



COUNTY COUNCIL
Council Chambers
Administration Building
Perth, Ontario

Pursuant to adjournment the Council of the Corporation of the County of Lanark met in special session on Wednesday, April 27, 2016 immediately following the Public Works Committee of the Whole.

Chair: Councillor Gail Code

1. CALL TO ORDER

The meeting was called to order at 8:50 p.m.

2. ROLL CALL

All members were in attendance, excluding J. Fenik.
A quorum was present.

3. DISCLOSURE OF PECUNIARY INTEREST

None at this time.

4. ADDITIONS AND APPROVAL OF AGENDA

MOTION #CC-2016-57

MOVED BY: Keith Kerr **SECONDED BY:** Brian Campbell

"THAT, the agenda be adopted as presented."

ADOPTED

5. REPORTS

- i) Public Works: April 27, 2016 Page
3 - 5
Chair, Councillor Klaas Van Der Meer

MOTION #CC-2016-58

MOVED BY: Klaas Van Der Meer **SECONDED BY:** Bill Dobson

"THAT, the Fourth Report of the Public Works Committee of the Whole be adopted as presented."

ADOPTED

6. ADJOURNMENT

Council adjourned at 8:52 p.m. on motion by Councillors A. Churchill and B. Stewart.


Leslie Drynan,
Deputy Clerk



FOURTH
REPORT OF THE PUBLIC WORKS COMMITTEE OF THE WHOLE
April 27, 2016

To the Members of Lanark County Council.

We, the Members of your Public Works Committee of the Whole beg leave to report Section "A" to be received as information and Section "B" as follows:

"A" 1. REPORT #PW-10-2016 RECOMMENDATION OF CONTRACT AWARD FOR CONTRACT #PW-C-31-2016-16-E0, BLACK CREEK CULVERTS REHABILITATION

"B" 1. **MOTION #PW-2016-49**

"THAT, Report #PW-10-2016, Recommendation of Contract Award for Contract #PW-C-31-2016-16-E0, Black Creek Culverts Rehabilitation, be received as information;

AND THAT, the Public Works Committee recommends to County Council that Contract #PW-C-31-2016-16-E0, Black Creek Culverts Rehabilitation, be awarded to Lischer Construction Inc. in the amount of \$146,100.00, plus HST;

AND THAT, a decision regarding the savings from this Contract, \$151,328.73, be deferred until the majority of the Construction Projects are completed, when the outcome of Asphalt Index Prices, Fuel Index Prices and project extras are known."

"A" 2. REPORT #PW-11-2016 RECOMMENDATION OF CONTRACT AWARD FOR CONTRACT #PW-C-29-2016-16-E0, MCINTYRE DRAIN CULVERT REPLACEMENT

"B" 2. **MOTION #PW-2016-50**

"THAT, Report #PW-11-2016, Recommendation of Contract Award for Contract #PW-C-29-2016-16-E0, McIntyre Drain Culvert Replacement, be received as information;

AND THAT, the Public Works Committee recommends to County Council that Contract #PW-C-29-2016-16-E0, McIntyre Drain Culvert Replacement, be awarded to Willis Kerr Contracting Limited in the amount of \$208,580.03, plus HST;

AND THAT, the Public Works Committee recommends to County Council that Tay Valley Township be compensated \$20,000 to help offset the costs associated with adding Granular "M" to Bathurst Concession 5;

AND THAT, this Project be funded from 2016 Construction Program savings."

"A" 3. REPORT #PW-12-2016 RECOMMENDATION OF CONTRACT CANCELLATION, SUPPLY AND DELIVERY OF ONE (1) 4 X 4 BACKHOE LOADER, CONTRACT #PW-E-23-2016-16-E

"B" 3. **MOTION #PW-2016-51**

"THAT, Contract #PW-E-23-2016-16-E0, Supply and Delivery of One (1) 4 x 4 Backhoe Loader with 19 Foot Digging Depth be cancelled; **AND THAT**, staff be authorized to proceed with a Request for Proposal (RFP) for One 4 x 4 Backhoe Loader."

