



Governance and Priorities Committee Report

Date: April 6, 2011 **From:** Mike Lai, Johnson Street Bridge Project Director
Subject: Johnson Street Bridge Structural Inspections

Purpose

The purpose of this report is to seek Council's direction with respect to the existing rail part of the Johnson Street Bridge due to a recent structural inspection by a consulting engineer.

Background

In February 2009, the City received a report on the condition assessment that was conducted over eight months by Delcan regarding the Johnson Street Bridge. The report identified structural, electrical and mechanical issues with both road and rail bridges. In addition, the report identified the seismic vulnerability of both bridges. In effect, the report concluded that the two bridges, constructed in 1924, have exceeded their design life and required replacement or major repairs. After an extensive public consultation process, including a borrowing referendum in November 2010, Council decided to replace the existing two bridges with a new bridge. The work on the new bridge, which will not include a rail crossing, is underway. The existing bridges were intended to continue to remain in operation as long as possible, although it was intended that the rail bridge would be decommissioned in early 2012 to build the new bridge.

Since 2009, the City has continued to monitor the condition of both bridges and carry out routine maintenance as needed. Last month, as part of that process, Stantec Consulting Ltd. conducted a more detailed structural inspection of both bridges. On March 29, the inspection revealed significant structural deterioration of the rail bridge due to corrosion of several key steel elements of the bridge. Stantec notified the City that the rail bridge must be closed immediately to train traffic until temporary emergency repairs are completed (see Attachment 1). The City immediately notified the Island Corridor Foundation and VIA Rail of the results of the Stantec inspection. On March 30, Stantec provided the City with a more detailed report (see Attachment 2) which identified critical areas for which immediate repairs were recommended as well as further areas which require repair only if the rail traffic was to continue over the bridge. Unless critical repairs are done, the rail bridge will have to be closed to all traffic, including pedestrians and cyclists.

In subsequent discussions with City staff, Stantec representatives confirmed that the repairs identified in their March 30 report are temporary emergency repairs of the most critical elements only. Due to the age of the bridge and the nature of the problem – extensive corrosion and pack rust under a layer of paint, it is hard to predict with certainty how far the damage extends. These repairs are not intended to extend the useful life of the bridge and further repairs would be necessary.

An estimated cost of the immediate repairs to the rail bridge is approximately \$120,000.00 and exceeds the existing budget for bridge operations and maintenance. This is a preliminary estimate and costs may be higher depending on the extent of repairs needed. Repairs to the road bridge are minor and will be accommodated within the existing operations and maintenance budget.

Concurrent with the City work on the bridge, Southern Railway of Vancouver Island has been undertaking critical maintenance work on the rail corridor between Victoria and Shawnigan Lake. Due to this maintenance work on other parts of the rail corridor, no trains have been operating on the bridge for nearly a month. Train service is scheduled to resume on April 8. Staff are reviewing possible locations for a temporary train station in Victoria West with ICF, Southern Railway and VIA Rail. If necessary, a temporary platform could be provided immediately west of the bridge to allow the Dayliner service to operate until a temporary station can be constructed. Access to the downtown will be via the Westsong walkway (south

side of the road bridge).

Options

1. To close the rail bridge immediately; or
2. To carry out all the temporary emergency repairs necessary to make the rail bridge structurally safe.

Discussion

Staff recommend Option 1. Option 2 has the following risks associated with it:

- a. Lack of funds for the repairs in the existing budget;
- b. Uncertainty regarding extent of the repairs needed;
- c. Temporary nature of the repairs that would not significantly extend the life of the bridge;
- d. Likelihood of other problems arising (structural, electrical, mechanical, etc.);
- e. The need to decommission the rail bridge in less than a year.

