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File No. BR594

VIA EMAIL ONLY
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March 4, 2021

Grant Dawson, Chair
Menesetung Bridge Association
Goderich, ON

Dear Sir:

Re: 2020 Structural Review of Menesetung Bridge

Further to your letter of August 20, 2020, the undersigned completed a site inspection of the bridge on December 11, 2020. The inspection was completed from the ground level and deck level with the use of binoculars. No inspection platforms were used, and no other high-level inspection methods were used to access remote elements. In the appropriate season and conditions, we expect to make an inspection from the water surface to confirm some of the assumptions made from shore observations.

In 2016 an inspection report was developed to the standard format of the Ontario Structure Inspection Manual, (OSIM). Based on the observations made on December 11, the condition rating of elements were updated and new photographs were taken to illustrate the conditions. The 2020 OSIM report is enclosed.

The budget values shown on page 3 of the OSIM report are just a first approximation of probable costs using a gross estimate of repair extents and recent contract unit prices. If the Association wishes to pursue any particular project; then it is recommended that a more detailed survey be done of the elements to be repaired. and a more precise calculation of probable costs be developed.

At this time, we did not see any deficiencies that are of immediate concern and it is our opinion that the structure is safe for its normal use for the next two years. It appears that the Association is making repairs to the wood of the deck and barriers as required to replace deteriorated elements.

Maintenance Work

In addition to the repairs and replacement of deteriorated wood elements on the deck and barriers, the following items could be viewed as regular maintenance that could be completed without the assistance of special contractors:

- Clear gravel and debris from the bearing seats of each abutment, annually. This would involve shovels and brooms to keep the horizontal platforms clear. Gravel, sand and debris holds moisture against the bearings and accelerates corrosion of these elements.
- Clean and paint structural steel within 3 m of the ends – as required. There is a general coating failure over the entire length of the bridge, but the corrosion is often worse at the ends where the steel is close to the moist earth embankments. Wire brushing and over-coating with a rust-inhibiting paint should be sufficient but may require re-application every 5 to 10 years.
- Maintain retaining walls on each approach path. These are made of timbers and posts. Some of the timbers have decayed and some of the posts have bent or rotated. A more permanent repair is suggested in the capital program for a budget of $2,000. This may cover the cost of supply of precast concrete retaining wall blocks. These retaining walls are not structural elements of the bridge but are important for the safe side support of the trail approaches to the bridge.

Capital Repairs

All of the other capital work recommended in the OSIM report involves difficult site access and specialized concrete rehabilitation experience. If the Association is unable to fund the entire project, then the following is a list of sub-projects, in order of priority:

1.	Patch repair concrete of abutments and ballast walls	$ 30,000
2.	Patch repair the tops of piers 2, 3, 4, 5	$400,000

These capital costs include allowances for mobilization, site access and engineering, but do not include HST. If the repairs to the tops of the piers is broken into different stages for funding purposes, the sum of the different stages will increase because of the cost of remobilization. On an individual basis, each pier top might have a cost of about $120,000. Of the four pier tops, pier #5 (the most northerly of these four) is the highest priority.

These priorities are aimed at restoring support for the structural bearings that hold each steel girder in place. The remainder of the piers are also important, but their mass allows them some latitude for further deterioration before they become a threat to the structural stability of the bridge.

Without any repairs to the bearing seats, we can imagine a situation where the concrete deterioration advances to the point of undercutting the bearing plates of some of the girders. At some time, the recommendation will come to close the bridge to use because of the lack of support to some of the bearings. This situation could be in the range of 15 years from now, but an earlier failure of bearing support is possible. It is unlikely that there will be a sudden failure of a girder

span without some warning that comes from observations of concrete deterioration under the bearings. That is, through annual inspections, there should be enough time to close the bridge before the beam supports become fully unstable. As well, the size and cost of the repair will increase with each year. The bearing seats of piers 1 and 6 were successfully repaired in 1995.

Please contact us if you have any questions.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

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A. I. Ross, P. Eng.

AIR:hv