"A" 4. REPORT #PW-13-2016 ANDREWSVILLE BRIDGE: OPTIONS FOR THE FUTURE

"B" 4. MOTION #PW-2016-52

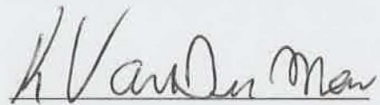
"THAT, contingent upon the agreement of the Council of the United Counties of Leeds and Grenville, Lanark County agrees to provide a maximum of \$60,000, to be matched by funding from the United Counties of Leeds and Grenville over a twelve year period, commencing November 2016, to allow traffic, under 5 tonnes in weight, on the Andrewsville Bridge."

All of which is respectfully submitted by:

Klaas Van Der Meer, Chair

Direction by the Warden:
Council may remove items in Section "B" to be voted on separately prior to introducing a motion to accept the report in its entirety.

Moved and Seconded by:




Moved By:

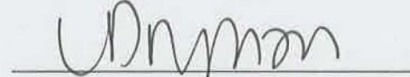


Seconded By:

Adopted this 27 day of April, 2016



Gail Code, Warden



Leslie Drynan, Deputy Clerk

THE COUNTY OF LANARK

PUBLIC WORKS COMMITTEE

April 27, 2016

Report # PW-13-2016 of the
Director of Public Works

ANDREWSVILLE BRIDGE: OPTIONS FOR THE FUTURE

1. STAFF RECOMMENDATIONS

"**THAT**, contingent upon the agreement of the Council of the United Counties of Leeds and Grenville, Lanark County agrees to provide a maximum of \$60,000, to be matched by funding from the United Counties of Leeds and Grenville over a twelve year period, commencing November 2016, to allow traffic, under 5 tonnes in weight, on the Andrewsville Bridge."

2. PURPOSE

To provide an update on the condition of the Andrewsville Bridge, review County Council's previous commitment and obtain a decision from County Council on the future of the bridge.

3. BACKGROUND

The Andrewsville Bridge, constructed in the early 1900's, is located between Burritts Rapids (5 km) and Merrickville (4 km). The ownership of the bridge is shared between Lanark County and the United Counties of Leeds and Grenville.

Currently, the bridge has a 5 tonne load limit, which is also the limit of the swing bridge owned by Parks Canada in this area. The annual average daily traffic (AADT) at the bridge is less than 200.

Summarized below are key events that have occurred over the last eight years:

2008

Wooden deck replacement and some stringer, bearing seat and ballast wall repairs (approximately \$100,000).

2012

January - Structural Report, Public Information Session (PIC) and Report to County Council.

May – A transport damages the bridge resulting in indefinite closure.

November - Motion #PW-2012-104

"**THAT**, the Council of Lanark County agree to the following position in regards to the Andrewsville Bridge;

1. **THAT**, Lanark County agrees to provide a maximum of \$50,000, to be matched by funding from the United Counties of Leeds and Grenville over four years to allow traffic under five tonnes in weight on the Andrewsville Bridge; and
2. **THAT**, funding be sought outside the levy for replacement of the Andrewsville Bridge including Provincial and Federal Governments, Parks Canada and other agencies as well as community fundraising; and
3. **THAT**, in the event of a lack of non-levy funding to support the bridge, that further deterioration beyond Lanark County's contribution of \$50,000 over four years for a total of \$100,000 invested by the two counties, that Lanark County shall recommend reconsideration of options by Lanark County and the United Counties of Leeds and Grenville."

November – Motion #PW-2012-105

"**THAT**, if adequate funding for the Andrewsville Bridge is not obtained over the five years, that the bridge be closed."

2013

January - Tender call for height restriction barriers, signage and bridge repairs to allow reopening of the bridge (approximately \$65,100).

March – bridge reopened.

2015

Annual inspection identifies stringer replacement required at North end of the bridge.

2016

February – April - Quotation is prepared for required stringer replacements with an estimated cost of \$30,000 to \$40,000, including engineering.

March – Meeting with Parks Canada officials. They indicated that the causeway, on the South end of the bridge, does not belong to Parks Canada. Parks Canada also indicated they have no funding stream available to contribute towards the replacement or repairs of the bridge.

Keystone Bridge Management provides a letter with a structural opinion of the bridge condition and life expectancy after stringer repairs completed. See Appendix "A".