Closing the rail bridge will impact on pedestrians and cyclists who currently use the rail bridge. Because the rail bridge will have to be decommissioned to build the replacement bridge, mitigation of those impacts has been part of the JSB Project plans and includes:

- a. temporary traffic lights at Esquimalt and Harbour;
- b. re-direction of cyclist and pedestrian traffic to the Westsong walkway (south side of the road bridge); and
- c. an appropriate communications strategy.

These plans can be advanced if the rail bridge is closed at this time.

Recommendation:

That Council direct staff to close the rail bridge immediately.

Respectfully submitted,



Mike C. Lai, P. Eng.
Johnson Street Bridge Project Director



Peter Sparanese, P. Eng.
General Manager of Operations

Report accepted and recommended by the City Manager:


Gail Stephens

Attachments: Copy of letter from Stantec dated March 29, 2011
Copy of letter report from Stantec dated March 30, 2011



Stantec Consulting Ltd.
400 - 655 Tyee Road
Victoria BC V9A 6X5
Tel: (250) 388-9161
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Stantec

March 29, 2011
File: 1123-11041

City of Victoria
1 Centennial Square
Victoria, BC V8W 1P6

Attention: Mike Lia, P.Eng., Assistant Director of Transportation & Parking Services

Dear Sir:

Reference: Johnson Street Bridge Project

Following our inspection of the Johnson Street Railway Bridge (bascule span) of this morning, it is my considered opinion that it should be closed until emergency repairs are completed.

Sincerely,

To Railway traffic

STANTEC CONSULTING LTD.

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Stantec

March 30, 2011
File: 112311041

City of Victoria
Streets Division
417 Garbally Road
Victoria, BC V8T 2J9

Dear Hector Furtado:

Reference: Johnson Street Bridge: Steel Repairs

Stantec completed an inspection of the underside of the main span of the Johnson Street Bridge on Tuesday March 29, 2011. The inspection was done using the gantries below the road bridge and the rail bridge.

During the inspection we found two locations on the rail bridge where we recommend scheduling immediate repairs. These locations are shown in further detail in Figure 1 below.

