

Executive Summary

The Old Spences Bridge was constructed in 1931 and crosses the Thompson River providing a link between Highway 8 and Highway 1 in the Community of Spences Bridge, BC. In 1962, a new bridge was constructed approximately 900 m downstream that also connects Highway 8 and Highway 1.

The Old Spences Bridge is a single-lane bridge composed of five truss spans and two girder spans. The truss spans vary in length with a single span of 21.0 m (69 feet), two spans of 27.7 m (91 feet) and two spans of 65.8 m (216 feet). The girder spans are 11.3 m (37 feet) and 12.2 m (40 feet) making the total length of the bridge 231.6 m (760 feet). Six concrete piers and two concrete abutments support the bridge.

Annual inspections of the Old Spences Bridge have been performed for many years and following the 2002 inspection the bridge was posted with a 25 tonne load limit. During the 2008 inspection, significant deterioration, corrosion and holes were identified in heavier structural components. Based on the 2008 visual inspection the bridge was closed to all vehicular traffic in 2009 in order to ensure public safety.

Subsequent to closing the crossing, the British Columbia Ministry of Transportation and Infrastructure (BC MoT) retained Buckland & Taylor Ltd. (B&T) to carry out a detailed inspection and load capacity evaluation of the structure. As part of their assignment, B&T was also tasked with developing conceptual rehabilitation options and cost estimates to restore the bridge to a range of acceptable levels of reliability.

This report contains observations made during B&T's 2009 inspection and makes recommendations regarding areas to focus on as part of the bridge for evaluation, as well as listing items for maintenance and future inspection. Recommendations for rehabilitation items have also been provided based on the inspection findings. This report does not address the cost effectiveness of carrying out the items identified above.

B&T Report No. 1884-RPT-SPE-002-0, entitled "Load Capacity Evaluation & Rehabilitation Options - Old Spences Bridge No. 2411" summarizes the findings of the load evaluation of the bridge, makes recommendations regarding conceptual rehabilitation options, and summarizes cost estimates to restore the bridge to a range of acceptable levels of reliability.

B&T's 2009 Inspection of the Old Spences Bridge found that overall the bridge is in poor condition, but also identified many areas that are in very poor condition. Some of the areas in very poor condition may affect the capacity of the bridge to safely carry vehicular, pedestrian, or snow loads. Since it is not possible to establish the load carrying capacity of the bridge based

on a visual inspection, a load capacity evaluation of the bridge must be carried out to determine whether it is safe to reopen the bridge to traffic and what level of traffic (i.e., load posting) can safely use the bridge.

The most significant findings and recommendations based on this inspection are as follows:

- Widespread coating failure was observed on the bridge steel. Trans Canada Coating Consultants Ltd. were retained to inspect and to provide an estimate of remaining service life of the current coating. Based on the results of the inspection, it has been determined that in order “to gain useful life for the bridge the corrosion must be slowed or stopped”. Cost estimates for two recoating options are included in this report.
- Localized areas of section loss and perforations were observed in multiple stringers, floorbeams and bracing members. Evaluation criteria have been included in this report as a guide for determining the capacity of the components and rehabilitation items for these members.
- Pack rust and rust jacking were found to have changed the support conditions of the concrete deck. It has been recommended that rehabilitation options be developed for the concrete deck.