4. DISCUSSION

Subject to quotation prices received, it is anticipated that the stringer replacements and structural inspection at low water, can be completed within the remaining funds, from the \$100,000, committed by the Counties in 2012.

If the stringer replacements are completed this year, there will have been approximately \$200,000 spent on the bridge since 2008. The height restriction devices appear to have done their job of limiting larger vehicles from crossing the bridge, although the barriers have been struck three or four times, by light weight RV's or camper trailers.

The opinion of the Engineer is that after the five stringers are replaced, the bridge can carry vehicular traffic for another 10 – 15 years with some annual maintenance. A structural inspection shall be carried out at low water, this year, of the underside of the bridge for the centre section to reaffirm the Engineers' findings and the causeway must be monitored closely each year for any signs of failure or further deterioration.

The bridge is at the bottom of both Counties' Asset Management Plans due to the low traffic volume and proximity of other available bridges to cross the river. It is not foreseeable that Lanark County would apply for grant money to replace the bridge.

5. ANALYSIS AND OPTIONS

Option 1 (recommended):

Contingent upon the agreement of the Council of the United Counties of Leeds and Grenville, Lanark County agrees to provide a maximum of \$60,000, to be matched by funding from the United Counties of Leeds and Grenville over a twelve year period, commencing November 2016, to allow traffic, under 5 tonnes in weight, on the Andrewsville Bridge.

Option 2 (not recommended):

No further commitment of money be made at this time and staff would use the authority under Motion PW-2012-105 and close the Bridge, if further repair needs arise in the future.

Option 3 (not recommended):

Staff would report to County Council for direction, on a case by case basis, as repair needs are identified.

Option 4 (not recommended):

The Counties download the bridge to the two local Municipalities.

6. FINANCIAL IMPLICATIONS

The existing commitment by the Counties ends in November 2016 and further monies is required to be spent, if the bridge is to remain open to vehicular traffic.

7. LOCAL MUNICIPAL IMPACT

The Andrewsville Bridge is a landmark for the local communities and public interest is high, especially with members of the Friends of the Andrewsville Bridge.

8. CONCLUSIONS

The Director recommends that Lanark County Council, in consultation with the United Counties of Leeds and Grenville, establish a long-term plan for the Andrewsville Bridge in 2016, to allow necessary actions to be taken by staff for the bridge to remain open.

9. ATTACHMENTS

Appendix "A" – Letter from Keystone Bridge Management Corp. dated March 24, 2016.

Recommended By:

Janet Tysick
Business Manager

Approved for Submission By:

Terry McCann
Director of Public
Works

Manager Approval By:

Kurt Greaves
Chief Administrative
Officer



Keystone Bridge Management Corp.

Your Bridge Asset Management Specialist

March 24, 2016

LANARK COUNTY
PUBLIC WORKS

MAR 31 2016

Terry McCann, C.E.T.
Director of Public Works
Lanark County
99 Christie Lake Road
Perth, ON K7H 3C6

Re: Andrewsville Bridge

Dear Terry,

This is in response to your request for a letter of advice regarding the subject bridge and approaches.

The only known deficiency on the bridge is the perforated condition of the stringers at the extreme north end. These are recommended for replacement to ensure the continued viability of the 5 tonne load limit. It is expected these stringers can be replaced for less than \$35,000.00.

The timber deck and curbs are in good condition and have at least 10 to 15 years of remaining service life. The truss above the road service is presently in good repair.

The steel girder approach span at the south side of the truss is in acceptable condition for the present load limit.

The concrete abutments and pier are weathered but suitable for the present.

It is anticipated that the stringers south of the ones recommended for replacement are in acceptable condition. However this needs to be confirmed by a wading inspection underneath the bridge. This may only be completed under low-flow conditions and will need to be coordinated with the upstream hydro dam operator.

In summary, with an investment of less than \$35,000 this bridge can reasonably be expected to carry light vehicle traffic for another 10 to 15 years.

The bridge approaches consist of a narrow causeway constructed on the river bed and flood plain. The longest portion of the causeway is on the south approach. The causeway is constructed of dry stone stacked walls infilled with rubble and presumably common fill. The causeway was constructed with small dry stone conduits at its base. These conduits are open and pass flow from the Rideau River.