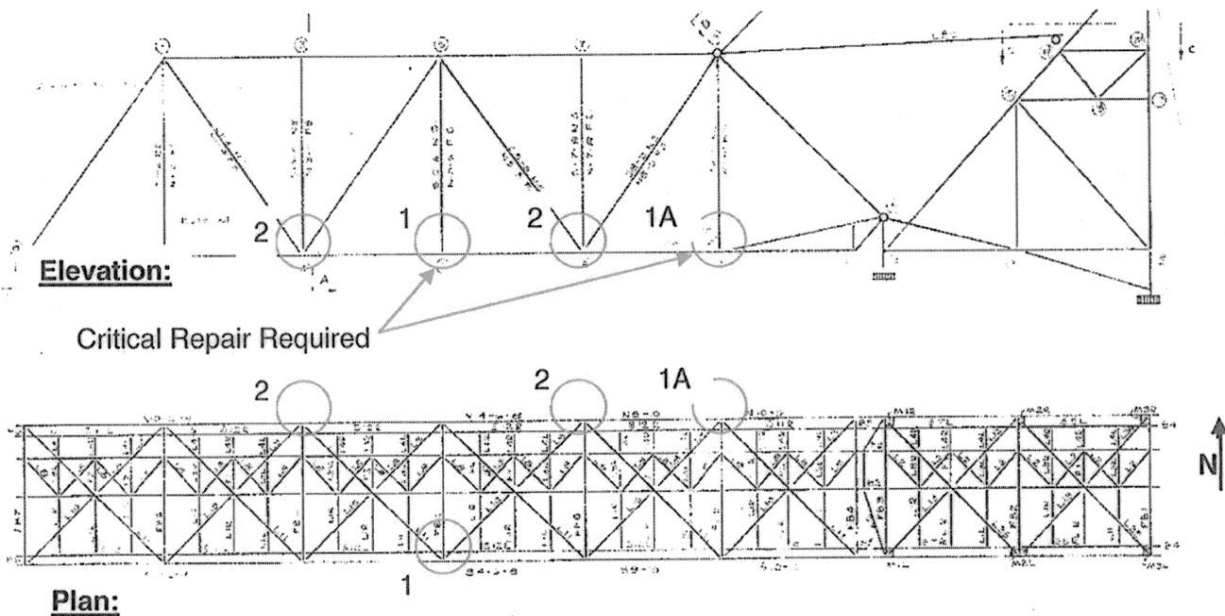


Figure 1: Rail Bridge Steel Repairs

The critical areas are the panel points where the deck is hung from the vertical truss member and there are no diagonal members to share the load.

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Reference: Johnson Street Bridge: Steel Repairs

Critical repair detail 1 requires at least 2 repairs and can be seen in further detail in Figure 2 below.

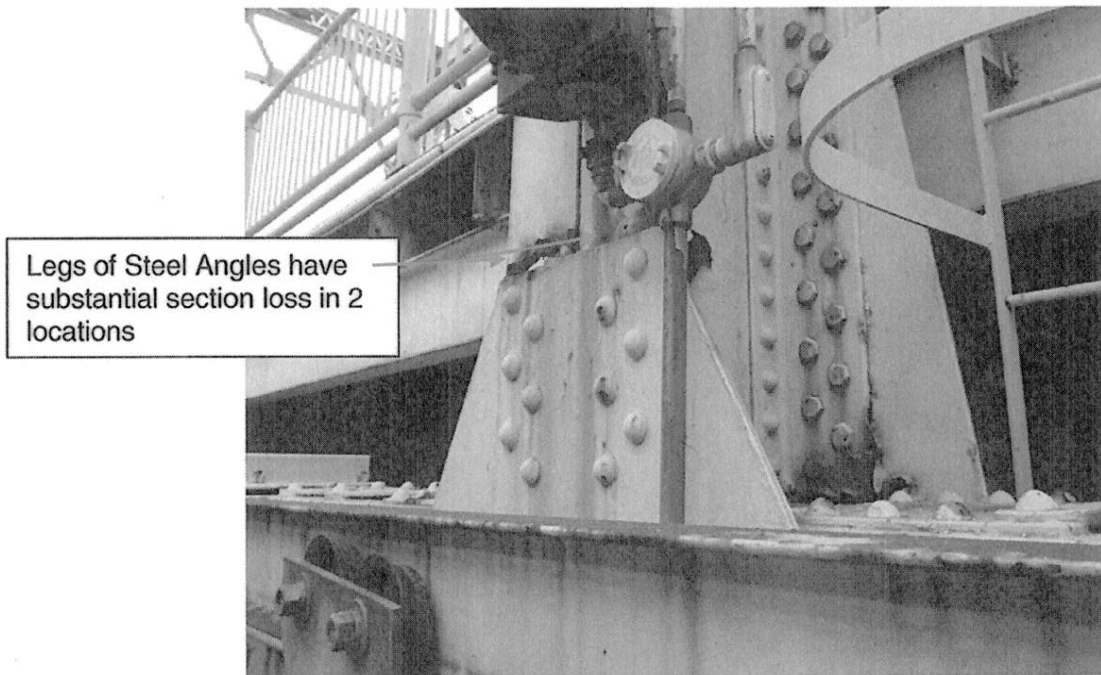


Figure 2: Photo of Critical repair 1 at Rail Bridge

Critical repair detail 1A is similar to critical repair detail 1, except that all 4 angles need to be repaired. The repairs will all be similar to the repair sketch that Andrew Rushforth provided for member 15-16 on the South counterweight frame, with the welds extending at least 12" each way past the deteriorated area. A detail of the required repairs is shown in Figure 3 below.

Less serious deteriorated areas occur on the verticals that go up to the top truss from the lower panel points, shown as detail 2 on Figure 1. These locations require all 4 angles to be repaired, but perhaps could be stayed if rail traffic is not to be reinstated on the bridge.

