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Project/File: 113733951

Municipality of Red Lake
Michel Labonte, RRFS, CIT
2 Fifth Street, P.O. Box 1000
Balmertown, ON P0V 1C0

Dear Michel Labonte,

Reference: Howey Bay Bridge and Forestry Road Culvert - OSIM Bridge Inspections 2025

1.1 Introduction

As requested by the Municipality of Red Lake Ontario, Stantec Consulting Ltd. (Stantec) completed a visual inspection of the Howey Bay Road Bridge and the Forestry Road Culvert. On November 5 and 6, 2025, Angela Kasdorf, C.E.T. and Vince Friesen, Str. Tech. of Stantec conducted the detailed visual inspections in accordance with the Ontario Structure Inspection Manual (OSIM) standards.

The notes and recommendations of the in-depth inspection are included in the attached inspection reports. The reports include a condition rating for each accessible element, photographs of key members, and a summary of recommended improvements, including level of priority and estimated repair cost.

Based on the observations made during the inspections, the structures have exhibited continuous, and progressive deterioration as compared to the previous inspections performed in 2023. With previous recommendations not having been addressed, the structures continue to degrade and therefore increase the costs of repair over time, while potentially reducing their ability to support applied loads either from vehicular traffic, or dead and transient loads.

Review of previous summary letters and inspection reports will show a progression of defect severity and increasing maintenance or replacement costs. Accordingly, the results of the 2025 inspections will show similar defects and recommendations with a typical gradual progression of defects.

The maintenance, rehabilitation or replacement recommendations are intended to improve the safety of the structures, and maintain their current structural capacity and functionality. These recommendations include an estimated timeframe which can be used to develop maintenance and repair programs depending on the level of urgency indicated in the detailed inspection report. Note that the costs associated with each maintenance item is an opinion of probable cost and should be considered a Preliminary Estimate – Class C. Cost estimates of this level are considered to have an accuracy of +35% to -20% and do not include factors such as risk to the contractor, future market conditions, contractor capacity or fees for professional engineering.

The intent of this letter is to provide a general summary of the key recommendations and observations.

1.2 Howey Bay Road Bridge Inspection

1. Replace the missing approach post blocking on the SW Post 4 (<1 year)
2. Replace a section of flexbeam railing on the north side between deck post 3 and northwest approach post 1 (<1 year)
3. Replace steel barrier posts 1 and 4 on north and south sides of the bridge (1-5 years)
4. The deck soffit at SU1 between G1/G2 appears to be temporarily repaired with foam to support the wearing surface. Recommend removing temporary repair and replacing with structural concrete (1- 5 years).
5. Repair the gabion baskets along SU1 and SU2 (1-5 years)

The Howey Bay Road Bridge continues to deteriorate as observed during this most recent inspection and is summarized below:

- The steel girders exhibit signs of ongoing severe corrosion with section loss. The bottom flanges beside the bearings have up to 4 mm remaining thickness at SU1 and 8 mm at SU2. Approximate original thickness is 14 mm measured nearer to midspan where there is only light patina formed.
- Rotation of the abutments has been measured since 2015. The rotation is causing gaps at the missing deck joint locations and causing spalls in the ballast walls from the girder bottom flanges. Comparing deck measurements, the substructure has not exhibited movement at SU1 SE and SU2 NW and SW since the previous inspection in 2023, however, SU1 NE the gap has increased by 5 mm since the previous inspection. Stantec recommends this monitoring continue during future inspections.
- The deck soffit has 22% of its total area rated in poor condition. The majority of which is observed adjacent to the abutments and may be caused by leakage through improper deck joint assemblies. According to the Ontario Structural Rehabilitation Manual (OSRM) a surface deterioration survey should performed and also include a delamination survey if more than 10% (or 10 m^2) is exhibiting deterioration and it is anticipated that major concrete repairs will be required.
- The reasoning for the current 5 tonne load limit posting is unknown as no structure evaluation is available.
- Based on the continued deterioration of the girders and concrete deck soffit, deterioration of the footings, reduced load capacity, and movement of the abutments, Stantec recommends replacing the bridge with a new structure in approximately 1-2 years with the new structure having an estimated service life of 75 years. Although the detailed inspection report indicates 1-5 Years, this is a typical convention used in OSIM reports, and therefore is narrowed down in this letter for clarification. Prior to replacement, initial investigations are recommended to be undertaken during the 2026 construction season and should include tasks such as topographic survey, channel bathymetry, geotechnical drilling as well as hydraulic and hydrologic studies. Additional investigations or studies are also anticipated to be required pertaining to heritage resource investigations and other environmental investigations for hazardous materials, species at risk as well as fish habitat and fish passage requirements.
- A determination of the exact replacement crossing in the absence of such investigations cannot be made at this time. However, for the purpose of budgetary estimates, a new similarly sized structure would be a 12.0 m long by 7.2 m wide concrete channel girder bridge with an estimated cost of $777,600 (excluding any contingency or regional factors affecting cost).
- The maintenance items listed above should maintain the bridge's functionality until the bridge is replaced. Maintenance items, rehabilitation, and replacement timing will need to be reassessed during the next OSIM inspection if the bridge remains in-place.