Portions of the dry stone walls have partly collapsed on the downstream side. This has impacted the guiderail support but the road surface remains intact. An estimated 5% of the dry stone walls are in a partially failed condition.

Extreme flood conditions could be perilous to the causeway. Additional vigilance is recommended during flood events.

Deterioration of the causeway will continue in a gradual fashion, exacerbated primarily through frost action. A catastrophic failure of the causeway due to on-going deterioration is not contemplated at this time. Spot maintenance and regular patrolling is recommended to maintain the causeway in a safe and serviceable condition. Any abrupt change to the dry stone walls should be referred to an engineer for evaluation.

As the bridge and causeway continues to age the risk of a latent defect will increase. At some point in the next 15 years a decision will be required regarding the continued viability of the Andrewsville Bridge.

Sincerely,

Harold Kleywegt, P.Eng.
Managing Director



**The United Counties of Leeds and Grenville
Committee of the Whole**

Resolution No. CW- 097 -2016

Date: July 5, 2016

Moved by Doug Malanka

Seconded by Pat Sayer

THAT the Committee of the Whole recommends matching the commitment of Lanark County Council of a maximum of \$60,000 over a 12 year period commencing November, 2016, to allow traffic under 5 tonnes in weight on the Andrewsville Bridge; and

THAT the Committee of the Whole recommends approval of \$20,000 in 2016 for the replacement of deficient bridge stringers to ensure continued viability of the 5 tonne load limit.

Carried ✓ Defeated


Chair



GENERAL NOTES

THE CONTRACTOR SHALL ENSURE THAT NO DELETERIOUS MATERIALS RESULTING FROM CONSTRUCTION ACTIVITIES ENTERS THE WATER COURSE.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE OWNER/CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK.

