Arterial Collector Loc MTO District - Posted Speed - No. of Lanes 2 Old County - AADT - % Trucks - Geographic Twp Special Routes Transit Truck School Bicy Structure Type Concrete Rigid Frame Detour Length Around Structure - (km) Total Deck Length 4.6 (m) Fill on Structure - (m) Overall Str. Width 6.3 (m) Skew Angle - (Deg Total Deck Area 29 (m²) Direction of Structure East/West Roadway Width 5.5 (m) No. of Spans 1  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 20 Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law# - Last Evaluation  | Latitude              | 46° 14' 10" 1           | V    | Long      | gitude                            | I = =           | 78° 56' 31" W |           |
| MTO Region - Road Class: Freeway Arterial Collector Local MTO District - Posted Speed - No. of Lanes 2 Old County - AADT - % Trucks - Geographic Twp Special Routes Transit Truck School Bicycle Structure Type Concrete Rigid Frame Detour Length Around Structure - (km) Total Deck Length 4.6 (m) Fill on Structure - (m) Overall Str. Width 6.3 (m) Skew Angle - (Degrees) Total Deck Area 29 (m²) Direction of Structure East/West Roadway Width 5.5 (m) No. of Spans 1  Span Lengths 3.6 (m)  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 2022 Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law # - Last Evaluation - Last Underwater Inspection  | MTO Region - Road Class: Freeway Arterial Collector Loc MTO District - Posted Speed - No. of Lanes 2 Old County - AADT - % Trucks - Geographic Twp Special Routes Transit Truck School Bicy Structure Type Concrete Rigid Frame Detour Length Around Structure - (km) Total Deck Length 4.6 (m) Fill on Structure - (m) Overall Str. Width 6.3 (m) Skew Angle - (Deg. Total Deck Area 29 (m²) Direction of Structure East/West Roadway Width 5.5 (m) No. of Spans 1  Span Lengths 3.6 (m)  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 20 Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law# - Last Evaluation - 1   | Owner(s)              | Township of Calvin      |      |           | anation                           | t Cons.         | Not App. Lis  |           |
| MTO District  - Posted Speed - No. of Lanes 2 Old County - AADT - % Trucks - Geographic Twp Special Routes Transit Truck School Bicycle Structure Type  - Concrete Rigid Frame - Detour Length Around Structure - (km) Total Deck Length 4.6 (m) Fill on Structure - (m) Overall Str. Width 6.3 (m) Skew Angle - (Degrees) Total Deck Area 29 (m²) Direction of Structure East/West Roadway Width 5.5 (m) No. of Spans 1  Span Lengths 3.6 (m)  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 2022 Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law # - Last Underwater Inspection -  | MTO District - Posted Speed - No. of Lanes 2 Old County - AADT - % Trucks - Geographic Twp Special Routes Transit Truck School Bicy Structure Type Concrete Rigid Frame Structure - Concrete Rigid Frame Transit Truck School Bicy Structure - Concrete Rigid Frame Transit Truck School Bicy Structure - Concrete Rigid Frame Transit Truck School Bicy Structure - Concrete Rigid Frame Transit Truck School Bicy Structure - Concrete Rigid Frame Transit Truck School Bicy Structure - Concrete Rigid Frame Transit Truck School Bicy Structure - Concrete Rigid Frame Transit Truck School Bicy Structure - Concrete Rigid Frame Transit Truck School Bicy Structure - Concrete Rigid Frame Transit Truck School Bicy     | MTO Region            |                         |      | Road      |                                   |                 |               |           |
| AADT   | Old County - AADT - % Trucks - Geographic Twp Special Routes Transit Truck School Biey Structure Type Concrete Rigid Frame   | MTO District          |                         |      |           | ed Speed                          | - N             |               |           |
| Geographic Twp.  Structure Type  Concrete Rigid Frame  Detour Length Around Structure  Detour Length Around Structure  - (km)  Total Deck Length  Overall Str. Width  6.3 (m) Skew Angle  Concrete Rigid Frame  Detour Length Around Structure  - (km)  Overall Str. Width  6.3 (m) Skew Angle  Direction of Structure  East/West  No. of Spans  I  Span Lengths  3.6 (m)  HISTORICAL DATA  Year Built  2018  Last OSIM Inspection  Last Enhanced OSIM Inspection  Current Load Limit  - (tonnes)  Last Bridge Master Inspection  - Last Evaluation  Last Evaluation  - Last Underwater Inspection   | Geographic Twp Special Routes Transit Truck School Bicy Structure Type Concrete Rigid Frame  Detour Length Around Structure - (km) Total Deck Length 4.6 (m) Fill on Structure - (m) Overall Str. Width 6.3 (m) Skew Angle - (Degraphic Around Structure East/West Total Deck Area 29 (m²) Direction of Structure East/West Roadway Width 5.5 (m) No. of Spans 1  Span Lengths 3.6 (m)  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 20 Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law# - Last Evaluation -        | Old County            |                         |      |           |                                   |                 |               | •0        |
| Structure Type Concrete Rigid Frame Detour Length Around Structure - (km)  Total Deck Length 4.6 (m) Fill on Structure - (m) Overall Str. Width 6.3 (m) Skew Angle - (Degrees)  Total Deck Area 29 (m²) Direction of Structure East/West  Roadway Width 5.5 (m) No. of Spans 1  Span Lengths 3.6 (m)  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 2022  Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law # - Last Evaluation - Last Evaluation - Last Underwater Inspection - Carrent By-Law Expiry Date - Last Underwater Inspection - Carrent Load Limit - Last Underwater Inspection - Carrent Last Underwater Inspection    | Structure Type   | Geographic Twp.       |                         |      |           | ial Routes Trai                   |                 |               | Bicycle   |
| Total Deck Length  | Total Deck Length 4.6 (m) Fill on Structure - (m)  Overall Str. Width 6.3 (m) Skew Angle - (Degree Total Deck Area 29 (m²) Direction of Structure East/West  Roadway Width 5.5 (m) No. of Spans 1  Span Lengths 3.6 (m)  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 20  Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law # - Last Evaluation - Last Evaluation   | Structure Type        |                         |      | Deto      | our Length Aroun                  | d               | _             |           |
| Total Deck Area   29   | Total Deck Area 29 (m²) Direction of Structure East/West  Roadway Width 5.5 (m) No. of Spans 1  Span Lengths 3.6 (m)  HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 20  Year of Last Major Rehab Last Enhanced OSIM Inspection -  Current Load Limit - (tonnes) Last Bridge Master Inspection -  Load Limit By-Law # - Last Evaluation -  | Total Deck Length     | 4.6                     | (m)  | Fill o    | on Structure                      |                 | <u> </u>      |           |
| Total Deck Area   29   | Total Deck Area   29   | Overall Str. Width    | 6.3                     | (m)  |           |                                   |                 |               | (Degrees) |
| HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 2022 Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law # - Last Evaluation - By-Law Expiry Date - Last Underwater Inspection -   | HISTORICAL DATA  Year Built  2018  Last OSIM Inspection  June 04, 20  Year of Last Major Rehab.  -  Last Enhanced OSIM Inspection  -  Current Load Limit  -  Load Limit By-Law#  -  Last Evaluation  -   | Fotal Deck Area       | 29                      | (m²) | Direc     | ction of Structure                |                 | East/West     |           |
| HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 2022  Year of Last Major Rehab Last Enhanced OSIM Inspection -  Current Load Limit - (tonnes) Last Bridge Master Inspection -  Load Limit By-Law # - Last Evaluation -  By-Law Expiry Date - Last Underwater Inspection -   | HISTORICAL DATA  Year Built 2018 Last OSIM Inspection June 04, 20  Year of Last Major Rehab Last Enhanced OSIM Inspection -  Current Load Limit - (tonnes) Last Bridge Master Inspection -  Load Limit By-Law # - Last Evaluation -  | Roadway Width         | 5.5                     | (m)  | No. o     | of Spans                          |                 | 1             |           |
| Year Built 2018 Last OSIM Inspection June 04, 2022 Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law # - Last Evaluation - By-Law Expiry Date - Last Underwater Inspection -  | Year Built 2018 Last OSIM Inspection June 04, 20. Year of Last Major Rehab Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law# - Last Evaluation -  | Span Lengths          | 3.6                     | (m)  |           |                                   |                 |               |           |
| Year of Last Major Rehab.  - Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law # - Last Evaluation - By-Law Expiry Date - Last Underwater Inspection   | Year of Last Major Rehab.  - Last Enhanced OSIM Inspection - Current Load Limit - (tonnes) Last Bridge Master Inspection - Load Limit By-Law# - Last Evaluation  | HIS                   | STORICAL DATA           |      |           |                                   |                 |               |           |
| Current Load Limit - (tonnes) Last Bridge Master Inspection -  Load Limit By-Law # - Last Evaluation -  By-Law Expiry Date - Last Underwater Inspection -  | Current Load Limit - (tonnes) Last Bridge Master Inspection -  Load Limit By-Law # - Last Evaluation -   | Year Built            | 2018                    |      |           | Last OSIM Insp                    | pection         | June          | 04, 2022  |
| Load Limit By-Law # - Last Evaluation - Last Underwater Inspection -   | Load Limit By-Law # - Last Evaluation -  | Year of Last Major R  | ehab                    |      | _         | Last Enhanced                     | OSIM Inspection |               | -         |
| By-Law Expiry Date - Last Underwater Inspection -  |  | Current Load Limit    |                         |      | _(tonnes) | es) Last Bridge Master Inspection |                 |               | - 1       |
|  | By-Law Expiry Date Last Underwater Inspection  | Load Limit By-Law#    | v #                     |      | _         | Last Evaluation                   |                 |               | -         |
| Min. Vertical Clearance(m) Last Condition Survey   |  | By-Law Expiry Date    |                         |      | _         | Last Underwater Inspection        |                 |               | -         |
|  | Min. Vertical Clearance (m) Last Condition Survey  | Min. Vertical Clearan | ce                      |      | _(m)      | Last Condition                    | Survey          |               | _         |

Site No.: B1

| FIELD I   | NSPECTION INFORMATION  |  |
|---|--|--|
| Date of Inspection: Inspector: Others in Party: | August 7, 2024  Tashi Dwivedi, P.Eng., HP Engineering  Derick Battrick, P.Eng., HP Engineering | Type of Inspection: OSIM Enhanced OSIM |
| Access Equipment Used:                          | Measuring Tape, Digital Camera and Hammer  |  |
| Weather:  | Sun and Cloud  |  |
| Temperature:                                    | 24 °C  |  |

|   |      | Priority |            | Estimated Cost |
|---|------|----------|------------|----------------|
| ADDITIONAL INVESTIGATION REQUIRED                             | None | Normal   | Urgent     | Estimated Cost |
| Rehabilitation/Replacement Study:                             | X    |          |            | \$ -           |
| Material Condition Survey                                     | X    |          |            | \$ -           |
| Detailed Deck Condition Survey:                               | X    |          |            | \$ -           |
| Non-destructive Delamination Survey of Asphalt- Covered Deck: | X    |          |            | \$ -           |
| Concrete Substructure Condition Survey:                       | X    |          |            | \$ -           |
| Detailed Coating Condition Survey:                            | X    |          |            | \$ -           |
| Detailed Timber Investigation:                                | X    |          |            | \$ -           |
| Underwater Investigation:                                     | X    |          |            | \$ -           |
| Fatigue Investigation:  | X    |          |            | \$ -           |
| Seismic Investigation:  | X    |          |            | \$ -           |
| Structure Evaluation:   | X    |          |            | \$ -           |
| Monitoring  | X    |          |            | \$ -           |
| Monitoring of Deformations, Settlement and Movements:         | X    |          |            | \$ -           |
| Monitoring Crack Widths:                                      | X    |          |            | \$ -           |
| Load Posting – Estimated Load Limit                           |      |          | Total Cost | s -            |
| Investigation Notes:  |      | -        |            |                |
|   |      |          |            |                |
|   |      |          |            |                |

| Recommended Work on Structure:  | None Minor Rehab. Major Rehab. Replace  |
|---|---|
| Timing of Recommended Work:   | 1 to 5 years 6 to 10 years  |
| Overall Comments: Structure is overal leaning towards the stream. Light hom | ll in good condition. The southeast, southwest and northeast retaining wall parallel to the stream is leycombing noted at northeast corner of exterior deck soffit. |
| Date of Next Inspection:  | June 2026   |

# Suspected Performance Deficiencies

00

BRIDGE

- 01
- None
  Load carrying capacity
  Excessive deformations (deflections & rotation)
  Continuing settlement
  Continuing movements 02 03
- 04 05 Seized bearings
- Maintenance Needs
- 01 Lift and swing bridge maintenance
- Bridge cleaning Bridge handrail maintenance 04 Painting steel bridge structures
- Bridge deck joint repair
- Bridge bearing maintenance

- Bearing not uniformly loaded/unstable
- Jammed expansion joint
- Pedestrian/vehicular hazard 08 09
- Rough riding surface 10 Surface ponding
- Deck drainage 11
- Repair of structural steel Repair of bridge concrete Repair of bridge timber Bailey bridges maintenance Animal/pest control 07
- 08 09
- 10
- 11 12 Bridge surface repair

- 12 13
- Slippery surfaces Flooding/channel blockage Undermining of foundation Unstable embankments 14
- 15
- 16 Other
- Erosion control at bridges
- Concrete sealing
- 15 Rout and seal
- Bridge deck drainage Scaling (loose Concrete or ACR Steel) 17
- 18 Other