1.3 Forestry Road Culvert Inspection

1. Rehabilitate the concrete footing that currently has extensive and progressing erosion along with exposed corroded rebar under the waterline (<1 year)
2. Repair potholes in the asphalt wearing surface (<1 year)
3. Add slope protection to the northwest embankment toe (1-5 years)

Due to limited access, an underwater investigation of the concrete footing was completed in 2017. It is recommended that another underwater investigation be completed as well as a substructure condition survey to determine the extent and rate of concrete footing deterioration as the 2025 inspection has indicated significant progression from previous years. The hairline to medium vertical cracks in the culvert walls, which were present in previous years, did not appear to have widened since the previous inspection. The purpose of these investigations is to allow for more detailed measurements to be made which can support accurate quantities and mechanisms for rehabilitation (which is recommended in less than one year). The underwater investigation should compare and contrast its findings to those of the investigation completed in 2017.

Due to the size of the concrete footings in the culvert, it is anticipated that this rehabilitation work will require effective pre-construction planning including channel isolation, supplementary culverts or diversion pumping, as well as regulatory approval from authorities such as Fisheries and Oceans Canada (DFO) and Transport Canada (TC).

The attached inspection reports further detail the inspection findings.

1.4 Bridge Condition Index (BCI)

A Bridge Condition Index (BCI) value for each structure was calculated in accordance with the Ontario Ministry of Transportation Engineering Standards Branch July 30, 2009 manual: *Bridge Condition Index (BCI) – An Overall Measure of Bridge Condition.*

The table below provides BCI ranges that generally give a good indication to the overall condition of the structure; however, it is important to note that a critical defect may still exist even though the bridge may have a relatively high BCI. Defects that may cause a safety concern for the public or a poor condition that could cause a sudden structural failure would not necessarily be accounted for in this BCI calculation.

The BCI manual states, "The BCI is calculated using asset management principals based on the remaining economic worth of the bridge. It is based on the premise that a bridge starts at a new condition and deteriorates to a lower condition with time. It uses actual inspection data from the various bridge elements and as the elements deteriorate, they have a lower economic value. Essentially, the BCI is a weighted average of all elements (since all elements are not of equal value to the bridge) and all Condition States (since each condition state represents a certain degree of loss of value of the element). The BCI begins at 100 when the bridge is in new condition and theoretically becomes 0 as all elements become fully in Poor condition. Practically, it is impossible for the BCI to fall to 0 since the entire bridge does not become poor before rehabilitation work is performed."

The BCI number range correlates with the overall bridge condition. The ranges are listed in Table 1 below.

Table 1 - BCI Range Description

BCI Number Range	Bridge Condition
100	Excellent (like new)
≥ 70 to <100	Good
≥60 to <70	Fair
<60	Poor

Table 2 provides a summary of the BCI calculated for each structure from the 2023 and 2025 inspections to show the deterioration progression. Each individual BCI calculation sheet can be found attached to this letter.

Table 2 - Structure BCI Values

Structure	BCI 2023	BCI 2025
Howey Bay Bridge	64.04	62.72
Forestry Road Culvert	70.55	68.50

According to the BCI calculations, Howey Bay Bridge remains in the low end of Fair as of the 2025 inspection. The Forestry Road Culvert has transitioned from the low end of the Good condition range to the high end of Fair. This is a typical gradual progression for structures without major rehabilitation intervention.

1.5 Closure

Stantec was pleased to assist the Municipality of Red Lake with these inspections. If you have any questions regarding the reports, please feel free to contact the undersigned.

Regards,

Stantec Consulting Ltd.

2025-12-19

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Attachment: Howey Bay Bridge Inspection Report
BCI for Howey Bay Bridge
Forestry Road Culvert Inspection Report
BCI for Forestry Road Culvert