

On July 18 the Manager of Roads and Drainage meet with a structural engineer from C.C. Tatham and Associates to review the bridge condition. The opinion of cost to return the bridge to use with a 3 tonne rating is between \$40,000 and \$50,000 including engineering fees (Attachment #2).

On July 18 staff met with the Grey County Bridge Crew Foreman, Otto Bergman, to review the bridge conditions. Mr Bergman was asked to generate a repair solution to provide a 3 tonne rating as well as check their construction schedule to determine if they could perform the work, how long the repairs would take, and if the works could be completed before September 15. Mr. Bergman has provided an estimate of costs, based on time and materials of \$30,000. The scope of the work could change as crews begin the work if un-sound concrete is encountered that does not permit adequate anchorage of repairs. The County crews will only charge for their actual time and cost of materials. Mr. Bergman also has concerns about jacking the bridge up during the repairs due to the weight of the concrete bridge deck. Mr. Bergman feels their equipment may be undersized and that a construction company that specializes in bridge repairs and that has larger jacking equipment may be needed.

The Grey Sauble Conservation Authority was contacted to check on the site requirements to permit the bridge repairs. A permit can be issued for in-water works from July 1 to September 15. After September 15 the requirements to protect the fish habitat become more onerous due to the salmon spawning in the river. It was recommended that the repairs be done within the permitted construction window as this would reduce the overall cost of the repairs. A permit application has been completed and forwarded to the GSCA on July 29, 2011 in anticipation of repairs going ahead. There are no costs for the permit.

To undertake emergency repairs and return the bridge to reduced service use (3 tonne), the expected costs are \$50,000 as outlined in the table below. In the event that unknown deficiencies are found or specialised construction equipment or labour is needed, the cost may increase.

Description	Est. Cost
Engineering	\$10,000
Construction	\$30,000
Contingency	\$10,000
Total	\$50,000

At this time, it is unclear how much, if any, of these repairs will be salvaged when the bridge is refurbished for long term viability.

This bridge has for some time been identified as needing significant repairs to ensure the functionality of the bridge for many years to come. With that in mind, the 2011 Capital Budget proposed that a Municipal Class “B” Environmental Assessment (EA) be undertaken in 2013 to determine the long-term use of the bridge at an estimated cost of \$75,000 funded from the Roads and Bridge Reserve. The Class “B” EA process applies because the bridge is over 40 yrs old and the proposed works could significantly alter the appearance of the structure.

In order to avoid costs associated with what could become temporary repairs, a viable option for Council is to leave the bridge closed to vehicular traffic for now and initiate the EA process immediately to determine the final solution for the Clendenan Bridge. Staff will reconsider the work plan for the fall of 2011 to make Staff available to manage this project.

The general public will be inconvenienced by the continued closure of the bridge; however, it should be noted that at best the bridge would only be opened to light traffic in the short term and that heavy traffic would need to detour around the bridge regardless.

On balance when considering the potential cost of temporary repairs and the inconvenience to the public, Staff recommend that the bridge be left closed for the time being and that a Municipal Class Environmental Assessment be initiated in 2011 with a project budget of \$75,000 to fully engage the community in determining the preferred alternative for the bridge. Should Council approve that the bridge remain closed until the EA is completed, Staff will have an Engineer’s assessment prepared to determine if there is any risk of imminent failure in order to permit the continued use of the bridge for pedestrians and cyclists.

C. The Blue Mountains’ Strategic Plan

This report furthers the Town’s Strategic Goal No. 2, “Addressing the Town’s municipal infrastructure needs”.

D. Environmental Impact

Any actions taken will follow the requirements of GSCA to reduce impacts on the river and protect the fish habitat.

E. Financial Impact

The emergency repairs estimated at \$55,000 or costs of an EA estimated at an upset amount of \$75,000 can be funded from the Roads and Bridge Reserves. Currently, Roads and Bridge Reserves contain \$1,880,000 uncommitted.