BRIDGE

| E   | LEMENT DATA   |                      |   |                 |                 |              |
|---|---|----------------------|---|-----------------|-----------------|--------------|
| Element Group:  | Approaches  |                      | Length:   |                 | NE 75.7m,       |              |
| Element Name:   | Barrier   |                      | Width:  |                 | SE 13.3m,       | SW 75.7m     |
| Location:   | NE, NW, SE, & SW of s   | tructure             | Height:   | i i i i i i i i | -               | m la m       |
| Material:   |   | 4                    | Count:  |                 | 4               |              |
| Element Type:   |   |                      | Total Quantity:   |                 | 174.2 m         |              |
| Environment:  | Severe  |                      | Limited Inspection  | :               | T, III III      |              |
| Protection System   | None  |                      |   |                 |                 |              |
| VARAT   | Units   | Excellent            | Good  | Fair            |                 | Poor         |
| Condition Data:   | m   | -                    | 174.2   | -               |                 |              |
|   | nerally in good condition.  |                      |   |                 |                 |              |
| Performance Deficie   | ncies: 00   | TRAT                 | Maintenance Need  | ds: 00          |                 |              |
| Recommended Worl  | Rehab. [ ☐ 1 – 5 Years [  | Replace 6 – 10 Years | Maintenance Need  | ls: Urgent      | 1 Year          | 2 Years      |
|   |   |                      |   |                 |                 |              |
| Element Group:  | Approaches  |                      | Length:   |                 | 6 m             |              |
| Element Group:<br>Element Name:   | Approaches Wearing Surface  |                      | Length:<br>Width:   |                 | 6 m<br>8.5 m    | The state of |
|   |   |                      |   |                 |                 |              |
| Element Name:   | Wearing Surface   |                      | Width:  |                 | 8.5 m           |              |
| Element Name:<br>Location:  | Wearing Surface East & West of Structure  | Surface              | Width:<br>Height:   |                 | 8.5 m           |              |
| Element Name: Location: Material:   | Wearing Surface East & West of Structure Gravel / Asphalt   | Surface              | Width: Height: Count:   |                 | 8.5 m<br>-<br>2 |              |
| Element Name: Location: Material: Element Type:   | Wearing Surface East & West of Structure Gravel / Asphalt Gravel / Asphalt Wearing  | Surface              | Width: Height: Count: Total Quantity:   |                 | 8.5 m<br>-<br>2 |              |
| Element Name: Location: Material: Element Type: Environment: Protection System  | Wearing Surface East & West of Structure Gravel / Asphalt Gravel / Asphalt Wearing Severe   | Surface  Excellent   | Width: Height: Count: Total Quantity:   | Fair            | 8.5 m<br>-<br>2 | Poor         |
| Element Name: Location: Material: Element Type: Environment:  | Wearing Surface  East & West of Structure  Gravel / Asphalt  Gravel / Asphalt Wearing  Severe  None   |                      | Width: Height: Count: Total Quantity: Limited Inspection:                               |                 | 8.5 m<br>-<br>2 | Poor -       |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments:                        | Wearing Surface East & West of Structure Gravel / Asphalt Gravel / Asphalt Wearing Severe None Units  | Excellent<br>-       | Width: Height: Count: Total Quantity: Limited Inspection:  Good 102                     |                 | 8.5 m<br>-<br>2 |              |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments:                        | Wearing Surface  East & West of Structure  Gravel / Asphalt  Gravel / Asphalt Wearing  Severe  None  Units  m²  To be generally in good co  | Excellent<br>-       | Width: Height: Count: Total Quantity: Limited Inspection:  Good 102                     | Fair<br>-       | 8.5 m<br>-<br>2 |              |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: Wearing surface appear | Wearing Surface  East & West of Structure  Gravel / Asphalt  Gravel / Asphalt Wearing  Severe  None  Units  m²  To to be generally in good contains to be generally in good contains. | Excellent<br>-       | Width: Height: Count: Total Quantity: Limited Inspection:  Good 102 se gravel at edges. | Fair -          | 8.5 m<br>-<br>2 |              |

BRIDGE

| EL  | EMENT DATA                |                      |                                   |      |            |            |
|---|---------------------------|----------------------|-----------------------------------|------|------------|------------|
| Element Group:  | Accessories               |                      | Length:                           |      | -          |            |
| Element Name:   | Signs                     |                      | Width:                            |      | s <b>.</b> |            |
| Location:   | NE, NW, SE & SW of Stru   | cture                | Height:                           |      | -          |            |
| Material:   | Steel                     |                      | Count:                            |      | 6          |            |
| Element Type:   | Hazard/Narrow Structure S | igns                 | Total Quantity:                   |      | 6          |            |
| Environment:  | Severe                    |                      | Limited Inspection:               |      |            |            |
| Protection System                                     | None                      |                      |                                   |      |            |            |
|   | Units                     | Excellent            | Good                              | Fair |            | Poor       |
| Condition Data:                                       | Each                      | -                    | 6                                 | -    |            | -          |
| Performance Deficie<br>Recommended Wor                |                           | Replace 6 – 10 Years | Maintenance Needs                 |      | 1 Yea      | ur 2 Years |
| Element Group:  | Barriers Railing Systems  |                      | Length: Width:                    |      | 12.5 m     |            |
| Location:   | North & South Sides of St | ructure              | Height:                           |      | -          |            |
| Material:   | Steel                     | lucture              | Count:                            |      | 2          |            |
| Element Type:   | Steel Thrie Beam Railing  |                      | Total Quantity:                   |      | 25 m       |            |
| Environment:  | Severe Severe             |                      | Limited Inspection:               |      |            |            |
|   | None                      |                      |                                   |      |            |            |
| Protection System                                     | Units                     | Excellent            | Good                              | Fair |            | Poor       |
| Condition Data:                                       | m <sup>2</sup>            | -                    | 25                                |      |            | -          |
| Comments: Deck barrier is general Performance Deficit | iencies: 00               | Replace 6 – 10 Years | Maintenance Need Maintenance Need |      | 1 Year     | r 2 Years  |

BRIDGE

| E                                      | LEMENT DATA                   |                        |                                    |            |                     |         |
|--|-------------------------------|------------------------|------------------------------------|------------|---------------------|---------|
| Element Group:                         | Decks                         |                        | Length:                            |            | 8.5 m               |         |
| Element Name:                          | Wearing Surface               |                        | Width:                             |            | 4.77 m              |         |
| Location:                              | Top of Deck                   |                        | Height:                            |            | -                   |         |
| Material:                              | Asphalt                       |                        | Count:                             |            | 1                   |         |
| Element Type:                          | Asphalt Wearing Surface       |                        | Total Quantity:                    |            | 40.5 m <sup>2</sup> |         |
| Environment:                           | Severe                        |                        | Limited Inspection:                |            |                     |         |
| Protection System                      | None                          |                        |                                    |            |                     |         |
| 6 111 5                                | Units                         | Excellent              | Good                               | Fair       |                     | Poor    |
| Condition Data:                        | m²                            | -                      | 40.5                               |            |                     |         |
| Performance Deficie<br>Recommended Wor |                               | Replace 6-10 Years     | Maintenance Need  Maintenance Need |            | 1 Year              | 2 Years |
| Element Group:                         | Decks                         |                        | Laugth                             |            | 8.5 m               |         |
| Element Group:                         | Deck Top (Covered)            |                        | Length: Width:                     |            | CA AND THE CONTRACT |         |
| Location:                              | Top of Deck                   |                        | Height:                            |            | 4.77 m              |         |
| Material:                              | Concrete                      |                        | Count:                             |            | 1                   |         |
| Element Type:                          | Thick Slab                    |                        | Total Quantity:                    |            | 40.5 m <sup>2</sup> |         |
| Environment:                           | Moderate                      |                        | Limited Inspection:                |            | 40.3 III            |         |
| Protection System                      | Gravel Wearing Surface        |                        | Emitted Inspection.                |            |                     |         |
| 1 rotection System                     | Units                         | Excellent              | Good                               | Fair       |                     | Poor    |
| <b>Condition Data:</b>                 | m <sup>2</sup>                | - Executive            | 40.5                               | - Fall     |                     | -       |
| Comments:<br>Based on condition of     | wearing surface and soffit, o | deck top was determine | ed to be generally in good o       | condition. | •                   |         |

BRIDGE

| ************************************** | David                     |                     |      |                     |         |
|--|---------------------------|---------------------|------|---------------------|---------|
| ************************************** | Decks                     | Length:             |      | 4.3 m               |         |
|  | Soffit - Thick Slab (Exte | Width:              |      | 1.0 m               |         |
| side of Deck                           | North & South Undersid    | Height:             |      | -                   |         |
|  | Concrete                  | Count:              |      | 2                   |         |
|  | Thick Slab                | Total Quantity:     |      | 8.6 m <sup>2</sup>  |         |
|  | Moderate                  | Limited Inspection: |      |                     |         |
|  | None                      |                     |      |                     |         |
| Excellent                              | Units                     | Good                | Fair |                     | Poor    |
|  | m²                        | 8.6                 | -    |                     | -       |
| Replace 6 – 10 Years                   | ork: Rehab.  1 - 5 Years  | Maintenance Needs   |      | 1 Year              | 2 Years |
|  | Decks                     | Length:             |      | 4.3 m               |         |
| nterior)                               | Soffit - Thick Slab (Inte | Width:              |      | 6.7 m               |         |
| k                                      | Underside of the Deck     | Height:             |      | -                   |         |
|  | Concrete                  | Count:              |      | 1                   |         |
|  | Thick Slab                | Total Quantity:     |      | 28.8 m <sup>2</sup> |         |
|  | Benign                    | Limited Inspection: |      |                     |         |
|  | None                      |                     |      |                     |         |
|  | Units                     | Good                | Fair |                     | Poor    |
| Excellent                              | m <sup>2</sup>            | 28.8                | -    |                     | -       |
| Excellent<br>-                         |                           |                     |      |                     |         |
| -<br>-                                 | s generally in good condi | tion.               |      |                     |         |

BRIDGE Site No.: B1

| EL   | EMENT DATA   |                         |   |   |        |              |
|--|--|-------------------------|---|---|--------|--------------|
| Element Group:   | Abutments  |                         | Length:   | 2004 01-4 (02-20-20-20-20-40-40-40-20-20-20-20-20-20-20-20-20-20-20-20-20 | -      |              |
| Element Name:  | Abutment Walls   |                         | Width:  |   | 8.7 m  | 11 113       |
| Location:  | East & West Underside of   | Structure               | Height:   |   | 2.7 m  |              |
| Material:  | Cast-in-Place Concrete   | П                       | Count:  | M st  | 2      |              |
| Element Type:  | Reinforced Concrete Wall   |                         | Total Quantity:   |   | 47.0 m | 12           |
| Environment:   | Benign   |                         | Limited Inspection  | :   |        | 1            |
| Protection System  | None   |                         |   |   |        | recovered, a |
| Condition Data:  | Units  | Excellent               | Good  | Fair  |        | Poor         |
| Condition Data.  | m²   | •                       | 47.0  | -   |        | <b>.</b>     |
|  | nerally in good condition. No  | arrow vertical cracks v |   |   | ting.  |              |
| Performance Deficie  |  |                         | Maintenance Need  | ls: 00  |        |              |
| Recommended Work   | Rehab.  1 – 5 Years  | Replace 6 – 10 Years    | Maintenance Need  | ls: Urgent  | 1 Ye   | ar 2 Years   |
|  |  |                         |   |   |        |              |
| Element Comm   | Paradatana   |                         |   |   | 1      |              |
| Element Group:   | Foundations  Foundation (Polony Group  | d Laval)                | Length:   |   | -      |              |
| Element Name:  | Foundation (Below Groun  | d Level)                | Width:  |   | -      |              |
| Element Name:<br>Location:   | Foundation (Below Groun Below Abutment Walls   | d Level)                | Width:<br>Height:   |   | -      |              |
| Element Name: Location: Material:  | Foundation (Below Groun<br>Below Abutment Walls<br>Concrete  | d Level)                | Width: Height: Count:   |   | -      |              |
| Element Name: Location: Material: Element Type:  | Foundation (Below Groun Below Abutment Walls Concrete Strip Footing  | d Level)                | Width: Height: Count: Total Quantity:                             |   | -      |              |
| Element Name: Location: Material: Element Type: Environment:   | Foundation (Below Groun Below Abutment Walls Concrete Strip Footing Benign   | d Level)                | Width: Height: Count:   |   | -      |              |
| Element Name: Location: Material: Element Type:  | Foundation (Below Groun Below Abutment Walls Concrete Strip Footing Benign None  |                         | Width: Height: Count: Total Quantity: Limited Inspection:         |   | -      |              |
| Element Name: Location: Material: Element Type: Environment:   | Foundation (Below Groun Below Abutment Walls Concrete Strip Footing Benign   | d Level)  Excellent     | Width: Height: Count: Total Quantity:                             | Fair<br>-   | -      | Poor         |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: | Foundation (Below Groun Below Abutment Walls Concrete Strip Footing Benign None Units N/A foundation instability obser | Excellent<br>-          | Width: Height: Count: Total Quantity: Limited Inspection:  Good - | Fair<br>-<br>s: 00  | -      | -            |

BRIDGE Site No.: B1

| EL                       | EMENT DATA  |                      |  |           |                     |                |
|--------------------------|---|----------------------|--|-----------|---------------------|----------------|
| Element Group:           | Retaining Walls   |                      | Length:                                      |           | 4.8 m               |                |
| Element Name:            | Walls   |                      | Width:                                       |           | -                   |                |
| Location:                | NE, NW, SE & SW of Str  | ucture               | Height:                                      |           | 3.1 m               |                |
| Material:                | Pre-cast Concrete Blocks  |                      | Count:                                       |           | 4                   |                |
| Element Type:            | Pre-cast Concrete Block V   | Valls                | Total Quantity:                              |           | 59.5 m <sup>2</sup> |                |
| Environment:             | Benign  |                      | Limited Inspection:                          |           |                     |                |
| Protection System        | None  |                      |  |           |                     |                |
|                          | Units   | Excellent            | Good   | Fair      |                     | Poor           |
| Condition Data:          | m²  | -                    | 59.5   |           |                     | -              |
| Walls are generally in g |   |                      | Maintenance Need                             | s: 00     |                     |                |
| Recommended Work         | x: Rehab.  1 - 5 Years  | Replace 6 – 10 Years | Maintenance Need                             | s: Urgent | 1 Yea               | ar 2 Years     |
| Element Group:           | Retaining Walls   |                      | Length:                                      |           | 3.6 m               |                |
| Element Name:            | Walls   |                      | Width:                                       |           | 0.6 m               |                |
| Location:                | NE, NW, SE & SW of Str<br>Stream)   | ructure (Parallel to | Height:                                      |           | 1.8 m               |                |
| Material:                | Pre-cast Concrete Blocks  |                      | Count:                                       |           | 4                   |                |
| Element Type:            | Pre-cast Concrete Block V   | Walls                | Total Quantity:                              |           | 26 m <sup>2</sup>   |                |
| Environment:             | Benign  |                      | Limited Inspection:                          |           |                     |                |
| Protection System        | None  |                      |  |           |                     |                |
| G IV D                   | Units   | Excellent            | Good   | Fair      |                     | Poor           |
| Condition Data:          | m²  |                      | 16   | 10        |                     | -              |
|                          | nd northeast retaining wall i<br>southeast and north east wa<br>ncies: 00 |                      | n, all walls are generally  Maintenance Need |           | n. Some u           | ndermining and |
| Recommended Work         | (: Rehab. [<br>1 – 5 Years [  | Replace 6 – 10 Years | Maintenance Need                             | s: Urgent | ☐ 1 Ye              | ar 2 Years     |