SEQUENCE OF WORK

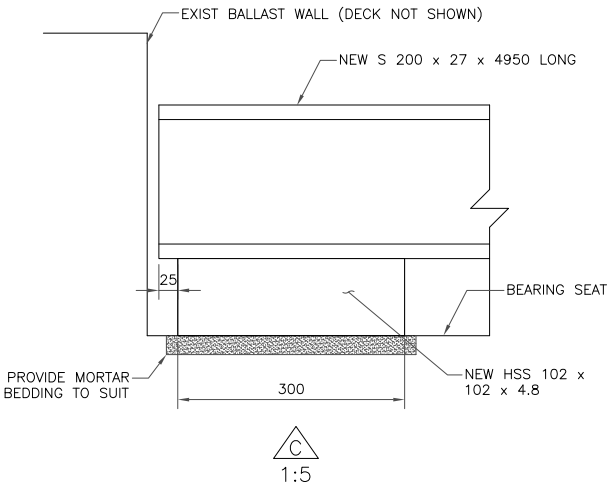
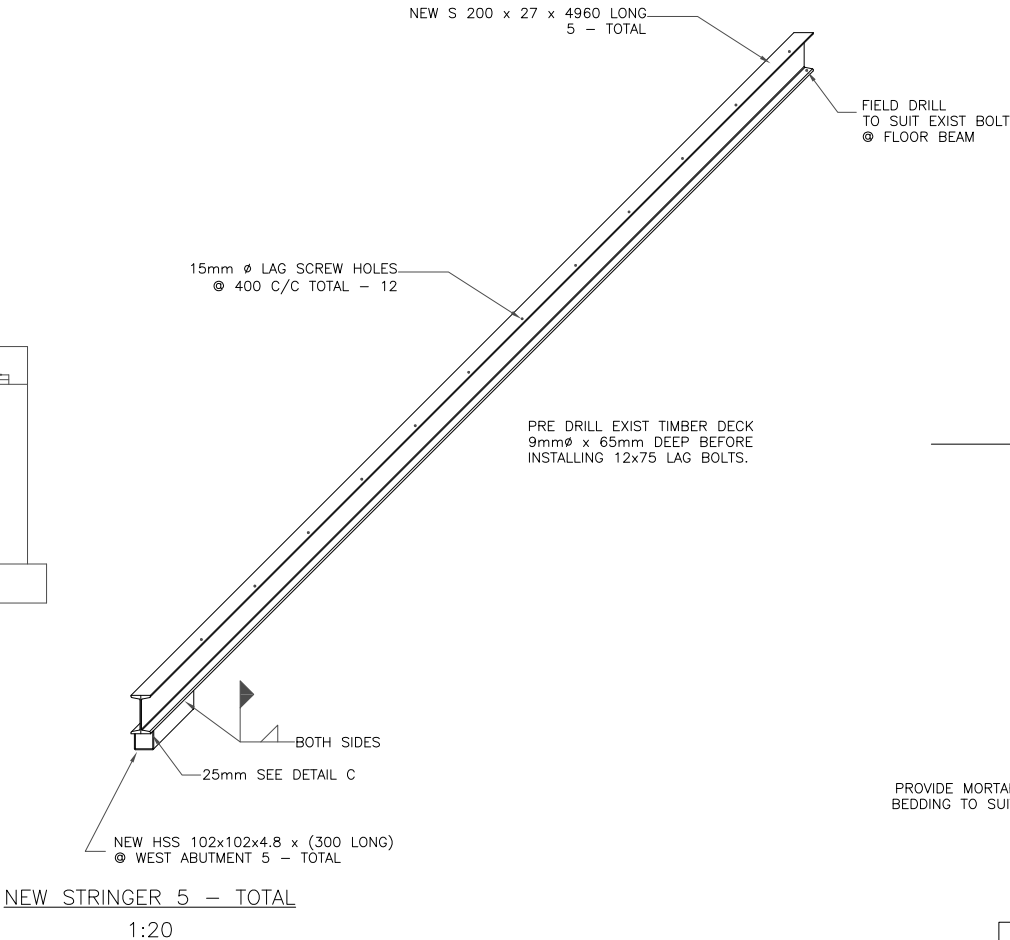
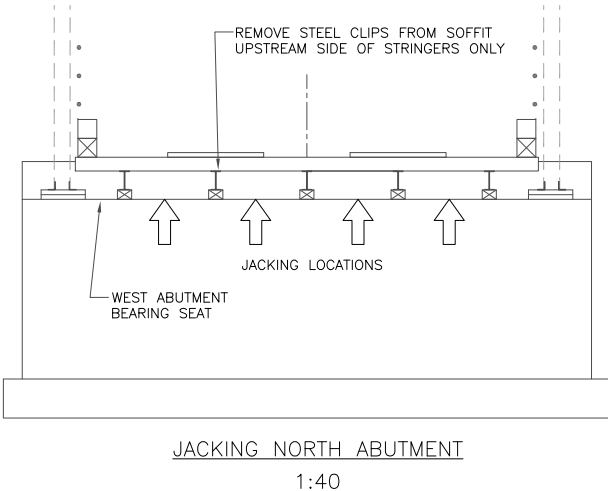
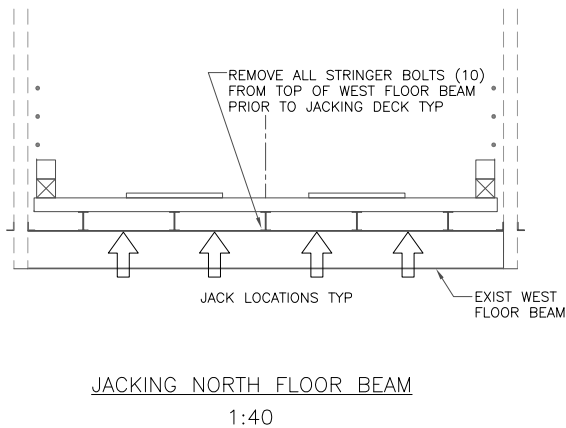
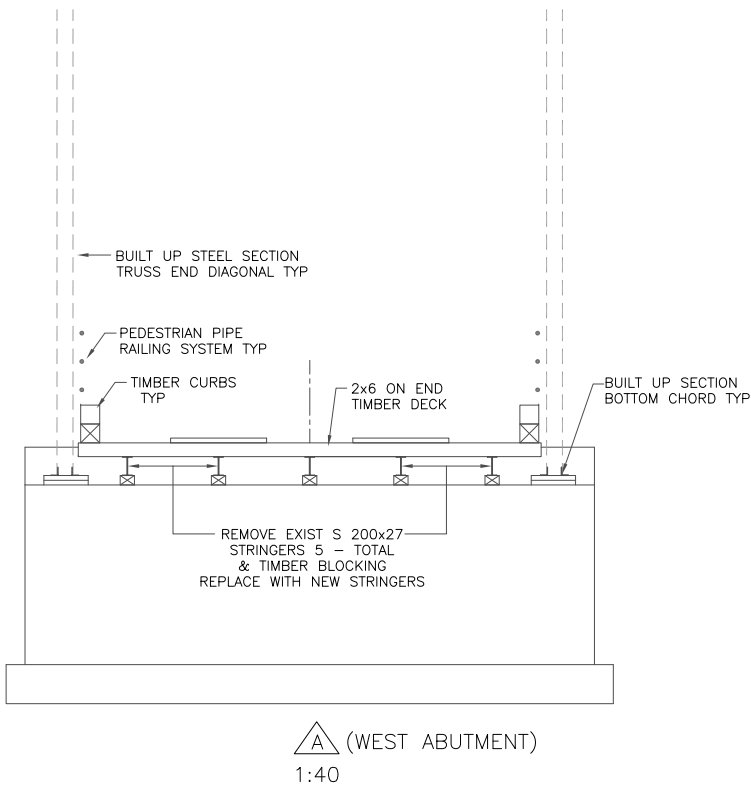
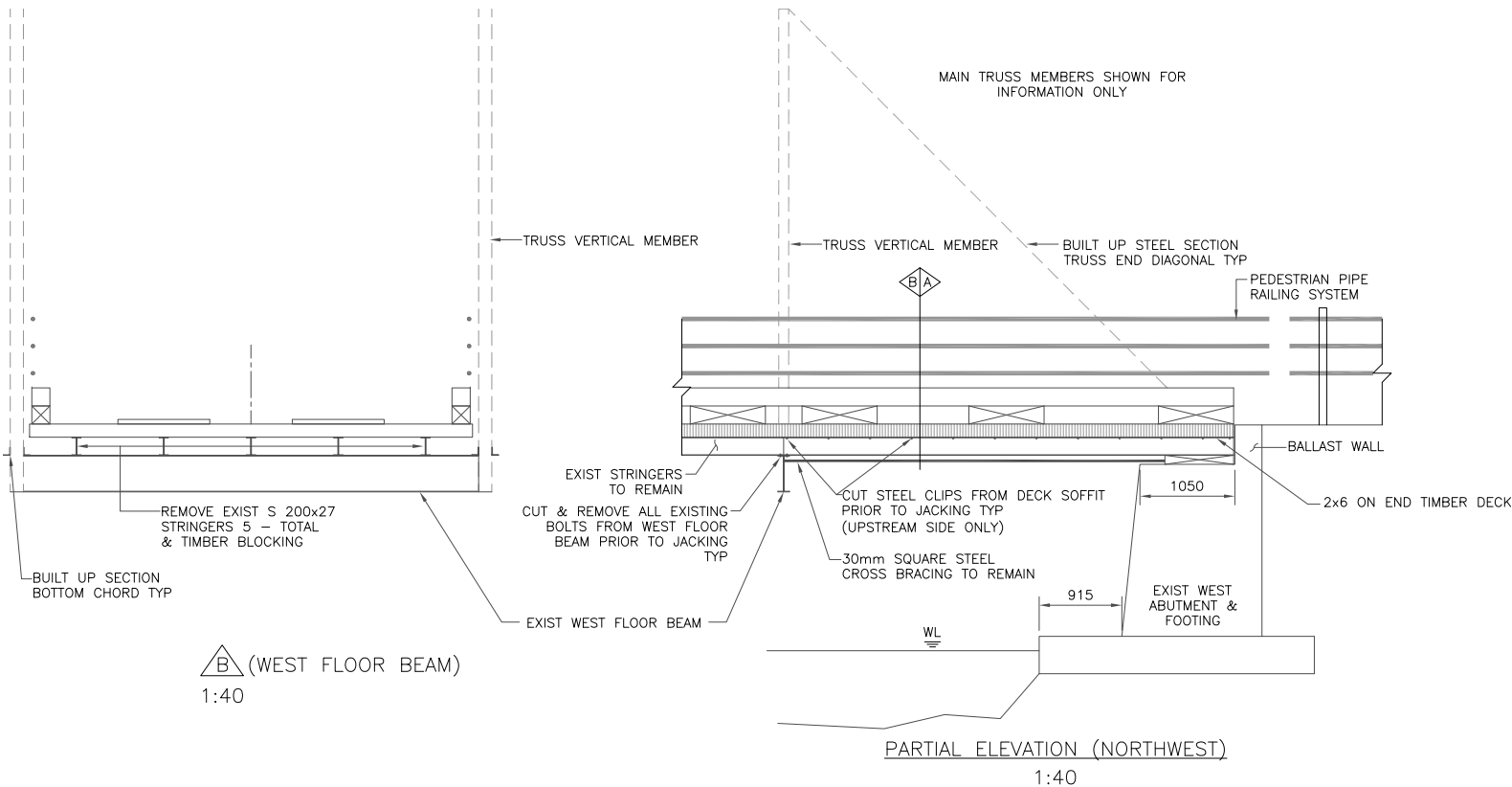
1. INSTALL ALL SIGNAGE AND ESTABLISH DETOUR AROUND BRIDGE. CLOSE BRIDGE TO TRAFFIC.
2. REMOVE BOLTS FROM WEST FLOOR BEAM/STRINGERS (10 TOTAL).
3. JACK BRIDGE (50mm MAX) AND BLOCK.
- 4.REMOVE CLIPS FROM DECK SOFFIT. (UPSTREAM SIDE ONLY).
5. REMOVE STRINGERS FROM THE NORTH END OF BRIDGE.
6. PLACE BEDDING GROUT UNDER STRINGERS AT THE WEST ABUTMENT AND INSTALL 5 NEW STRINGERS. LOWER BRIDGE. LAG BOLT TOP FLANGE OF STRINGERS TO UNDERSIDE OF DECK.
7. OPEN BRIDGE TO TRAFFIC AND REMOVE DETOUR SIGNAGE.