Reference: Johnson Street Bridge: Steel Repairs

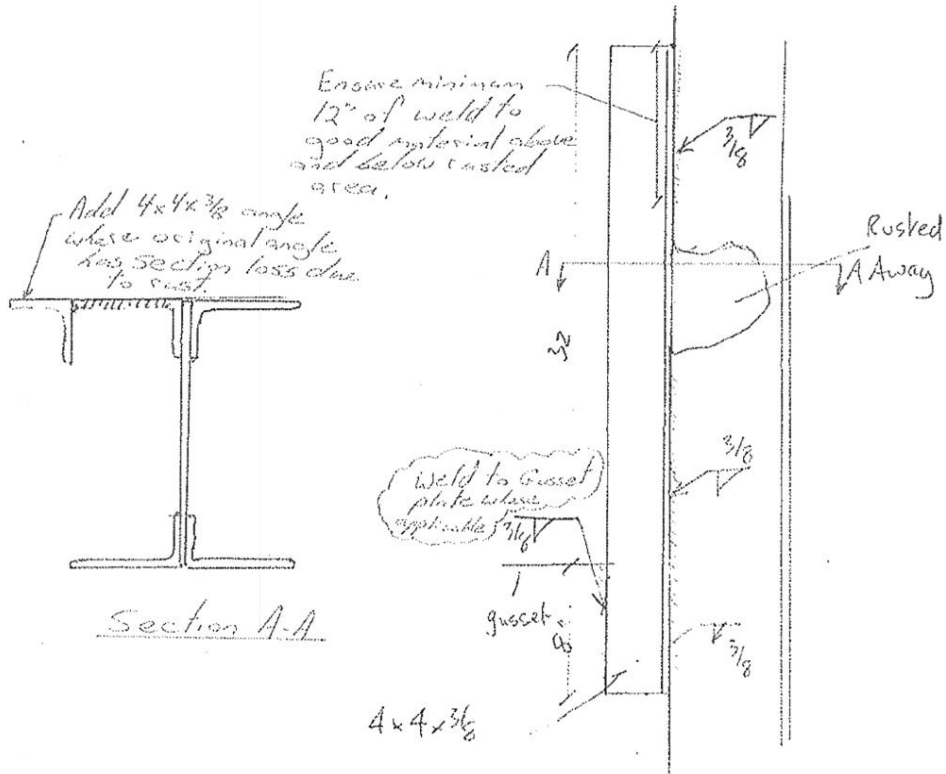


Figure 3: Typical Repair Sketch

During the inspection of the road bridge we also found two areas that should be repaired. These repairs were not identified as critical, but should be coordinated with the other more urgent repairs. The locations of these repairs can be seen in Figure 4. There are also bearing stiffeners under the fixed spans that should be replaced at the same time as these repairs are being done. We estimate that there are 3-4 bearing stiffeners that will require repairs at this time. Stantec will coordinate the exact locations and repair details while this work is taking place.

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Reference: Johnson Street Bridge: Steel Repairs




Figure 5: Photo of Recommended Repair Location at Road Bridge

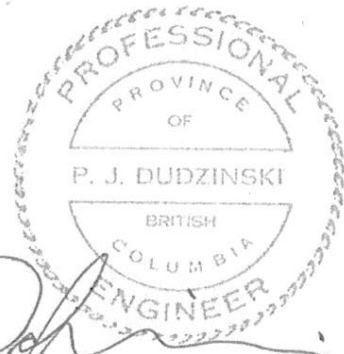
This photo was taken at the furthest west location, but is typical of both areas that require repairs. Repairs should be completed as per Figure 3 above.

Please contact Paul Dudzinski, or Bryan Gallagher at (250) 388-9161 if you have any questions or concerns.

Regards,

STANTEC CONSULTING LTD.


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for
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