BRIDGE

| EL   | EMENT DATA   |                      |   |           |      |              |
|--|--|----------------------|---|-----------|------|--------------|
| Element Group:   | Embankments and Stream   | S                    | Length:   |           | -    |              |
| Element Name:  | Embankments  |                      | Width:  |           | -    |              |
| Location:  | NE, NW, SE & SW of Str   | ucture               | Height:   |           | -    |              |
| Material:  | Native Soil  |                      | Count:  |           | 4    |              |
| Element Type:  | Embankment   | F 1                  | Total Quantity:   |           | 4    |              |
| Environment:   | Moderate   | k 1 1 1              | Limited Inspection:                                       |           |      |              |
| Protection System  | None   |                      |   |           |      |              |
| G III D  | Units  | Excellent            | Good  | Fair      |      | Poor         |
| Condition Data:  | Each   | a                    | 4   | 7         |      |              |
|  | oly sloped and covered in ro   | ck slope protection. | ·   | 10.11     |      |              |
| Performance Deficie  | ncies: 00  | , N                  | Maintenance Need  | s: 00     | 1 12 |              |
| Recommended Work   | : Rehab. 1 – 5 Years   | Replace 6 – 10 Years | Maintenance Need  | s: Urgent | 1    | Year 2 Years |
|  |  |                      |   |           |      |              |
|  |  |                      |   |           |      |              |
| Element Group:   | Embankments and Stream   | S                    | Length:   |           | -    |              |
| Element Group:<br>Element Name:  | Slope Protection   |                      | Width:  |           | -    |              |
|  |  |                      |   |           |      |              |
| Element Name:  | Slope Protection   |                      | Width:  |           | -    |              |
| Element Name:<br>Location:   | Slope Protection NE, NW, SE & SW of Str  |                      | Width:<br>Height:   |           | -    |              |
| Element Name: Location: Material:  | Slope Protection NE, NW, SE & SW of Str Rock   |                      | Width: Height: Count:                                     |           | - 4  |              |
| Element Name: Location: Material: Element Type:  | Slope Protection  NE, NW, SE & SW of Str  Rock  Rock Slope Protection  |                      | Width: Height: Count: Total Quantity:                     |           | - 4  |              |
| Element Name: Location: Material: Element Type: Environment: Protection System                           | Slope Protection  NE, NW, SE & SW of Str  Rock  Rock Slope Protection  Moderate  |                      | Width: Height: Count: Total Quantity:                     | Fair      | - 4  | Poor         |
| Element Name: Location: Material: Element Type: Environment:   | Slope Protection  NE, NW, SE & SW of Str  Rock  Rock Slope Protection  Moderate  None  | ucture               | Width: Height: Count: Total Quantity: Limited Inspection: |           | - 4  | Poor<br>-    |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: | Slope Protection  NE, NW, SE & SW of Str  Rock  Rock Slope Protection  Moderate  None  Units                                 | ucture               | Width: Height: Count: Total Quantity: Limited Inspection: |           | - 4  |              |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: | Slope Protection  NE, NW, SE & SW of Str Rock  Rock Slope Protection  Moderate  None  Units  each  erally in good condition. | ucture               | Width: Height: Count: Total Quantity: Limited Inspection: | Fair<br>- | - 4  |              |

BRIDGE Site No.: B1

| EI                                | LEMENT DATA            |                      |                    |            |       |            |
|-----------------------------------|------------------------|----------------------|--------------------|------------|-------|------------|
| Element Group:                    | Embankments and Strea  | ms                   | Length:            |            | -     |            |
| Element Name:                     | Streams and Waterways  |                      | Width:             |            | -     |            |
| Location:                         | Below Structure        |                      | Height:            |            | -     |            |
| Material:                         | Native                 |                      | Count:             |            | -     |            |
| Element Type:                     | Streams                |                      | Total Quantity:    |            | All   |            |
| Environment:                      | Benign                 |                      | Limited Inspection | ų.         |       |            |
| Protection System                 | None                   |                      |                    |            |       |            |
| Condition Date:                   | Units                  | Excellent            | Good               | Fair       |       | Poor       |
| Condition Data:                   | All                    | -                    | All                | -          |       | -0         |
| Comments:<br>Low volume, low flow | r from south to north. |                      |                    |            |       |            |
| Performance Deficie               | encies: 00             |                      | Maintenance Need   | ls: 00     |       |            |
| Recommended Wor                   | k: Rehab.  1 – 5 Years | Replace 6 – 10 Years | Maintenance Need   | ls: Urgent | 1 Yea | ar 2 Years |

BRIDGE

| REPAIR AND REHABILITATION REQUIRED Priority |                                    |              | Estimated Cost |            |           |         |
|---|------------------------------------|--------------|----------------|------------|-----------|---------|
| Element                                     | Repair and Rehabilitation Required | 6 - 10 Years | 1 - 5 Years    | < 1 year   | Estiliato | eu Cosi |
|   |                                    |              |                |            | \$        | -       |
|   |                                    |              |                |            | \$        |         |
|   |                                    |              |                |            | \$        | _       |
|   |                                    |              |                |            | \$        |         |
|   |                                    |              |                |            | \$        | -       |
|   |                                    |              |                |            | \$        |         |
|   |                                    |              |                |            | \$        |         |
| 31  |                                    |              |                |            | \$        | -       |
|   |                                    |              |                |            | \$        | 1       |
|   |                                    |              |                | Total Cost | \$        |         |

| ASSOCIATED WORK     | Comments   | Estimated Cost |
|---------------------|------------|----------------|
| Approaches          |            |                |
| Detours             |            |                |
| Traffic Control     |            |                |
| Utilities           |            |                |
| Right of Way        |            | 4 E -          |
| Environmental Study |            |                |
| Other               |            |                |
| Contingencies       |            |                |
|                     | Total Cost |                |

| JUSTIFICATION |  |
|---------------|--|
|               |  |
|               |  |
|               |  |
|               |  |
|               |  |
|               |  |

BRIDGE

| INVENTORY DAT         | ГА:                        |                    |                     |                      |                             |                 |
|-----------------------|----------------------------|--------------------|---------------------|----------------------|-----------------------------|-----------------|
| Structure Name        | Hackenbroke Bridge         |                    |                     |                      |                             |                 |
| Main Hwy/Road#        | Peddlers Drive             | Under<br>Structure | Navigable<br>: Rail | Water Road           | Non- Navigable \ Pedestrian | Water Other     |
| Road Name:            | Peddlers Drive             | On<br>Structure    | Rail                | Road Ped             | estrian Other               |                 |
| Structure Location    | 0.96 km West of Beckett Ln |                    |                     |                      |                             |                 |
| Latitude              | 46° 14' 10" N              | Lo                 | ngitude             |                      | 78° 56′ 31″ W               |                 |
| Owner(s)              | Township of Calvin         |                    | ritage<br>signation | Not Cons. Co         | ons./Not App.  Desig. & 1   | List/Not Desig. |
| MTO Region            | -                          | Ros                | ad Class:           | Freeway Art          | erial Collector             |                 |
| MTO District          | -                          | Pos                | sted Speed          | =                    | No. of Lanes                | 2               |
| Old County            | <u>-</u>                   | AA                 | .DT                 | -                    | % Trucks                    | -               |
| Geographic Twp.       | -                          | Spe                | cial Routes         | Transit Tr           | uck School                  | Bicycle         |
| Structure Type        | Concrete Rigid Frame       |                    | our Length A        | round                |                             | (km)            |
| Total Deck Length     | (m)                        | Fill               | on Structure        |                      | -                           | (m)             |
| Overall Str. Width    | (m)                        | Ske                | w Angle             |                      | Ä                           | (Degrees)       |
| Total Deck Area       | (m <sup>2</sup>            | Dir                | ection of Stru      | cture                | East/West                   |                 |
| Roadway Width         | (m)                        | No.                | of Spans            |                      | 1                           |                 |
| Span Lengths          | (m)                        |                    |                     |                      |                             |                 |
| HI                    | STORICAL DATA              |                    |                     |                      |                             |                 |
| Year Built            | 2018                       |                    | Last OSI            | Inspection           | Jı                          | ine 04, 2022    |
| Year of Last Major R  | ehab                       |                    | Last Enha           | nced OSIM Inspec     | tion                        |                 |
| Current Load Limit    |                            | (tonnes)           | Last Bridg          | ge Master Inspection | on                          |                 |
| Load Limit By-Law #   | <u> </u>                   |                    | Last Eval           | ation                | 8 <del></del>               |                 |
| By-Law Expiry Date    | <del> </del>               |                    | Last Unde           | rwater Inspection    | W <del></del>               |                 |
| Min. Vertical Clearan |                            | (m)                | Last Cond           | ition Survey         |                             | -               |
| Rehabilitation Histo  | ry: (Date / Description)   |                    |                     |                      |                             |                 |

BRIDGE Site No.: B1

| FIELD I                | NSPECTION INFORMATION                     |  |
|------------------------|---|--|
| Date of Inspection:    | August 9, 2024                            | Type of Inspection: OSIM Enhanced OSIM |
| Inspector:             | Tashi Dwivedi, P.Eng., HP Engineering     |  |
| Others in Party:       | Derick Battrick, P.Eng., HP Engineering   |  |
| Access Equipment Used: | Measuring Tape, Digital Camera and Hammer | · · · · · · · · · · · · · · · · · · ·  |
| Weather:               | Sun and Cloud                             |  |
| Temperature:           | 24 °C                                     |  |

| ADDITIONAL INTEGRACIATION DECLINED                           |      | Priority |            |           |                 |
|--|------|----------|------------|-----------|-----------------|
| ADDITIONAL INVESTIGATION REQUIRED                            | None | Normal   | Urgent     | Estimated | Cost            |
| Rehabilitation/Replacement Study:                            | X    |          |            | \$        | -               |
| Material Condition Survey                                    | X    |          |            | \$        | -               |
| Detailed Deck Condition Survey:                              | X    |          |            | \$        | -               |
| Non-destructive Delamination Survey of Asphalt- Covered Deck | X    |          |            | \$        | // <del>-</del> |
| Concrete Substructure Condition Survey:                      | X    |          |            | \$        | -               |
| Detailed Coating Condition Survey:                           | X    |          |            | \$        | : -             |
| Detailed Timber Investigation:                               | X    |          |            | \$        | -               |
| Underwater Investigation:                                    | X    |          |            | \$        | - 19 <u>-</u>   |
| Fatigue Investigation:                                       | X    |          |            | \$        | -               |
| Seismic Investigation:                                       | X    |          |            | \$        | · -             |
| Structure Evaluation:  | X    |          |            | \$        | -               |
| Monitoring   | X    |          |            | \$        | -               |
| Monitoring of Deformations, Settlement and Movements:        | X    |          |            | \$        | _               |
| Monitoring Crack Widths:                                     | X    |          |            | \$        | -               |
| Load Posting – Estimated Load Limit                          |      | ]        | Total Cost | \$        | 16.11.2         |
| Investigation Notes:   | •    |          |            |           |                 |
|  |      |          |            |           |                 |
|  |      |          |            |           |                 |

| OVERALL STRUCTURAL NOTES:  |                                     |           |                                     |  | Septim of the 120 million (1)       |
|--|-------------------------------------|-----------|-------------------------------------|--|-------------------------------------|
| Recommended Work on Structure:   | None                                | Min       | or Rehab.                           | Major Rehab.                                     | Replace                             |
| Timing of Recommended Work:  | 1 to 5 year                         |           | 6 to 10 year                        |  |                                     |
| Overall Comments: Structure is overall i leaning towards the stream. Light honey | n good condition<br>combing noted a | t northea | utheast, southy<br>ast corner of ex | west and northeast retain<br>terior deck soffit. | ning wall parallel to the stream is |
| Date of Next Inspection:   | June 2026                           |           |                                     |  |                                     |

#### 1Suspected Performance Deficiencies

- 00 None 00 None
  01 Load carrying capacity
  02 Excessive deformations (deflections & rotation)
  03 Continuing settlement
  04 Continuing movements
  05 Seized bearings
  Maintenance Needs
- Lift and swing bridge maintenance 01 02 Bridge cleaning
  Bridge handrail maintenance Painting steel bridge structures
- Bridge deck joint repair Bridge bearing maintenance
- Bearing not uniformly loaded/unstable Jammed expansion joint Pedestrian/vehicular hazard 06 07 08 Rough riding surface Surface ponding Deck drainage 09 10
- 07 Repair of structural steel 08 Repair of bridge concrete Repair of bridge timber 09 10 Bailey bridges maintenance

Animal/pest control

Bridge surface repair

11

12

- 12 Slippery surfaces 13 Flooding/channel blockage 14 Undermining of foundation Unstable embankments
- 16 Other
- 13 Erosion control at bridges 14 Concrete sealing 15 Rout and seal
- Bridge deck drainage Scaling (loose Concrete or ACR Steel) Other 16 17 18

BRIDGE

| EI   | LEMENT DATA   |                      |   |           |  |
|--|---|----------------------|---|-----------|--|
| Element Group:   | Approaches  |                      | Length:   |           | NE 75.7m, NW 9.5m,<br>SE 13.3m, SW 75.7m |
| Element Name:  | Barrier   |                      | Width:  |           | -  |
| Location:  | NE, NW, SE, & SW of str   | ructure              | Height:   |           | -  |
| Material:  | -   |                      | Count:  |           | 4  |
| Element Type:  | -   |                      | Total Quantity:   |           | 174.2 m                                  |
| Environment:   | Severe  |                      | Limited Inspection:   |           |  |
| Protection System  | None  |                      |   |           |  |
| Condition Data:  | Units   | Excellent            | Good  | Fair      | Poor                                     |
| Condition Data:  | m   | -                    | 174.2   |           | -  |
| Performance Deficie<br>Recommended Work  |   | Replace 6 – 10 Years | Maintenance Needs   |           | 1 Year 2                                 |
| 1  |   |                      | 1   |           |  |
| Element Group:   | Approaches  |                      | Length:   |           | 6 m                                      |
| Element Group:<br>Element Name:  | Approaches Wearing Surface  |                      | Length: Width:  |           | 6 m<br>8.5 m                             |
|  |   |                      |   |           |  |
| Element Name:  | Wearing Surface   |                      | Width:  |           | 8.5 m                                    |
| Element Name:<br>Location:   | Wearing Surface East & West of Structure  | Surface              | Width:<br>Height:   |           | 8.5 m                                    |
| Element Name: Location: Material:  | Wearing Surface East & West of Structure Gravel / Asphalt   | Surface              | Width: Height: Count:   |           | 8.5 m<br>-<br>2                          |
| Element Name: Location: Material: Element Type:  | Wearing Surface East & West of Structure Gravel / Asphalt Gravel / Asphalt Wearing  | Surface              | Width: Height: Count: Total Quantity:                               |           | 8.5 m<br>-<br>2                          |
| Element Name: Location: Material: Element Type: Environment: Protection System                           | Wearing Surface East & West of Structure Gravel / Asphalt Gravel / Asphalt Wearing Severe   | Surface  Excellent   | Width: Height: Count: Total Quantity:                               | Fair      | 8.5 m<br>-<br>2                          |
| Element Name: Location: Material: Element Type: Environment:   | Wearing Surface  East & West of Structure  Gravel / Asphalt  Gravel / Asphalt Wearing  Severe  None   |                      | Width: Height: Count: Total Quantity: Limited Inspection:           |           | 8.5 m - 2 102 m <sup>2</sup>             |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: | Wearing Surface East & West of Structure Gravel / Asphalt Gravel / Asphalt Wearing Severe None Units  | Excellent<br>-       | Width: Height: Count: Total Quantity: Limited Inspection:  Good 102 | Fair      | 8.5 m - 2 102 m <sup>2</sup> Poor        |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: | Wearing Surface  East & West of Structure  Gravel / Asphalt  Gravel / Asphalt Wearing  Severe  None  Units  m²  rs to be generally in good co | Excellent<br>-       | Width: Height: Count: Total Quantity: Limited Inspection:  Good 102 | Fair<br>- | 8.5 m - 2 102 m <sup>2</sup> Poor        |

