

May 28, 2024

Township of Nipissing
45 Beatty Street
Nipissing, Ontario P0H 1W0

Attention: Mr. Dan MacInnis, Operations Superintendent

**RE: HUMMEL BRIDGE – SITE REVIEW INSPECTION / LOAD
EVALUATION**

HP Engineering has been retained by the Township of Nipissing to carry out a site inspection, evaluation, and provide update load posting recommendations for the Hummel Bridge (located on Tamarack Road, approximately 0.6km south of Alsace Road). The current assignment was requested by the Township as a follow-up from our 2020 inspection and evaluation (refer to our Preliminary Design Report, dated January 2023). As part of this (2020) evaluation, the load posting of 17 / 23 / 33 tonnes was confirmed to still be applicable and a reduction in the load posting was not deemed to be warranted.

For the current assignment, a site review inspection was carried out on May 22, 2024 by Mr. Tashi Dwivedi, P.Eng., and Mr. Nicholas Brown, P.Eng. The site inspection generally consisted of a detailed visual and tactile inspection of the bridge components. Access to the underside was carried out via barge (barge provided and operated by our sub-contractor, Grand-Calumet Construction). The performance of the bridge was also observed (on the underside) during the passage of vehicles.

As a result of our site inspection and evaluation, the following comments are provided:

- The general overall condition of the structure has not changed appreciably since our 2020 inspection except for the overall condition of the concrete deck and steel stringers of the main (steel truss) span. These components, in general, were observed to be in notably worse condition at present, compared to our 2020 inspection. The concrete deck was observed to be separated (lifted up) from the stringers in a number of areas and a number of the sealed cracks observed previously (in the concrete deck) appeared to have separated. The stringers also were in worse condition (compared to our 2020 inspection) and additional areas of full perforations and severe to very severe corrosion and corrosion scaling were noted. In addition, now that the stringers and deck had separated, the overall extent of the deterioration along the top flanges of the stringers has become much more evident.

- When vehicles drove over the structure, the deck sections (of the main span) would deflect and impact the stringers and concrete dust / small pieces of concrete debris would be observed falling from the underside of the deck. It was discussed on-site by the inspectors from HP Engineering, that they did not feel particularly *safe* under the bridge when vehicles passed (in particular larger vehicles) as result of this observation.
- It was also noted during our time on site that vehicles appearing to be in excess of the current load posting (17 / 23 / 33) passed over the bridge, so it is likely that, at least to some extent, the load posting is not being followed.

Based on the observed condition from our site visit of May 22, 2024, and our subsequent further evaluation, ***it is our recommendation that the bridge be closed to all vehicular traffic at this time.***

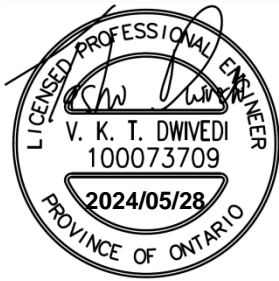
With regards to renewal options, our previous Preliminary Design Report provided two main options (Option 1; rehabilitate structure and Option 2; complete structure replacement). These two options are still viable options (noting the current recommendation to close the bridge). In terms of overall construction costs, it is expected that these costs would be higher given inflationary and market forces since these estimates were originally prepared circa 2021. Assuming work is carried out in 2025, it could be expected that a 20-30% increase in overall construction costs could be anticipated. Based on this, the following updated anticipated construction costs are presented (refer to our original Preliminary Design Report for a description of the options):

- Renewal Option 1 (structure rehabilitation including deck replacement, steel stringer replacement, structural steel repairs, steel pier column encasement); estimated construction costs of \$1,200,000 - \$1,300,000 (timber deck) and \$1,300,000 - \$1,400,000 (reinforced concrete deck).
- Renewal Option 2 (structure replacement with single span, single lane prefabricated steel truss superstructure supported on new reinforced concrete abutments); estimated construction costs of \$3,000,000 – \$3,200,000. For a similar span two-lane structure (assuming a 7.0m roadway width); estimated construction costs of \$3,600,000 – \$3,900,000. To incorporate a separated sidewalk (single lane or two-lane structure options), a premium of approximately \$600,000 – \$650,000 is anticipated.

We trust the above letter satisfies your requirements. Should you have any questions or require further information, please do not hesitate to contact the undersigned.

Respectfully submitted,

HP Engineering Inc.



Tashi Dwivedi, P.Eng.
Principal