F. Attached

1. Correspondence from G.D. Jewell Engineering Inc., July 15, 2011.
2. Correspondence from C.C. Tatham & Ass., July 22, 2011

Respectfully submitted,

Reg Russwurm

Reg Russwurm

Director of Engineering and Public Works

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G.D. Jewell
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July 15, 2011

Town of the Blue Mountains
26 Bridge Street
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Attention: Jim McCannell,
Manager of Roads and Drainage Division

RE: **Town of the Blue Mountains
Emergency Closure of Bridge #16**
Our File No. 29-0685

Dear Sir:

G.D. Jewell Engineering Inc. has been retained by the Town of the Blue Mountains to carry out the 2011 Biennial OSIM Inspection for the structures within the township.

During our inspection of Bridge #16 on July 14, 2011, the following severe defects were found:

- The concrete under bearing at Northeast corner has spalled off and the support has only 50% of the area supported.
- Abutment under bearing at Northwest corner has wide through cracks on both sides of the corner.

These defects were identified as newly developed compared with our 2009 OSIM inspection results. As a single load path structure, failure of the bearing could cause complete structure failure.

An Emergency Repair is required and the structure shall be closed until the work is done to ensure structure stability and public safety.

If you have any question with regards to the above findings/recommendations, please do not hesitate to contact the undersigned in our Mississauga office.

Yours truly,
G. D. Jewell Engineering Inc.



Robin Chi, P. Eng.



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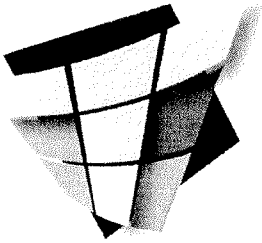
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Northeast Corner



North West Corner



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie

EPW.11.073
Attachment #2

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MEMO

Date: July 22, 2011 **Pages:** 2 **CCTA File:** 109115-12
To: Jim McCannell The Blue Mountains **Via:** email
Copy: **Via:**
From: Terry Smart, P. Eng.
Subject: Bridge No. 16, 10th Line, Clarksburg
Bearing Seat Repairs

As requested, we reviewed the abutments of Bridge No. 16 on July 19, 2011. We understand the bridge had recently been closed to traffic due to concerns with the bearing seat under one of the through trusses.

The bridge is a single lane pony through truss style bridge with concrete deck on steel beams and girders. The abutment in question is the west side. The west side is the "fixed" support while the east is the "roller" support.

We observed that the north west corner of the abutment has a large section of concrete missing such that the bearing plate for the end of the north through truss has lost approximately 80% of support (see attached photo).

The south west corner of the abutment below the south through truss bearing plate has been repaired in the past but this repair has failed and is cracked for the full height of the abutment on the south and east face. There appears to be some displacement outward near the top of the cracked section.

It is also interesting to note that there does not appear to be any anchors between the bearing plates and the abutment. This is true at both abutments.

The existing bearing plates are corroded but appear to be in serviceable condition.

We understand the bridge had a 9 tonne posting and the desire is to provide a repair that will enable a 3 tonne posting (ie just enough for passenger cars and light trucks).

We would see the repair proceeding as follows.

- Jack up the bridge at the west abutment to relieve the load at the bearings. This would likely involve adding temporary brackets to the side of the abutment and bridge to place hydraulic jacks in order to lift the superstructure off the abutment.
- Remove the deteriorated concrete below the north west bearing to sound concrete. Replace with a reinforced bearing seat that is dowelled into the existing sound concrete of the abutment.
- Remove the deteriorated concrete below the south west bearing to sound concrete. This would entail the full height of the abutment. Replace the corner and bearing seat with reinforced concrete that is dowelled into the sound concrete of the abutment.
- Provide anchors between the new bearing seats and the existing bearing plates.

We note the design of the jacking arrangement should be done by a professional engineer and sealed drawings should be provided.

Approvals from the CA, MNR and possibly DFO would likely be required and the usual in water work windows would apply. This may pose a challenge in having the work done this season.

We estimate the cost for the repairs as described above to be \$40,000 to \$50,000 + HST which would include an allowance for professional fees.

At the same time it may be prudent to replace the roller bearings at the east abutment. We estimate this cost to be approximately \$10,000 + HST.

We would be happy to assist with detailing the repairs, designing the jacking arrangement and pursuing the permits if you wish.

We trust the above is the information you require at this time. Please contact the undersigned should you have any questions.



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