| EL                                 | EMENT DATA   |                        |                     |                    |            |          |
|------------------------------------|--|------------------------|---------------------|--------------------|------------|----------|
| Element Group:                     | Accessories  |                        | Length:             |                    |            |          |
| Element Name:                      | Signs  | 234                    | Width:              | Width:             |            | 47) a    |
| Location:                          | NE, NW, SE & SW of Structure                                 |                        | Height:             |                    | -          |          |
| Material:                          | Steel  | 1 10                   | Count:              |                    | 6          |          |
| Element Type:                      | Hazard/Narrow Structure                                      | Signs                  | Total Quantity:     |                    | 6          |          |
| Environment:                       | Severe   |                        | Limited Inspection: | To the second      |            | - 11     |
| Protection System                  | None   | 1 11 1                 |                     |                    |            |          |
| Can dition Date:                   | Units  | Excellent              | Good                | Fair               |            | Poor     |
| Condition Data:                    | Each   | -                      | 6                   | -                  |            | -        |
| 2 - narrow bridge ahead            | nerally in good condition.<br>I signs are not required for t | his structure. Roadway |                     |                    | l approach | nes.     |
| Performance Deficie                | ncies: 00  |                        | Maintenance Needs   | s: 00              |            |          |
| Recommended Work                   | Rehab.  1 – 5 Years  | Replace 6 – 10 Years   | Maintenance Needs   | s: Urgent<br>Years | 1          | rear2    |
| Element Group:                     | Barriers   |                        | Length:             |                    | 12.5 m     |          |
| Element Name:                      | Railing Systems  | is #251                | Width:              |                    | -          |          |
| Location:                          | North & South Sides of St                                    | tructure               | Height:             |                    | •          | V CI,    |
| Material:                          | Steel  | equi.                  | Count:              |                    | 2          |          |
| Element Type:                      | Steel Thrie Beam Railing                                     | 11 1                   | Total Quantity:     |                    | 25 m       |          |
| Environment:                       | Severe   | B  B B                 | Limited Inspection: |                    |            | _= = = = |
| Protection System                  | None   |                        |                     |                    |            |          |
| G W D                              | Units  | Excellent              | Good                | Fair               |            | Poor     |
| Condition Data:                    | m²   | -                      | 25                  | -                  |            | -        |
| Comments:  Deck barrier is general | ly in good condition.  |                        |                     |                    |            |          |
| Performance Deficie                |  | Replace                | Maintenance Need    |                    |            | Year 2   |

|                                    |                               |                        |                         |                 |        | Site No.: B1 |
|------------------------------------|-------------------------------|------------------------|-------------------------|-----------------|--------|--------------|
|                                    |                               |                        |                         |                 |        |              |
| El                                 | LEMENT DATA                   |                        |                         |                 |        |              |
| Element Group:                     | Decks                         |                        | Length:                 |                 | 8.5 m  |              |
| Element Name:                      | Wearing Surface               |                        | Width:                  |                 | 4.77 m | L.           |
| Location:                          | Top of Deck                   |                        | Height:                 |                 | -      |              |
| Material:                          | Asphalt                       |                        | Count:                  |                 | 1      |              |
| Element Type:                      | Asphalt Wearing Surface       |                        | Total Quantity:         |                 | 40.5 m | 2            |
| Environment:                       | Severe                        |                        | Limited Inspection      |                 |        |              |
| Protection System                  | None                          |                        |                         |                 |        |              |
| C 1141 D-4                         | Units                         | Excellent              | Good                    | Fair            |        | Poor         |
| Condition Data:                    | m²                            | -                      | 40.5                    | -               |        | -            |
| Performance Deficie                | encies: 00                    |                        | Maintenance Need        | ls: 00          |        |              |
|                                    | 1 – 5 Years                   | 6 – 10 Years           |                         | Years           |        |              |
| Element Group:                     | Decks                         |                        | Length:                 |                 | 8.5 m  |              |
| Element Name:                      | Deck Top (Covered)            |                        | Width:                  |                 | 4.77 m |              |
| Location:                          | Top of Deck                   |                        | Height:                 |                 | -      |              |
| Material:                          | Concrete                      |                        | Count:                  | 1               |        |              |
| Element Type:                      | Thick Slab                    |                        | Total Quantity:         |                 | 40.5 m | 2            |
| Environment:                       | Moderate                      |                        | Limited Inspection      |                 |        |              |
| Protection System                  | Gravel Wearing Surface        |                        |                         |                 |        |              |
| Condition Data:                    | Units                         | Excellent              | Good                    | Fair            |        | Poor         |
|                                    | m <sup>2</sup>                | -                      | 40.5                    | -               |        | -            |
| Comments:<br>Based on condition of | wearing surface and soffit, d | eck top was determined | to be generally in good | condition.      |        |              |
| Performance Deficie                | ncies: 00                     |                        | Maintenance Need        | s: 00           |        |              |
| Recommended World                  | k: Rehab.                     | Replace 6 – 10 Years   | Maintenance Need        | s: Urgent Years |        | Year 2       |

| nerally in good condition.               |   |   |  |  |                 |
|--|---|---|--|--|-----------------|
|  |   |   |  |  |                 |
| m"                                       | -   | 20.0  |  |  |                 |
|  |   |   | 10-20-20-20-20-20-20-20-20-20-20-20-20-20  |  | -               |
|  | Eveallent   | Good  | Fair   |  | Poor            |
|  |   | Limited Inspection  |  |  |                 |
|  |   |   |  | 20.6 M   |                 |
|  |   |   | 1/   |  |                 |
| 1. 12. 12. 12. 12. 12. 12. 12. 12. 12. 1 |   |   |  |  |                 |
| Market Mark                              | or)   |   |  | Section of the section   | 15"             |
| Decks                                    |   | Length:   |  | 4.3 m  |                 |
|  |   |   |  |  |                 |
| Rehab.  1-5 Years                        | Replace 6 – 10 Years  | Maintenance Needs: Urgent 1 Year 2 Years  |  |  |                 |
|  |   |   |  |  |                 |
| y in good condition with li              | ght honeycombing no   |   |  |  |                 |
| m²                                       | -   | 8.6   | <u>a</u>   |  |                 |
|  |   |   | 7.000  |  | Poor<br>-       |
| None                                     | Sec. 20 Marie de  |   |  |  | and government  |
| Moderate                                 |   | Limited Inspection:   |  |  |                 |
| Thick Slab                               |   |   |  | 8.6 m <sup>2</sup>   |                 |
| Concrete                                 | At a constant   | (=,4,0,000  |  |  |                 |
| North & South Underside of               | of Deck   |   |  |  |                 |
|  |   |   |  |  |                 |
| Decks                                    |   |   |  | 31510/40200000   |                 |
| MENT DATA                                |   |   |  |  |                 |
|  | Decks Soffit – Thick Slab (Exterior North & South Underside of Concrete Thick Slab Moderate None Units m²  y in good condition with li  ies: 00  Rehab. 1 – 5 Years | Concrete Concrete Chick Slab Moderate None  Units Excellent  m²  -  y in good condition with light honeycombing not  ies: 00  Rehab. Replace  1 - 5 Years  Concrete Concrete Chick Slab  Concrete Chick Slab  Replace  1 - 5 Years  Concrete | Decks Soffit - Thick Slab (Exterior) North & South Underside of Deck Height: Concrete Count: Thick Slab Total Quantity: Moderate None Units Excellent Good m² - 8.6  Y in good condition with light honeycombing noted at northeast corner.  Ies: 00 Rehab. Replace 1 - 5 Years 6 - 10 Years  Decks Soffit - Thick Slab (Interior) Underside of the Deck Concrete Thick Slab Total Quantity: Underside of the Deck Concrete Thick Slab Total Quantity: Underside of the Deck Concrete Thick Slab Benign Limited Inspection None Units Excellent Good | Length:   Soffit - Thick Slab (Exterior)   Width:   Width:   Worth & South Underside of Deck   Height:   Concrete   Count:   Thick Slab   Total Quantity:   Limited Inspection:   Width:   Wid | Length:   4.3 m |

| BRIDGE                             |                               |                      |                     |                     |                     | Site No.: B |
|------------------------------------|-------------------------------|----------------------|---------------------|---------------------|---------------------|-------------|
|                                    | 1 – 5 Years                   | 6 – 10 Years         |                     | Years               |                     |             |
|                                    |                               |                      |                     |                     |                     |             |
| E                                  | LEMENT DATA                   |                      |                     |                     |                     |             |
| Element Group:                     | Abutments                     |                      | Length:             |                     | -                   |             |
| Element Name:                      | Abutment Walls                |                      | Width:              |                     | 8.7 m               |             |
| Location:                          | East & West Underside of      | of Structure         | Height:             |                     | 2.7 m               |             |
| Material:                          | Cast-in-Place Concrete        |                      | Count:              |                     | 2                   |             |
| Element Type:                      | Reinforced Concrete Wa        | 11                   | Total Quantity:     |                     | 47.0 m <sup>2</sup> |             |
| Environment:                       | Benign                        |                      | Limited Inspection  | :                   |                     |             |
| Protection System                  | None                          |                      |                     |                     |                     |             |
| C. P.C. D.                         | Units                         | Excellent            | Good                | Fair                |                     | Poor        |
| Condition Data:                    | m <sup>2</sup>                | -                    | 47.0                | -                   |                     |             |
| Recommended Wor                    | Rehab.  1 – 5 Years           | Replace 6 - 10 Years | Maintenance Need    | ls: Urgent<br>Years | 1 Ye                | ear 2       |
|                                    |                               |                      |                     |                     |                     |             |
| Element Group:                     | Foundations                   |                      | Length:             |                     | -                   |             |
| Element Name:                      | Foundation (Below Ground      | nd Level)            | Width:              |                     | -                   |             |
| Location:                          | Below Abutment Walls          |                      | Height:             |                     | -                   |             |
| Material:                          | Concrete                      |                      | Count:              |                     | -                   |             |
| Element Type:                      | Strip Footing                 |                      | Total Quantity:     |                     | -                   |             |
| Environment:                       | Benign                        |                      | Limited Inspection: |                     | X                   |             |
| Protection System                  | None                          |                      |                     |                     |                     |             |
| C122 D(                            | Units                         | Excellent            | Good                | Fair                |                     | Poor        |
| Condition Data:                    | N/A                           |                      | -                   | -                   |                     | -           |
| Comments:<br>No visible evidence o | f foundation instability obse |                      |                     |                     |                     |             |
| Performance Deficie                | encies: 00                    |                      | Maintenance Need    | 00                  |                     |             |

Site No.: B1 BRIDGE 1 Year Maintenance Needs: Urgent Recommended Work: Rehab. Replace 6 - 10 Years 1-5 Years ELEMENT DATA Length: 4.8 m Retaining Walls **Element Group:** Width: Walls **Element Name:** 3.1 m Height: NE, NW, SE & SW of Structure Location: Count: 4 Pre-cast Concrete Blocks Material: 59.5 m<sup>2</sup> **Total Quantity:** Pre-cast Concrete Block Walls Element Type: Limited Inspection: **Environment:** Benign **Protection System** None Poor Fair Good Units Excellent **Condition Data:** 59.5  $m^2$ Comments: Walls are generally in good condition. Maintenance Needs: 00 Performance Deficiencies: 00 Maintenance Needs: Urgent 1 Year Replace Rehab. Recommended Work: Years 6-10 Years 1-5 Years 3.6 m Length: Retaining Walls **Element Group:** 0.6 m Width: Walls **Element Name:** NE, NW, SE & SW of Structure (Parallel to 1.8 m Height: Location: Stream) Count: 4 Pre-cast Concrete Blocks Material: 26 m<sup>2</sup> Pre-cast Concrete Block Walls **Total Quantity:** Element Type: Limited Inspection: **Environment:** Benign None **Protection System** Fair Poor Good Units Excellent **Condition Data:**  $m^2$ 16 10 Comments: Southwest, southeast and northeast retaining wall is leaning towards stream, all walls are generally in good condition. Some undermining and flowing water noted at southeast and north east walls.

BRIDGE

| BRIDGE   |                              |   |   |                       |             | Site No.: B1 |  |
|--|------------------------------|---|---|-----------------------|-------------|--------------|--|
| Performance Deficiencies: 00   |                              |   | Maintenance Nee   | Maintenance Needs: 00 |             |              |  |
| Recommended Wor  | k: Rehab.  1-5 Years         | Maintenance Nee   | Maintenance Needs: Urgent 1 Year 2 Years                        |                       |             |              |  |
| ELEMENT DATA   |                              |   |   |                       |             |              |  |
| Element Group:   | Embankments and Stream       | 18  | Length:   | Length: -             |             |              |  |
| Element Name:  | Embankments                  |   | Width:  |                       | -           |              |  |
| Location:  | NE, NW, SE & SW of Structure |   | Height:   |                       | -           |              |  |
| Material:  | Native Soil                  |   | Count:  |                       | 4           |              |  |
| Element Type:  | Embankment                   |   |   | Total Quantity:       |             | 4            |  |
| Environment:   | Moderate                     |   |   | Limited Inspection:   |             |              |  |
| Protection System  | None                         |   |   |                       |             |              |  |
| Condition Data:  | Units                        | Excellent   | Good  | Fair                  |             | Poor         |  |
|  | Each                         | -   | 4   | -                     |             | -            |  |
| Performance Deficiencies: 00  Recommended Work: Rehab. Replace  1-5 Years 6-10 Years |                              |   | Maintenance Needs: 00  Maintenance Needs: Urgent 1 Year 2 Years |                       |             |              |  |
|  |                              |   |   |                       |             |              |  |
| Element Group:   | Embankments and Streams      |   | Length:   | Length:               |             | -            |  |
| Element Name:  | Slope Protection             |   | Width:  |                       | -           |              |  |
| Location:  | NE, NW, SE & SW of Structure |   | Height:   |                       | -           |              |  |
| Material:  | Rock                         |   | Count:  |                       | 4           |              |  |
| Element Type:  | Rock Slope Protection        |   | Total Quantity:   | Total Quantity:       |             | 4            |  |
| Environment:   | Moderate                     |   | Limited Inspection  | Limited Inspection:   |             |              |  |
| Protection System  | None                         | - Continue (1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - |   |                       |             |              |  |
| Condition Data:  | Units                        | Excellent   | Good  | Fair Poor             |             | Poor         |  |
|  | each                         | -   | 4   | ( <u>-</u>            | ı. <b>-</b> |              |  |