STRUCTURAL STEEL NOTES

1. ALL NEW STEEL GRADE 350W
2. ALL NEW STEEL TO BE SHOP COATED WITH 2 COATS PRIMER
3. INSTALL NEW STRINGER TO FLOOR BEAM BOLTS (10) TO SUIT FIELD CONDITIONS

LIST OF DRAWINGS

1. GENERAL ARRANGEMENT AND DETAILS
2. KEYPLAN AND TRAFFIC MANAGEMENT PLAN



REVISIONS						DESCRIPTION	DATE
	DESIGN	CHK	CHK	SITE	DWG		
	HK	CHK	CHK	HK	99-001		MAY 2016
	SR	CHK	CHK	HK			1

Andrewsville Bridge Wading Inspection

Introduction

Keystone Bridge Management was retained by the County of Lanark to complete a wading inspection of the underside of the Andrewsville Bridge over the Rideau River downstream of Merrickville, Ontario. The inspection was completed on August 3, 2016. Harold Kleywegt, P.Eng was the principal inspector. He was assisted by Cole Zanchetta, a 3rd year civil engineering student. Also present and assisting was Sean Derouin, E.I.T. of the County of Lanark.

Access to the underside of the bridge was obtained by setting up a 10' step ladder and 24' extension ladder on the river bottom. It was possible to obtain access to the underside of the bridge in most areas. However stream scour at both abutments precluded setting up ladders at these locations.

The Rideau River is flowing principally north at the Andrewsville Bridge. Accordingly, the east abutment is on the United Counties of Leeds & Grenville side of the bridge and the west abutment is on the Lanark County side.

The bridge has two spans, a 38.5 m long main truss forming the west span and a 9.2 m steel girder flanking east span. The truss has 9 panel points supporting floor beams at the interior 7 panel points. Five steel S200 x 27 stringers span between the floor beams and directly support the laminated timber deck. The stringer and floor beam framing is duplicated on the east steel girder approach span.