| Performance Deficiencies: 00  | Comments:               |                            |           |                     |         |   |        |  |
|---|-------------------------|----------------------------|-----------|---------------------|---------|---|--------|--|
| Recommended Work:   | Slope protection is gen | nerally in good condition. |           |                     |         |   |        |  |
| Recommended Work:   |                         |                            |           |                     |         |   |        |  |
| Recommended Work:   |                         |                            |           |                     |         |   |        |  |
| Recommended Work:   |                         |                            |           |                     |         |   |        |  |
| 1 - 5 Years   | Performance Deficie     | encies: 00                 |           | Maintenance Need    | s: 00   |   |        |  |
| Element Group:   Embankments and Streams   Length:   -  | Recommended Wor         |                            |           |                     |         |   | Year 2 |  |
| Streams and Waterways   | El                      | LEMENT DATA                |           |                     |         |   |        |  |
| Location:   Below Structure   Height:   -   | Element Group:          | Embankments and Stream     | ns        | Length:             |         | - |        |  |
| Material: Native Count: -  Element Type: Streams Total Quantity: All  Environment: Benign Limited Inspection: -  Protection System None  Condition Data: Units Excellent Good Fair Poor All - All  Comments: Low volume, low flow from south to north.  Performance Deficiencies: 00 Maintenance Needs: 00  Recommended Work: Rehab. Replace Maintenance Needs: Urgent 1 Year 2 | Element Name:           | Streams and Waterways      |           | Width:              |         |   |        |  |
| Element Type: Streams   | Location:               | Below Structure            |           | Height:             | Height: |   | -      |  |
| Environment: Benign Limited Inspection:  Protection System None  Condition Data: Units Excellent Good Fair Poor All - All - All  Comments: Low volume, low flow from south to north.  Performance Deficiencies: 00 Maintenance Needs: 00  Recommended Work: Rehab. Replace Maintenance Needs: Urgent 1 Year 2   | Material:               | Native                     |           | Count:              | Count:  |   |        |  |
| Protection System None  Condition Data: Units Excellent Good Fair Poor  All - All  Comments:  Low volume, low flow from south to north.  Performance Deficiencies: 00  Recommended Work: Rehab. Replace Maintenance Needs: Urgent 1 Year 2  | Element Type:           | Streams                    |           | Total Quantity:     | All     |   |        |  |
| Condition Data:    Units   Excellent   Good   Fair   Poor   | Environment:            | Benign                     |           | Limited Inspection: |         |   |        |  |
| Comments: Low volume, low flow from south to north.  Performance Deficiencies: 00  Recommended Work: Rehab. Replace Maintenance Needs: Urgent 1 Year 2  | Protection System       | None                       |           |                     |         |   |        |  |
| Comments: Low volume, low flow from south to north.  Performance Deficiencies: 00  Recommended Work: Rehab. Replace Maintenance Needs: Urgent 1 Year 2  | Condition Data          | Units                      | Excellent | Good                | Fair    |   | Poor   |  |
| Performance Deficiencies: 00  Recommended Work: Rehab. Replace Maintenance Needs: Urgent 1 Year 2   | Condition Data.         | All                        |           | All                 | -       |   | -      |  |
| Recommended Work: Rehab. Replace Maintenance Needs: Urgent 1 Year 2   |                         | v from south to north.     |           |                     |         |   |        |  |
| Voors   | Performance Deficie     | encies: 00                 |           | Maintenance Need    | s: 00   |   |        |  |
|   | Recommended Wor         |                            |           |                     |         | 1 | Year 2 |  |

# BRIDGE

|         | REPAIR AND REHABILITATION REQUIRED |              | Priority    |            | <b>D</b>    |     |
|---------|------------------------------------|--------------|-------------|------------|-------------|-----|
| Element | Repair and Rehabilitation Required | 6 - 10 Years | 1 - 5 Years | < 1 year   | Estimated C | ost |
|         |                                    |              |             |            | \$          | -   |
|         |                                    |              |             |            | \$          | -   |
|         |                                    |              |             |            | \$          |     |
|         |                                    |              |             |            | \$          | 2   |
|         |                                    |              |             |            | \$          | -   |
|         |                                    |              |             |            | \$          | 2   |
|         |                                    |              |             |            | \$          |     |
|         |                                    |              |             |            | \$          | •   |
|         |                                    |              |             |            | \$          |     |
|         |                                    |              |             | Total Cost | \$          |     |

| ASSOCIATED WORK     | Comments   | Estimated Cost |
|---------------------|------------|----------------|
| Approaches          |            |                |
| Detours             |            |                |
| Traffic Control     |            |                |
| Utilities           |            |                |
| Right of Way        |            |                |
| Environmental Study |            |                |
| Other               |            |                |
| Contingencies       |            |                |
|                     | Total Cost |                |

| JUSTIFICATION |  |  |
|---------------|--|--|
|               |  |  |
|               |  |  |
|               |  |  |
|               |  |  |
|               |  |  |
|               |  |  |

# Structure Condition Summary Form

HP Engineering Inc. Structure Name Walley Bridge
Structure Number B2
Date of Inspection August 7, 2024
Project No.
Consultant HP Engineering Inc.

| Element Group    | Element Group Element Name    | Unit<br>(Qty.) | Unit Price<br>(MTO) | Total<br>Element<br>Quantity | Element<br>Qty. in<br>Excellent<br>Condition<br>(1.00) | Element<br>Quantity in<br>Good<br>Condition<br>(0.75) | Element<br>Quantity in<br>Fair<br>Condition<br>(0.4) | Element Quantity in Poor F Condition (0) | Total<br>Replacement<br>Value (TRV) | Current<br>Element<br>Value<br>(CEV) | Element<br>Condition<br>Index | Performance<br>Deficiency | Maintenance<br>Need |
|------------------|-------------------------------|----------------|---------------------|------------------------------|--|---|--|--|-------------------------------------|--------------------------------------|-------------------------------|---------------------------|---------------------|
|                  | Abutment Walls                | Sa.m           | 900.00              | 5.60                         | 0.00   | 5.60  | 1  | 00:0                                     |                                     | 3780                                 | 75                            | 00                        | 00                  |
| 75               | Ballast Walls                 | Sq.m           | 350.00              | 8.40                         | 0.00   | 8.30  | 0.10   | 0.00                                     | 2940                                | 2193                                 | 75                            | 8                         | 00                  |
| Abutment         | Bearings                      | Each           | 1000.00             | 8.00                         | 0.00   | 0.00  | 9.00   | 2.00                                     | 8000                                | 2400                                 | 30                            | 8                         | 00                  |
|                  | Wingwalls                     | Sq.m           | 350.00              | 7.10                         | 0.00   | 7.10  | 0.00   | 0.00                                     | 2485                                | 1864                                 | 75                            | 0                         | 0                   |
| Approaches       | Wearing Surface               | Sq.m           | 9.00                | 63.00                        | 0.00   | 26.00   | 7.00   | 0.00                                     | 378                                 | 269                                  | 71                            | 00                        | 0                   |
|                  | Posts (Steel/Concrete)        | Each           | 200.00              | 26.00                        | 0.00   | 26.00   | 0.00   | 0.00                                     | 11200                               | 8400                                 | 75                            | 00                        | 00                  |
| Barriers         | Railing Systems               | ε              | 200.00              | 104.00                       | 0.00   | 104.00  | 0.00   | 0.00                                     | 20800                               | 15600                                | 75                            | 00                        | 00                  |
|                  | Girders -Steel                | Sq.m           | 420.00              | 579.20                       | 0.00   | 578.20  | 1.00   | 0.00                                     | 243264                              | 182301                               | 75                            | 00                        | 00                  |
|                  | Deck Top - Thin Slab          | Sq.m           | 120.00              | 234.00                       | 0.00   | 227.50  | 5.50   | 1.00                                     | 28080                               | 20739                                | 74                            | 00                        | 80                  |
| Decks            | Soffit - Thin Slab            | Sq.m           | 120.00              | 325.90                       | 00.00  | 319.90  | 4.00   | 2.00                                     | 39108                               | 28983                                | 74                            | 00                        | 80                  |
| Joints           | Armouring / Retaining Devices | Ε              | 1.00                | 11.20                        | 0.00   | 6.00  | 5.20   | 0.00                                     | 11                                  | 7                                    | 59                            | 00                        | 00                  |
|                  | Bearings                      | Each           | 1000.00             | 16.00                        | 0.00   | 0.00  | 13.00  | 3.00                                     | 16000                               | 2200                                 | 33                            | 8                         | 8                   |
| Piers            | Caps                          | Sq.m           | 900.00              | 79.90                        | 0.00   | 78.40   | 1.00   | 0.50                                     | 71910                               | 53280                                | 74                            | 00                        | 8                   |
|                  | Shafts/ Columns/ Pier Bents   | Sq.m           | 900.00              | 2.00                         | 0.00   | 2.00  | 0.00   | 0.00                                     | 1800                                | 1350                                 | 75                            | 0                         | 00                  |
| Sidewalks/ Curbs | Curbs                         | Sq.m           | 40.00               | 84.40                        | 0.00   | 71.50   | 11.90  | 1.00                                     | 3376                                | 2335                                 | 69                            | 00                        | 80                  |
|                  |                               |                |                     |                              |  |   |  |  |                                     |                                      |                               |                           |                     |

|                                 | Importance Factor for Traffic | Importance Factor for Economic Impacts | Importance Factor for Bridge Width | Importance Factor for Bridge Profile or Alignment |    |
|---------------------------------|-------------------------------|--|------------------------------------|---|----|
| 72                              | 0                             | 0                                      | 0                                  | 0   |    |
| Bridge Condition<br>Index (BCI) | <u>.</u>                      | ۳.                                     | <b>⊥</b>                           | _4  | 11 |

Page 1 of 1

| Structure Name        | Walley Bridge            |                   |                     |                   |                        |                  |                         |             |
|-----------------------|--------------------------|-------------------|---------------------|-------------------|------------------------|------------------|-------------------------|-------------|
| Main Hwy/Road #       | Peddlers Drive           |                   | Under<br>Structure: | Navigable<br>Rail | Water Road             | Non- N<br>Pedest | avigable Wa<br>rian     | ter Other   |
| D. 131                | D.III. D.I               |                   | On<br>Structure:    | Rail              | Road X                 | Pedestrian       | Other                   |             |
| Road Name:            | Peddlers Drive           |                   |                     |                   |                        |                  |                         |             |
| Structure Location    | 1.65 km West of Graham   |                   |                     | (9) 14            |                        |                  |                         |             |
| Latitude              | 46° 14' 33"              | N                 | Long                | gitude            |                        | _                | ' 07" W                 |             |
| Owner(s)              | Township of Calvin       |                   | Heri<br>Desi        | tage<br>gnation   | Not Cons. Desig./not L | Cons./Not A      | pp. Lis<br>Desig. & Lis |             |
| MTO Region            | _                        |                   | Road                | d Class:          | Freeway                | Arterial X       | Collector               | Local       |
| MTO District          | -                        |                   | Post                | ed Speed          |                        | No. of L         | anes                    | 1           |
| Old County            | <u> </u>                 |                   |                     |                   | -                      | % Truck          |                         | -           |
| Geographic Twp.       |                          |                   |                     | ial Routes        | Transit                | Truck            | School                  | Bicycle     |
| Structure Type        | Concrete Slab on Steel I | -Girders          | Deto                | our Length A      | Around                 |                  |                         | (km)        |
| Total Deck Length     | 51.8                     | (m)               | ——<br>Fill o        | on Structure      |                        | -                |                         | (m)         |
| Overall Str. Width    | 5.6                      | (m)               |                     | v Angle           |                        |                  |                         | (Degrees)   |
| Total Deck Area       | 290.1                    | (m <sup>2</sup> ) |                     | ction of Stru     | ıcture                 | East/            | West                    | _(5 egrees) |
| Roadway Width         | 4.5                      | (m)               | No.                 | of Spans          |                        | 3                |                         | _           |
| Span Lengths          | 13.1, 26, 12.7           | (m)               |                     | 1                 |                        |                  |                         | -           |
|                       |                          |                   |                     |                   |                        |                  |                         |             |
| н                     | STORICAL DATA            |                   |                     |                   |                        |                  |                         |             |
| Year Built            |                          |                   |                     | Last OSII         | M Inspection           |                  | Augi                    | ust 7, 2024 |
| Year of Last Major R  | ehab                     |                   |                     | Last Enha         | anced OSIM I           | nspection        |                         |             |
| Current Load Limit    | ( <del>-</del>           |                   | (tonnes)            | Last Brid         | ge Master Insp         | pection          |                         | -           |
| Load Limit By-Law #   | <u> </u>                 |                   |                     | Last Evaluation   |                        |                  |                         | -           |
| By-Law Expiry Date    | -                        |                   | _                   | Last Unde         | erwater Inspec         | tion             |                         | -           |
| Min. Vertical Clearar | ice                      |                   | (m)                 | Last Cond         | dition Survey          |                  |                         |             |
|                       | ry: (Date / Description) |                   |                     |                   |                        |                  |                         |             |

Site No.: B2 BRIDGE

| NSPECTION INFORMATION                   |   |
|---|---|
| August 7, 2024                          | Type of Inspection: OSIM  Enhanced OSIM   |
| Tashi Dwivedi, P.Eng., HP Engineering   | 9   |
| Derick Battrick, P.Eng., HP Engineering |   |
| Measuring Tape, Digital Camera and Hami | mer   |
| Overcast                                |   |
| 24 °C                                   |   |
|   | August 7, 2024  Tashi Dwivedi, P.Eng., HP Engineering  Derick Battrick, P.Eng., HP Engineering  Measuring Tape, Digital Camera and Hamn  Overcast |

| A DEVELONAL INVESTED A PROPERTY OF THE PROPERT |      | Priority | Estimated Cost    |                |           |
|--|------|----------|-------------------|----------------|-----------|
| ADDITIONAL INVESTIGATION REQUIRED  | None | Normal   | Table 1 Urgent    | Littiliated Co |           |
| Rehabilitation/Replacement Study:  | X    |          |                   | \$             |           |
| Material Condition Survey  | X    |          |                   | \$             | d E       |
| Detailed Deck Condition Survey:  |      | X        |                   | \$             | 10,000.00 |
| Non-destructive Delamination Survey of Asphalt- Covered Deck:  | X    |          |                   | \$             | -         |
| Concrete Substructure Condition Survey:  | X    |          |                   | \$             | ű.        |
| Detailed Coating Condition Survey:   | X    |          |                   | \$             | -         |
| Detailed Timber Investigation:   | X    |          |                   | \$             |           |
| Underwater Investigation:  | X    |          |                   | \$             | 1 = 3     |
| Fatigue Investigation:   | X    |          |                   | \$             | = N h     |
| Seismic Investigation:   | X    |          |                   | \$             |           |
| Structure Evaluation:  | X    |          |                   | \$             | 7.        |
| Monitoring   | X    |          |                   | \$             | 5.        |
| Monitoring of Deformations, Settlement and Movements:  | X    |          |                   | \$             |           |
| Monitoring Crack Widths:   | X    |          |                   | \$             | 11.       |
| Load Posting - Estimated Load Limit  |      |          | <b>Total Cost</b> | \$             | 10,000.00 |

| OVERALL STRUCTURAL NOTES:                      |   |
|--|---|
| Recommended Work on Structure:                 | None Minor Rehab. Major Rehab. Replace  |
| Timing of Recommended Work:                    | ∑ 1 to 5 years ☐ 6 to 10 years  |
| at transition rail to deck barrier at all 4 co | I deck barrier have been replaced since previous inspection (design by others). Missing barrier posts briners of deck. Seals at piers exhibit bulging, splits and severe damage at curb edges. Abutment and severe bulging throughout. Spall with exposed reinforcement noted at northeast end of curb. Spall d horizonal and vertical medium to wide cracks noted at south of west pier cap. Medium to wide end. |
| Date of Next Inspection:                       | June 2026   |

| Suspected | Performance | Deficien | cies |
|-----------|-------------|----------|------|
|-----------|-------------|----------|------|

- None
- 01 Load carrying capacity
- Excessive deformations (deflections & rotation)
- 03 Continuing settlement

- Continuing settlement
  Continuing movements
  Seized bearings
  Maintenance Needs
  Lift and swing bridge maintenance
  Bridge cleaning
  Bridge handrail maintenance

- Painting steel bridge structures Bridge deck joint repair 04
- Bridge bearing maintenance

- 06 Bearing not uniformly loaded/unstable
- 07 Jammed expansion joint 08 Pedestrian/vehicular hazard
- 09 Rough riding surface
- 10 Surface ponding
- 11 Deck drainage
- Repair of structural steel 07
- Repair of bridge concrete Repair of bridge timber 08 09
- Bailey bridges maintenance Animal/pest control 10
- 11 Bridge surface repair 12

- Slippery surfaces Flooding/channel blockage Undermining of foundation 13
- 14
- Unstable embankments 15
- 16 Other
- Erosion control at bridges Concrete sealing 13
- 14
- 15 Rout and seal
- Bridge deck drainage Scaling (loose Concrete or ACR Steel) 16 17

# BRIDGE

| E                                   | LEMENT DATA                    |                         |                              |   |   |  |  |  |
|-------------------------------------|--------------------------------|-------------------------|------------------------------|---|---|--|--|--|
| Element Group:                      | Approaches                     |                         | Length:                      |   | 14m (NW), 29m (SW),<br>31m (NE), 29m (SE) |  |  |  |
| Element Name:                       | Barrier                        |                         | Width:                       |   | -   |  |  |  |
| Location:                           | East & West of Structure       |                         | Height:                      | Height:                                       |   |  |  |  |
| Material:                           | Steel                          |                         | Count:                       |   | 4   |  |  |  |
| Element Type:                       | Steel Flex Beam on Woo         | d Posts                 | Total Quantity:              |   | 130 m                                     |  |  |  |
| Environment:                        | Severe                         |                         | Limited Inspection:          |   |   |  |  |  |
| <b>Protection System</b>            | None                           |                         |                              |   |   |  |  |  |
| Condition Data:                     | Units                          | Excellent               | Good                         | Fair  | Poor                                      |  |  |  |
|                                     | m                              | _                       | 99 -                         |   | 4   |  |  |  |
| deck.                               | dition. Transition rail from a | approach barrier to dec | k barrier is missing a post; | this condition is                             | present at all 4 corners of               |  |  |  |
| Performance Deficie                 | Performance Deficiencies: 01   |                         |                              | Maintenance Needs: 18 – Install missing posts |   |  |  |  |
| Recommended Wor                     | k: Rehab.  1 – 5 Years         | Replace 6 – 10 Years    | Maintenance Needs            | s: 🛚 Urgent                                   | 1 Year 2 Years                            |  |  |  |
| Element Group:                      | Approaches                     |                         | T                            |   |   |  |  |  |
| Element Name:                       | Wearing Surface                |                         | Length:                      |   | 6 m                                       |  |  |  |
| Location:                           | East & West Approaches         |                         | Width:                       |   | 5.25 m                                    |  |  |  |
| Material:                           | Asphalt                        |                         | Height:                      |   | -   |  |  |  |
| Element Type:                       | Asphalt Wearing Surface        | 8                       | Count:                       |   | 2   |  |  |  |
| Environment:                        | Severe                         | )<br>                   | Total Quantity:              |   | 63 m <sup>2</sup>                         |  |  |  |
| Protection System                   | None                           |                         | Limited Inspection:          |   |   |  |  |  |
| Trotection System                   | Units                          | Б. н.                   |                              |   |   |  |  |  |
| Condition Data:                     | m <sup>2</sup>                 | Excellent               | Good<br>56                   | Good Fair Poo                                 |   |  |  |  |
| Comments:<br>Moderate ravelling obs | erved throughout the approa    | ach. Asphalt polishing  |                              | oroach.                                       |   |  |  |  |
| Performance Deficien                | ncies: 00                      |                         | Maintenance Needs            | : 00  |   |  |  |  |
| Recommended Work                    | Rehab.                         | Replace 6 – 10 Years    | Maintenance Needs            | : Urgent                                      | 1 Year 2 Years                            |  |  |  |

Site No.: B2 BRIDGE **ELEMENT DATA** Length: Element Group: Accessories Width: **Element Name:** Signs Height: Location: NE, NW, SE & SW of Structure Count: 6 Material: **Total Quantity:** 6 Hazard and One Lane Signs **Element Type:** Limited Inspection: Severe **Environment:** Hot Dip Galvanizing **Protection System** Fair Poor Units Excellent Good **Condition Data:** 6 Each Comments: Signs are generally in good condition. Northeast hazard sign has a bent corner. Maintenance Needs: 00 Performance Deficiencies: 00 Maintenance Needs: Urgent 1 Year 2 Years Replace Recommended Work: Rehab. 1 – 5 Years 6 – 10 Years 52 m Barriers Length: Element Group: Width: Element Name: Railing Systems Location: North & South Sides of Structure Height: 2 Count: Material: Steel 104 m **Total Quantity:** Steel Thrie Beam Element Type: **Limited Inspection:** Severe **Environment:** None **Protection System** Excellent Good Fair Poor Units **Condition Data:** 104 m Comments: Generally in good condition. Adequacy of deck barrier configuration (thrie beam railing face mounted on exterior of existing raised concrete curb) has not been reviewed by HP Engineering for adequacy. Maintenance Needs: 00 Performance Deficiencies: 00 1 Year 2 Years Maintenance Needs: Urgent Recommended Work: Rehab. Replace 1 – 5 Years 6 – 10 Years

BRIDGE

| E.   | LEMENT DATA                                   |                      |                                     |             |             |           |
|--|---|----------------------|-------------------------------------|-------------|-------------|-----------|
| Element Group:   | Barriers                                      |                      | Length:                             |             | -           |           |
| Element Name:  | Posts   |                      | Width:                              |             | y. <b>-</b> |           |
| Location:  | North & South Sides of St                     | ructure              | Height:                             |             |             |           |
| Material:  | Steel   |                      | Count:                              |             | 56          |           |
| Element Type:  | HSS Steel Posts                               |                      | Total Quantity:                     |             | 56          |           |
| Environment:   | Severe  |                      | Limited Inspection:                 |             |             |           |
| Protection System  | None  |                      |                                     |             |             |           |
| Condition Data:  | Units   | Excellent            | Good                                | Good Fair   |             | Poor      |
| Condition Data:  | Each  | -                    | 56                                  | -           |             | -         |
| Performance Deficio                                      | encies: 00                                    |                      | Maintenance Needs                   | : 00        |             |           |
| Recommended Wor  | k: Rehab.  1 – 5 Years                        | Replace 6 – 10 Years | Maintenance Needs                   | : Urgent    | 1 Year      | 2 Years   |
| Element Group:   | Joints  |                      | Length:                             |             | 5.6 m       |           |
| Element Name:  | Armouring / Retaining De                      | vices                | Width:                              |             | -           |           |
| Location:  | East & West Ends of Struc                     | ture                 | Height:                             |             | <b></b>     |           |
| Material:  | Steel   |                      | Count:                              |             | 2           |           |
| Flore and True   |   | GUV                  |                                     |             | 2           |           |
| Element Type:  | Armouring / Retaining De                      | vices                | Total Quantity:                     |             | 11.2 m      |           |
|  | Armouring / Retaining De                      | vices                | Total Quantity: Limited Inspection: |             |             |           |
| Environment:   |   | vices                |                                     |             |             |           |
| Environment:<br>Protection System                        | Severe  | vices  Excellent     |                                     | Fair        |             | Poor      |
| Protection System  Condition Data:                       | Severe<br>None                                |                      | Limited Inspection:                 | Fair<br>5.2 |             | Poor<br>- |
| Environment: Protection System Condition Data: Comments: | Severe None Units                             |                      | Limited Inspection:                 |             |             |           |
| Environment: Protection System Condition Data: Comments: | Severe None Units m over at the ends of deck. |                      | Limited Inspection:                 | 5.2         |             |           |

BRIDGE

| EL   | EMENT DATA   |                                    |  |  |   |                           |
|--|--|------------------------------------|--|--|---|---------------------------|
| Element Group:   | Joints   |                                    | Length:  |  | 5.6 m   |                           |
| Element Name:  | Seals / Sealants   |                                    | Width:   |  | -   |                           |
| Location:  | East & West Ends of Struc  | cture & At Piers                   | Height:  |  | -   |                           |
| Material:  | Neoprene / Rubber  |                                    | Count:   |  | 2   |                           |
| Element Type:  | Strip Seal   |                                    | Total Quantity:  |  | 11.2  |                           |
| Environment:   | Severe   |                                    | Limited Inspection:  |  |   |                           |
| Protection System  | None   |                                    |  |  |   |                           |
|  | Units  | Excellent                          | Good   | Fair   |   | Poor                      |
| Condition Data:  | Each - 5.6   |                                    |  | 5.6  |   |                           |
| Performance Deficie  | y in fair to poor condition wi   | an medium to severe s              | Maintenance Needs  |  |   |                           |
| Recommended Work   | Rehab.    1 - 5 Years  | ⊠ Replace<br>□ 6 – 10 Years        | Maintenance Needs  | : Urgent   | 1 Year  | 2 Years                   |
|  |  |                                    |  |  |   |                           |
| Element Group:   | Sidewalks / Curbs  |                                    | Length:  |  | 52.1 m  |                           |
| Element Group: Element Name:   | Sidewalks / Curbs Curbs  |                                    | Length: Width:   |  | 52.1 m<br>0.56 m  |                           |
|  |  | ructure                            |  |  |   |                           |
| Element Name:  | Curbs  | ructure                            | Width:   |  | 0.56 m  |                           |
| Element Name:<br>Location:   | Curbs North & South Sides of St  | iructure                           | Width:<br>Height:  |  | 0.56 m<br>0.25 m  |                           |
| Element Name: Location: Material:  | Curbs North & South Sides of St Concrete   | ructure                            | Width: Height: Count:  |  | 0.56 m<br>0.25 m<br>2   |                           |
| Element Name: Location: Material: Element Type:  | Curbs North & South Sides of St Concrete Concrete Curb   | ructure                            | Width: Height: Count: Total Quantity:                                |  | 0.56 m<br>0.25 m<br>2   |                           |
| Element Name: Location: Material: Element Type: Environment: Protection System                           | Curbs  North & South Sides of St  Concrete  Concrete Curb  Severe  | ructure  Excellent                 | Width: Height: Count: Total Quantity:                                | Fair   | 0.56 m<br>0.25 m<br>2   | Poor                      |
| Element Name: Location: Material: Element Type: Environment:   | Curbs North & South Sides of St Concrete Concrete Curb Severe None   |                                    | Width: Height: Count: Total Quantity: Limited Inspection:            | Fair<br>11.9   | 0.56 m<br>0.25 m<br>2   | Poor 1.0                  |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: | Curbs  North & South Sides of St  Concrete  Concrete Curb  Severe  None  Units  m²  generally in good condition and at lower half of the curb  ncies: 00 | Excellent - with narrow cracks and | Width: Height: Count: Total Quantity: Limited Inspection:  Good 71.5 | 11.9 derate scaling and not noted at northers: 8: 08 – Repair of | 0.56 m 0.25 m 2 84.4 m <sup>2</sup> d abrasions east end of c | 1.0<br>from snow<br>curb. |

| E  | LEMENT DATA  |   |   |                    |                          |   |  |
|--|--|---|---|--------------------|--------------------------|---|--|
| Element Group:   | Decks  |   | Length:   |                    | -                        |   |  |
| Element Name:  | Drainage System  |   | Width:  |                    | -                        | a   |  |
| Location:  | North & South of Deck                                      |   | Height:   |                    |                          |   |  |
| Material:  | Steel  |   | Count:  |                    |                          | 4   |  |
| Element Type:  | Round Pipe Deck Drains                                     |   | Total Quantity:   |                    | 4                        |   |  |
| Environment:   | Severe   |   | Limited Inspection:                                     |                    |                          |   |  |
| Protection System  | None   |   |   |                    |                          |   |  |
| Condition Date   | Units  | Excellent   | Good  | Fair               |                          | Poor                                      |  |
| Condition Data:  | Each   | -   | 4   | <u> </u>           |                          |   |  |
| Performance Defici   | <br>encies: 00   |   | Maintenance Need  | s: 00              |                          |   |  |
| Recommended Wor  | Rehab.  1 – 5 Years  | Replace 6 – 10 Years                                | Maintenance Need  | s: Urgent          | ☐ 1 Ye                   | ar 2 Years                                |  |
| Element Group:   | Decks  |   | Length:   |                    | 52 m                     |   |  |
| Element Name:  | Deck Top   |   | Width:  |                    |                          | 4.5 m                                     |  |
| Location:  | Top of Deck  |   | Height:   |                    | -                        |   |  |
| Material:  | Concrete   |   | Count:  |                    | 1                        |   |  |
| Element Type:  | Thin Slab  |   | Total Quantity:   |                    | 234 m <sup>2</sup>       |   |  |
| Environment:   | Severe   |   | Limited Inspection:                                     |                    |                          |   |  |
| Protection System  | None   |   |   |                    |                          |   |  |
| C. III. D.   | Units  | Excellent   | Good  | Fair               |                          | Poor                                      |  |
| Condition Data:  | m²   | -   | 227.5   | 5.5                |                          | 1   |  |
| Comments:<br>Exposed deck top is go<br>of deck. Few small sp | enerally in good condition walls at east end along north o | vith light scaling and mi<br>curb. Few patched spal | nor abrasion throughout a<br>ls near west end along sou | nd is partially co | vered in a<br>small, exp | sphalt at the ends<br>posed spalls noted. |  |
| Performance Deficie  | encies: 00   |   | Maintenance Need  | s: 08 – Repair of  | Bridge C                 | oncrete                                   |  |
| Recommended Wor  | k: Rehab.  1 - 5 Years                                     | Replace 6 – 10 Years                                | Maintenance Need  | s: Urgent          | 1 Yes                    | ar 🔀 2 Years                              |  |

BRIDGE

| EI   | LEMENT DATA  | en e |                     |           |                     |             |
|--|--|--|---------------------|-----------|---------------------|-------------|
| Element Group:   | Decks  |  | Length:             |           | 2 m                 |             |
| Element Name:  | Soffit - Thin Slab (End)   |  | Width:              |           | 5.6 m               |             |
| Location:  | Underside of Deck  |  | Height:             |           |                     |             |
| Material:  | Concrete   |  | Count:              |           | 6                   |             |
| Element Type:  | Thin Slab  |  | Total Quantity:     |           | 67.2 m <sup>2</sup> |             |
| Environment:   | Moderate   |  | Limited Inspection: |           |                     |             |
| <b>Protection System</b>   | None   |  |                     |           |                     |             |
| Condition Data:  | Units  | Excellent                                | Good                | Fair      |                     | Poor        |
| Condition Data:  | m <sup>2</sup> - 67.2 -  |  |                     | -         |                     |             |
| Generally in good cond   |  |  | Maintenance Needs   | : 00      |                     | ,           |
| Recommended World  | and the second s | Replace 6 – 10 Years                     | Maintenance Needs   |           | 1 Year              | 2 Years     |
| Element Cusum  | Desire   |  | T                   |           | 20.0                |             |
| Element Group: Element Name:   | Decks  | >  | Length: Width:      |           | 39.8 m              |             |
| Location:  | Soffit – Thin Slab (Exterior Underside of Deck   | )<br>                                    |                     |           | 1 m                 |             |
| Material:  | Concrete   |  | Height: Count:      |           | -                   |             |
| The state of the s | Thin Slab  |  |                     |           | 79.6 m <sup>2</sup> |             |
| Element Type: Environment:   |  | <u> </u>                                 | Total Quantity:     |           | /9.6 m²             |             |
|  | Moderate   |  | Limited Inspection: |           | 1 1                 | 12-12-1     |
| Protection System  | None Units   | Excellent                                | G 1                 |           |                     | A. Constant |
| <b>Condition Data:</b>   | m <sup>2</sup>   | Excellent                                | <b>Good</b> 73.6    | Fair<br>4 |                     | Poor 2      |
| Comments: Generally in good cond   | lition with light spalls along   | drip groove, narrow cra                  | 1,000               | d.        | Bridge Concret      |             |
| Recommended Work   |  | Replace 6-10 Years                       | Maintenance Needs   |           |                     | 2 Years     |

| BRIDGE  | LEMENT DATA                  |                        |                     |                                    |                      | Site No.: B2 |  |
|---|------------------------------|------------------------|---------------------|------------------------------------|----------------------|--------------|--|
| Element Group:  | Decks                        |                        | Length:             | S. D. C. Arrello and S. C. Control | 39.8 m               |              |  |
| Element Name:   | Soffit – Thin Slab (Interior |                        | Width:              |                                    | 4.5 m                |              |  |
| Location:   | Underside of Deck            | 1)                     | Height:             |                                    | - 4.3 III            |              |  |
| Material:   | Concrete                     |                        | Count:              |                                    | 1                    |              |  |
| Element Type:   | Thin Slab                    |                        | Total Quantity:     |                                    | 179.1 m <sup>2</sup> |              |  |
| Environment:  | Benign                       |                        | Limited Inspection: |                                    | 177.1 11             | 1            |  |
| Protection System   | None                         |                        | Limited Inspection. |                                    |                      | <del></del>  |  |
| Protection System   | Units                        | Excellent              | Good                | Fair                               |                      | Poor         |  |
| Condition Data:   | m <sup>2</sup>               | Excenent               |                     | 179.1 -                            |                      | 1001         |  |
| Generally in good con-  | dition with narrow cracks.   |                        |                     |                                    |                      |              |  |
| Performance Deficie   | encies: 00                   |                        | Maintenance Needs   | s: 00                              | <u> </u>             |              |  |
|   | 1 – 5 Years                  | Replace 6 – 10 Years   |                     | 200                                |                      |              |  |
| Element Group:  | Beams / MLEs                 |                        | Length:             |                                    | 2 m                  |              |  |
| Element Name:   | Girders (End Spans - End     | 1)                     | Width:              | Width:                             |                      | 0.23 m       |  |
| Location:   | Underside of Structure       |                        | Height:             | Height:                            |                      | 0.6 m        |  |
| Material:   | Steel                        |                        | Count:              |                                    | 16                   |              |  |
| Element Type:   | Steel I-Girders              |                        | Total Quantity:     |                                    | 60.5 m <sup>2</sup>  | 2            |  |
| Environment:  | Moderate                     |                        | Limited Inspection: | Limited Inspection:                |                      |              |  |
| Protection System   | None                         |                        |                     |                                    |                      |              |  |
| C III D   | Units                        | Excellent              | Good                | Fair                               |                      | Poor         |  |
| Condition Data:   | m <sup>2</sup>               | -                      | 59.5                | 1                                  |                      |              |  |
| Comments: Generally in good congirder ends.  Performance Deficients Recommended Wor |                              | orrosion. Localized mo | Maintenance Need    | s: 00                              | g noted or           |              |  |
| Accommended wor   | 1 – 5 Years                  | 6-10 Years             | Maintenance (vector | o Orgent                           |                      | ar z rears   |  |

BRIDGE

| E   | LEMENT DATA                                  |                    |                     |                           |                      |  |
|---|--|--------------------|---------------------|---------------------------|----------------------|--|
| Element Group:  | Beams / MLEs                                 |                    | Length:             | 17.                       | 8 m                  |  |
| Element Name:   | Girders (End Spans – Mic                     | idle)              | Width:              | 0.2                       | 3 m                  |  |
| Location:   | Underside of Structure                       |                    | Height:             | 0.6                       | 0.6 m                |  |
| Material:   | Steel  | man a start        | Count:              | 8                         | 8                    |  |
| Element Type:   | Steel I-Girders                              | 1 2                | Total Quantity:     | 269                       | 269.1 m <sup>2</sup> |  |
| Environment:  | Benign                                       |                    | Limited Inspection: |                           |                      |  |
| Protection System   | None   |                    | per ul              |                           |                      |  |
| Condition Data:   | Units  | Excellent          | Good                | Fair                      | Poor                 |  |
| Condition Data:   | m²   | -                  | 269.1 -             |                           | -                    |  |
| Performance Deficie   | encies: 00                                   |                    | Maintenance Needs:  | 00                        | <del>-, </del>       |  |
| Recommended Wor   | Rehab.  1 – 5 Years                          | Replace 6-10 Years | Maintenance Needs:  | Urgent 1                  | Year 2 Years         |  |
| Element Group:  | Beams / MLEs                                 |                    | Length:             | 2 m                       | 8                    |  |
| Element Name:   | Girders (Middle Span – En                    | nd)                | Width:              | 0.3                       | m                    |  |
| Location:   | Underside of Deck                            |                    | Height:             | 0.7                       | 5 m                  |  |
| Material:   | Steel  |                    | Count:              | 8                         |                      |  |
| Element Type:   | Steel I-Girders                              |                    | Total Quantity:     | 38.4                      | l m²                 |  |
| Environment:  | Moderate                                     |                    | Limited Inspection: | X                         |                      |  |
| Protection System   | None   |                    |                     | 12_                       |                      |  |
| rotection bystem  | 0.65-0.60(0.700)                             |                    |                     |                           |                      |  |
| 519 - 100 - | Units  | Excellent          | Good                | Fair                      | Poor                 |  |
|   | Units<br>m <sup>2</sup>                      | Excellent          | Good 38.4           | Fair<br>-                 | Poor -               |  |
| Condition Data:   | m <sup>2</sup>                               | -                  |                     | i=                        | -                    |  |
| Condition Data:   | m <sup>2</sup> nerally in good condition wit | -                  | 38.4                | -<br>visible condition on | -                    |  |

| RIDGE<br>EI  | LEMENT DATA              |                      |                     |            |                      | Site No.: B2 |  |
|--|--------------------------|----------------------|---------------------|------------|----------------------|--------------|--|
| Element Group:                                       | Beams / MLEs             |                      | Length:             |            | 22 m                 |              |  |
| Element Name:  | Girders (Middle Span – M | iddle)               | Width:              |            | 0.3 m                |              |  |
| Location:  | Underside of Deck        |                      | Height:             |            |                      | 0.75 m       |  |
| Material:  | Steel                    |                      | Count:              |            | 4                    |              |  |
| Element Type:  | Steel I-Girders          |                      | Total Quantity:     |            | 211.2 m <sup>2</sup> |              |  |
| Environment:   | Benign                   |                      | Limited Inspection: |            | X                    |              |  |
| Protection System                                    | None                     |                      |                     |            |                      |              |  |
|  | Units                    | Excellent            | Good                | Fair       |                      | Poor         |  |
| Condition Data:                                      | m <sup>2</sup>           | -                    | 211.2               | •          |                      | •            |  |
| Performance Deficio                                  |                          |                      | Maintenance Needs   |            |                      |              |  |
| Recommended Wor                                      | Rehab.  1 – 5 Years      | Replace 6 – 10 Years | Maintenance Needs   | s: Urgent  | 1 Yea                | ar 2 Years   |  |
| Element Group:                                       | Beams / MLEs             |                      | Length:             |            | -                    |              |  |
| Element Name:  | Diaphragms (End Spans –  | End)                 | Width:              | Width:     |                      | -            |  |
| Location:  | East & West Underside of | Structure            | Height:             | Height:    |                      | -            |  |
| Material:  | Steel                    |                      | Count:              |            | 12                   |              |  |
| Element Type:  | Steel I-Beam Diaphragms  |                      | Total Quantity:     |            | 12                   |              |  |
| Environment:   | Moderate                 |                      | Limited Inspection: |            |                      |              |  |
| Protection System                                    | None                     |                      |                     |            |                      |              |  |
|  | Units                    | Excellent            | Good                | Fair       |                      | Poor         |  |
| Condition Data:                                      | Each                     | -                    | 12                  | -          |                      | -            |  |
| Comments: Generally in good con Performance Deficion | encies: 00               |                      | Maintenance Need    |            |                      |              |  |
| Recommended Wor                                      | Rehab.  1 – 5 Years      | Replace 6 – 10 Years | Maintenance Need    | ls: Urgent | 1 Yea                | ar 2 Years   |  |

| EL   | EMENT DATA  |                      |   |            |                |  |
|--|---|----------------------|---|------------|----------------|--|
| Element Group:   | Beams / MLEs  |                      | Length:   |            | •              |  |
| Element Name:  | Diaphragms (End Spans –   | Middle)              | Width:  |            | •              |  |
| Location:  | East & West Underside of  | Structure            | Height:   |            | -              |  |
| Material:  | Steel   | F                    | Count:  |            | 6              |  |
| Element Type:  | Steel I-Beam Diaphragms   | - 1-                 | Total Quantity:   |            | 6              |  |
| Environment:   | Benign  | 11                   | Limited Inspection:                                       |            | X              |  |
| Protection System  | None  |                      |   | <b>'</b>   |                |  |
| =0.6   | Units   | Excellent            | Good  | Fair       | Poor           |  |
| Condition Data:  | Each  | -                    | 6   | ) <b>-</b> | . 100          |  |
| Performance Deficie Recommended Work   |   | Replace 6 – 10 Years | Maintenance Needs  Maintenance Needs                      |            | 1 Year 2 Years |  |
|  |   |                      |   |            |                |  |
| Element Group:   | Beams / MLEs Diaphragms (Middle Span  | ı – End)             | Length: Width:  |            | -              |  |
|  | Beams / MLEs Diaphragms (Middle Span Underside of Structure   | ı – End)             |   |            |                |  |
| Element Name:  | Diaphragms (Middle Span   | ı – End)             | Width:  |            |                |  |
| Element Name: Location: Material:  | Diaphragms (Middle Span<br>Underside of Structure   |                      | Width:<br>Height:   |            | -              |  |
| Element Name:<br>Location:   | Diaphragms (Middle Span<br>Underside of Structure<br>Steel  |                      | Width: Height: Count:                                     |            | -<br>-<br>6    |  |
| Element Name: Location: Material: Element Type:  | Diaphragms (Middle Span<br>Underside of Structure<br>Steel<br>Steel I-Beam Diaphragms                 |                      | Width: Height: Count: Total Quantity:                     |            | -<br>-<br>6    |  |
| Element Name: Location: Material: Element Type: Environment: Protection System                           | Diaphragms (Middle Span<br>Underside of Structure<br>Steel<br>Steel I-Beam Diaphragms<br>Moderate     |                      | Width: Height: Count: Total Quantity:                     | Fair       | -<br>-<br>6    |  |
| Element Name: Location: Material: Element Type: Environment:   | Diaphragms (Middle Span Underside of Structure Steel Steel I-Beam Diaphragms Moderate None            |                      | Width: Height: Count: Total Quantity: Limited Inspection: | Fair<br>-  | -<br>6<br>6    |  |
| Element Name: Location: Material: Element Type: Environment: Protection System                           | Diaphragms (Middle Span Underside of Structure Steel Steel I-Beam Diaphragms Moderate None Units Each | Excellent            | Width: Height: Count: Total Quantity: Limited Inspection: |            | - 6 6 6 Poor   |  |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: | Diaphragms (Middle Span Underside of Structure Steel Steel I-Beam Diaphragms Moderate None Units Each | Excellent            | Width: Height: Count: Total Quantity: Limited Inspection: | -          | - 6 6 6 Poor   |  |

|  | LEMENT DATA                                  |                      |   |           |          |           |  |
|--|--|----------------------|---|-----------|----------|-----------|--|
| Element Group:   | Beams / MLEs                                 |                      | Length:   |           | -        |           |  |
| Element Name:  | Diaphragms (Middle Span                      | – Middle)            | Width:  | Width:    |          |           |  |
| Location:  | Underside of Structure                       |                      | Height:   | Height:   |          |           |  |
| Material:  | Steel  |                      | Count:  |           | 9        |           |  |
| Element Type:  | Steel I-Beam Diaphragms                      | 4                    | Total Quantity:   |           | 9        |           |  |
| Environment:   | Moderate                                     |                      | Limited Inspection:   |           | X        |           |  |
| Protection System  | None   |                      |   |           |          |           |  |
| G W B  | Units  | Excellent            | Good  | Fair      |          | Poor      |  |
| Condition Data:  | Each   | -                    | 9   | •         |          | -         |  |
| Performance Deficio  | encies: 00                                   |                      | Maintenance Needs   | s: 00     |          |           |  |
| Recommended Wor  | k: Rehab. 1 – 5 Years                        | Replace 6 – 10 Years | Maintenance Needs   | s: Urgent | ☐ 1 Yea  | r 2 Years |  |
| Element Group:   | Abutments                                    |                      | Length:   |           | 2.1 m    |           |  |
|  | Wingwalls                                    |                      | Width:  | Width:    |          | -         |  |
| Element Name:  |  |                      | Height:   | Height:   |          | 0.85 m    |  |
|  | NE, NW, SE & SW of Str                       | ucture               | B   |           | 0.65 III |           |  |
| Location:  | NE, NW, SE & SW of Str<br>Concrete           | ucture               | Count:  |           | 4        |           |  |
| Location:<br>Material:   |  |                      | 100 - |           |          |           |  |
| Location:<br>Material:<br>Element Type:  | Concrete                                     |                      | Count:  |           | 4        |           |  |
| Location:<br>Material:<br>Element Type:<br>Environment:  | Concrete Reinforced Concrete Win             |                      | Count:<br>Total Quantity:   |           | 4        |           |  |
| Location: Material: Element Type: Environment: Protection System   | Concrete Reinforced Concrete Win Benign      |                      | Count:<br>Total Quantity:   | Fair      | 4        | Poor      |  |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: | Concrete Reinforced Concrete Win Benign None | gwall                | Count: Total Quantity: Limited Inspection:  |           | 4        | Poor<br>- |  |

| EL   | EMENT DATA  |  |  |                                  |                  |             |
|--|---|--|--|----------------------------------|------------------|-------------|
| Element Group:   | Abutments   | AND THE RESERVE OF THE PARTY OF | Length:  |                                  | -                |             |
| Element Name:  | Ballast Walls   | J1 =   | Width:   |                                  | 5.62 1           | n           |
| Location:  | East & West Underside of  | f Structure  | Height:  |                                  | 0.75 1           | n           |
| Material:  | Concrete  |  | Count:   |                                  | 2                |             |
| Element Type:  | Reinforced Concrete Wall  |  | Total Quantity:  |                                  | 8.4 m²           |             |
| Environment:   | Benign  |  | Limited Inspection   | :                                |                  |             |
| Protection System  | None  |  |  |                                  |                  |             |
| Candition Date:  | Units   | Excellent  | Good   | Fair                             |                  | Poor        |
| Condition Data:  | m² -  |  | 8.3  | 0.1                              |                  |             |
| Performance Deficie  |   | Replace  | Maintenance Need   | <b>Is:</b> 00                    | □1 Y             | ear 2 Years |
|  | 1 – 5 Years   | 6 – 10 Years   |  |                                  |                  | VIII        |
|  |   |  |  |                                  |                  |             |
| Element Group:   | Abutments   |  | Length:  |                                  | 1.               |             |
| Element Group:<br>Element Name:  | Abutments Bearings  |  | Length: Width:   |                                  | -                |             |
|  |   | , , , , , , , , , , , , , , , , , , ,  |  | =                                |                  |             |
| Element Name:  | Bearings  |  | Width:   |                                  | -                |             |
| Element Name:<br>Location:   | Bearings On Abutment Walls  |  | Width:<br>Height:  |                                  | -                |             |
| Element Name: Location: Material:  | Bearings On Abutment Walls Neoprene / Rubber / Steel  |  | Width: Height: Count:  |                                  | - 8              |             |
| Element Name: Location: Material: Element Type:  | Bearings On Abutment Walls Neoprene / Rubber / Steel Elastomeric Bearing / Stee   |  | Width: Height: Count: Total Quantity:                          |                                  | - 8              |             |
| Element Name: Location: Material: Element Type: Environment: Protection System   | Bearings On Abutment Walls Neoprene / Rubber / Steel Elastomeric Bearing / Stee Benign  |  | Width: Height: Count: Total Quantity:                          | Fair                             | - 8              | Poor        |
| Element Name: Location: Material: Element Type: Environment:   | Bearings On Abutment Walls Neoprene / Rubber / Steel Elastomeric Bearing / Stee Benign None                                       | el Plate   | Width: Height: Count: Total Quantity: Limited Inspections      |                                  | - 8              | Poor 2      |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments:                       | Bearings On Abutment Walls Neoprene / Rubber / Steel Elastomeric Bearing / Stee Benign None Units                                 | Excellent  | Width: Height: Count: Total Quantity: Limited Inspection: Good | Fair<br>6                        | -<br>-<br>8<br>8 | 2           |
| Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: Abutment bearings are | Bearings On Abutment Walls Neoprene / Rubber / Steel Elastomeric Bearing / Stee Benign None Units Each moderately to severely com | Excellent  | Width: Height: Count: Total Quantity: Limited Inspection: Good | Fair<br>6<br>te corrosion / corr | -<br>-<br>8<br>8 | 2           |

|   | EMENT DATA  |                      |   |            |                    |  |
|---|---|----------------------|---|------------|--------------------|--|
| Element Group:  | Abutments   |                      | Length:   |            | -                  |  |
| Element Name:   | Abutment Walls  |                      | Width:  |            | 5.62 m             |  |
| Location:   | East & West Underside of  | Structure            | Height:   |            | 0.5 m              |  |
| Material:   | Concrete  |                      | Count:  |            | 2                  |  |
| Element Type:   | Reinforced Concrete Abut  | ment                 | Total Quantity:   |            | 5.6 m <sup>2</sup> |  |
| Environment:  | Benign  |                      | Limited Inspection:                                       |            |                    |  |
| Protection System   | None  |                      |   |            |                    |  |
|   | Units   | Excellent            | Good  | Fair       | Poor               |  |
| Condition Data:   | m² - 5.6 -  |                      | -   |            |                    |  |
| Performance Deficie<br>Recommended Wor  |   | Replace 6 – 10 Years | Maintenance Needs:  Maintenance Needs:                    |            | 1 Year 2 Years     |  |
|   | Piers   |                      | Length:   |            |                    |  |
|   |   |                      |   |            | -                  |  |
| Element Name:   | Bearings  |                      | Width:  |            | -                  |  |
| Element Name:<br>Location:  | Bearings On Piers Caps  |                      | Width:<br>Height:   |            | -                  |  |
| Element Name:<br>Location:<br>Material:   | Bearings On Piers Caps Neoprene / Rubber / Steel  |                      | Width: Height: Count:                                     |            | -<br>-<br>16       |  |
| Element Name:<br>Location:<br>Material:<br>Element Type:  | Bearings On Piers Caps Neoprene / Rubber / Steel Elastomeric Bearing / Stee               |                      | Width: Height: Count: Total Quantity:                     |            | -                  |  |
| Element Name: Location: Material: Element Type: Environment:  | Bearings On Piers Caps Neoprene / Rubber / Steel Elastomeric Bearing / Steel Moderate     |                      | Width: Height: Count:                                     |            | -<br>-<br>16       |  |
| Element Name: Location: Material: Element Type: Environment:  | Bearings On Piers Caps Neoprene / Rubber / Steel Elastomeric Bearing / Stee Moderate None | el Plate             | Width: Height: Count: Total Quantity: Limited Inspection: | Fair       | -<br>-<br>16<br>16 |  |
| Element Group: Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: | Bearings On Piers Caps Neoprene / Rubber / Steel Elastomeric Bearing / Steel Moderate     |                      | Width: Height: Count: Total Quantity:                     | Fair<br>13 | -<br>-<br>16       |  |

| EL  | EMENT DATA   |   |   |                                  |                     |                              |  |
|---|--|---|---|----------------------------------|---------------------|------------------------------|--|
| Element Group:  | Piers  |   | Length:   |                                  | 8.12 m              |                              |  |
| Element Name:   | Caps   |   | Width:  |                                  | 1 m                 | Y. F. mil                    |  |
| Location:   | On Piers   |   | Height:   |                                  | 1.3 m               |                              |  |
| Material:   | Concrete   |   | Count:  |                                  | 2                   |                              |  |
| Element Type:   | Rectangular Pier Caps  |   | Total Quantity:   | 17                               | 79.9 m <sup>2</sup> |                              |  |
| Environment:  | Moderate   |   | Limited Inspection:   |                                  |                     |                              |  |
| Protection System   | None   |   |   |                                  |                     |                              |  |
| Condition Data:   | Units  | Excellent                                       | Good  | Fair                             |                     | Poor                         |  |
| Condition Data:   | m² -   |   | 78.4  | 1                                |                     | 0.5                          |  |
| Performance Deficie<br>Recommended Work   |  | Replace 6 – 10 Years                            | Maintenance Needs  Maintenance Needs                        |                                  | Bridge Co           |                              |  |
| Element Commi   | Di   |   | T   |                                  |                     |                              |  |
| Element Group: Element Name:  | Piers Shafts/Columns/Pile Bent   |   | Length:   |                                  |                     |                              |  |
| Location:   | Underside of Structure   | S   |   | Width:                           |                     | -                            |  |
| Material:   | Steel  |   | Height: Count:  |                                  | -                   |                              |  |
| Element Type:   | Pier Column  |   | Total Quantity:   |                                  | 2                   |                              |  |
| Environment:  | Benign   | 1 1 4   | Limited Inspection:   |                                  | 2                   | - M P 3                      |  |
|   | None   |   | Limited Inspection:   | #11      <br>                    |                     |                              |  |
| Protection System   | Units  | Excellent                                       | Good  | Fair                             |                     | Poor                         |  |
| Condition Data:   | Each   | - Excelent                                      | 2   | T A II                           |                     | -                            |  |
| Comments: Steel piles covered in t piles could not be verif timber crib noted throu | imber crib (piles are inacce<br>fied due to presence of shea<br>ghout. | ssible). Timber sheath<br>thing. Timber on west | ing and steel nosing are gen<br>pier appears to be coming o | nerally in good off. Some separa | condition. I        | Exact number of eathering of |  |

| El   | LEMENT DATA                        |                              |                                |                   |                           |  |
|--|------------------------------------|------------------------------|--------------------------------|-------------------|---------------------------|--|
| Element Group:   | Foundations                        |                              | Length:                        |                   | -                         |  |
| Element Name:  | Foundation (Below Groun            | d Level)                     | Width:                         |                   | -                         |  |
| Location:  | Below Abutment Walls &             | Piers                        | Height:                        |                   | -                         |  |
| Material:  | Concrete                           |                              | Count:                         |                   | •                         |  |
| Element Type:  | Strip Footing                      |                              | Total Quantity:                |                   | -                         |  |
| Environment:   | Benign                             |                              | Limited Inspection:            |                   | X                         |  |
| Protection System                                      | None                               |                              |                                | •                 |                           |  |
|  | Units                              | Excellent                    | Good                           | Fair              | Poor                      |  |
| Condition Data:  | N/A                                | -                            | -                              |                   | -                         |  |
| Performance Defici                                     | encies: 00                         |                              | Maintenance Needs              | • 00              |                           |  |
|  | 1 – 5 Years                        | Replace 6 – 10 Years         |                                |                   |                           |  |
| Element Group:   | Embankments and Stream             | ns                           | Length:                        |                   | -                         |  |
| Element Name:  | Embankments                        |                              | Width:                         |                   | -                         |  |
| Location:  | NE, NW N, S, SE, & SW of Structure |                              | Height:                        |                   |                           |  |
| Material:  | Native Soil                        |                              | Count:                         |                   | 6                         |  |
| Element Type:  | Embankment                         |                              | Total Quantity:                |                   | 6                         |  |
| Environment:   | Moderate                           | foderate Limited Inspection: |                                |                   |                           |  |
| Protection System                                      | None                               |                              |                                |                   |                           |  |
| C 121 B  | Units                              | Excellent                    | Good                           | Fair              | Poor                      |  |
| Condition Data:  | Each                               | -                            | 6                              | -                 | -                         |  |
| Comments:<br>Embankments are wel<br>of current bridge. | Il vegetated with some large       | random rocks and rocl        | c protection in front of abutr | ment walls. Old b | oridge abutments to north |  |
| Performance Defici                                     | encies: 00                         |                              | Maintenance Needs              | : 00              |                           |  |
| Recommended Wor  | Rehab. [ 1 – 5 Years [             | Replace 6 – 10 Years         | Maintenance Needs              | : Urgent          | 1 Year 2 Years            |  |

| EL  | EMENT DATA                           |           |   |         |         |      |
|---|--------------------------------------|-----------|---|---------|---------|------|
| Element Group:  | Embankments and Streams              |           | Length:                                 |         | -       |      |
| Element Name:   | Slope Protection                     |           | Width:                                  |         |         |      |
| Location:   | East and West Underside of Structure |           | Height:                                 |         | -       |      |
| Material:   | Rock                                 |           | Count:                                  |         | 2       |      |
| Element Type:   | Slope Protection                     |           | Total Quantity:                         |         | 2       |      |
| Environment:  | Moderate                             |           | Limited Inspection:                     |         |         |      |
| Protection System   | None                                 |           | = |         |         |      |
|   | Units Excellent Good Fair            |           |   | Poor    |         |      |
| Condition Data:   | Each                                 | -         | 2                                       | -       |         |      |
| Large rocks placed along the embankments directly in front of both the East and West abutments. Generally in fair condition.  Performance Deficiencies: 00  Maintenance Needs: 00 |                                      |           |   |         |         |      |
| Recommended Work: Rehab. Replace Maintenance Needs: Urgent 1 Year 2 Years   |                                      |           |   |         | 2 Years |      |
|   |                                      |           | -                                       |         |         |      |
| Element Group:  | Embankments and Stream               | S         | Length:                                 |         | •       |      |
| Element Name:   | Streams and Waterways                | Width:    |   | -       |         |      |
| Location:   | Below Structure                      |           | Height:                                 |         | -       |      |
| Material:   | Native                               |           | Count:                                  |         | -       |      |
| Element Type:   | Streams                              |           | Total Quantity:                         |         | All     |      |
| Environment:  | Benign                               |           | Limited Inspection:                     |         |         |      |
| Protection System   | None                                 |           |   |         |         |      |
| C. Prim Data  | Units                                | Excellent | Good                                    | Fair    |         | Poor |
| Condition Data:   | All                                  | -         | All                                     | 2-      | -       |      |
| Comments:  Water flows from south to north with moderate volume and flow; there are no visible flow obstructions.   |                                      |           |   |         |         |      |
| Performance Deficie   |                                      | Replace   | Maintenance Needs: 00                   |         |         |      |
| Recommended Worl  | Maintenance Need                     | s: Urgent | 1 Year                                  | 2 Years |         |      |

| REPAIR AND REHABILITATION REQUIRED |                                       |              | Priority    |            |                | P 10 .     |  |
|------------------------------------|---------------------------------------|--------------|-------------|------------|----------------|------------|--|
| Element                            | Repair and Rehabilitation Required    | 6 - 10 Years | 1 - 5 Years | < 1 year   | Estimated Cost |            |  |
| Joint                              | Joint Seal Replacement                |              | х           |            | \$             | 28,000.00  |  |
| Bearings                           | Abutment and Pier Bearing Replacement |              | Х           |            | \$             | 98,000.00  |  |
|                                    |                                       |              |             |            | \$             | •          |  |
|                                    |                                       |              |             |            | \$             | -          |  |
|                                    |                                       |              |             |            | \$             |            |  |
|                                    |                                       |              |             |            | \$             | -          |  |
|                                    |                                       |              |             |            | \$             |            |  |
|                                    |                                       |              |             |            | \$             | -          |  |
|                                    |                                       |              |             |            | \$             |            |  |
|                                    |                                       | •            | •           | Total Cost | \$             | 126,000.00 |  |

| ASSOCIATED WORK     | Comments        | Esti | imated Cost |
|---------------------|-----------------|------|-------------|
| Approaches          |                 | \$   | -           |
| Detours             |                 | \$   |             |
| Traffic Control     | Traffic control | \$   | 35,000.00   |
| Utilities           |                 | \$   |             |
| Right of Way        |                 | \$   | -           |
| Environmental Study |                 | \$   | -           |
| Other               |                 | \$   | -           |
| Contingencies       |                 | \$   | -           |
|                     | Total Cost      | s    | 35,000.00   |

| JUSTIFICATION |  |
|---------------|--|
|               |  |
|               |  |
|               |  |
|               |  |
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