For the purpose of this report the area between floor beams is referred to as "Bays." There are 8 Bays comprising the truss floor system. They are numbered from east to west with Bay 1 closest to the pier, and Bay 8 closest to the west abutment. The stringers are numbered 1 to 5 from south to north. This convention has been followed in captioning the images included with this report.

The Bay 8 stringers were not inspected as they were about to be replaced and have since been replaced.

Findings

In general the floor system of the truss and approach span is almost fully involved with corrosion. Any remaining paint coating on the stringers is ineffective. On the floor beams the paint system is still about 50% intact and somewhat effective.

The corrosion of the stringers consists of pitting type corrosion, rust flaking, and some slab rust. The most severe corrosion occurs on Stringer 2 of the east approach span. This stringer has web perforations throughout its length.

The stringers of the main truss with the exception of Bay 8 do not have any perforations of the webs. It is unlikely that any of the webs will perforate in the next 5 to 10 years. The average section loss of the

stringers in Bays 1 to 7 of the main truss is conservatively estimated as not exceeding 10%. It is more likely that the average section loss is around 5%.

The stringers of the approach span are very similar in condition as the main truss, with the exception of Stringer 2. This stringer has four perforations of its web. The largest perforation involves the entire depth of the web. This stringer has very conservatively an average of 10 to 15% section loss.

The stringers have more severe local corrosion and section loss where they bear on the pier and east abutment. Difficult access and the presence of debris hindered a more thorough examination. However the accompanying images provide a reasonably good portrayal of their condition.

The floor beams are in mostly fair to good condition. The most pronounced corrosion on the floor beams is at their ends where they frame into the main truss. The average section loss to the floor beams is in all likelihood not more than 2%.

The truss bottom chords are visible from the bridge deck. Hence these were not inspected as closely as the stringers and floor beams. Nonetheless, the underside of the bottom chords was consistent with the top side condition. The bottom chords are in mostly fair to good condition with no significant section loss noted.

The girders of the east approach span exhibit the most corrosion at their bearings. Debris at the bearings and difficult access precluded a thorough assessment. However, it can be stated that these girders remain structurally sound for the current load limit on the bridge.

Conclusions

The floor system of the truss and east approach span is substantially corroded and weakened as a result. This corrosion is principally due to de-icing salts penetrating the timber deck and wetting the floor system. However the floor system is entirely adequate for the present 5 tonne load limit on the bridge.

The corrosion will continue to weaken the floor system to the point that even the 5 tonne load limit is not acceptable. It is expected the stringers have possibly 5 to 10 years of remaining service life at the current load limit.

Recommendations

The following recommendations will help extend the life of the present bridge:

1. Provide a thorough cleaning of the top of the pier and east abutment bridge seat.
2. Close the bridge during the winter months so that de-icing salt is no longer contaminating the floor system.
3. Should the bridge stay open year round, then the floor system and bottom chords should be high pressure washed as early as possible each spring.
4. Coating the floor system is probably prohibitively expensive but should be considered in order to preserve the bridge.

5. The bottom chords of the truss should be painted in the next 5 years if it is intended to keep the bridge in service for more than another 10 years.
6. The underside should be re-inspected every two years as river flow permits.

Outlook

The timber bridge deck is in good condition and is expected to have up to 20 years of remaining service life. Should the bridge be required to stay in service beyond the life of the present timber deck than all of the stringers except for those in Bay 8 should be replaced. The stringers should be replaced with galvanized stringers. It will be possible to clean and paint the floor beams conveniently when the deck is removed for replacement. The bottom chords of the bridge should be painted concurrently if not already painted.

Other Concerns

The dry stone masonry retaining walls of the bridge approaches are a concern. There is notable bulging and displacement of the wall in the NW quadrant. A portion of the wall has failed in the SE quadrant. The integrity of the wall has been somewhat affected by the imposition of the railing system foundations into the top of the wall.

The causeway on the east approach has at least one dry stone culvert type opening through it at the base. There is iron strapping helping to form these openings. The iron strapping is substantially corroded.

The approach embankments are in a precarious condition. They are in a partial state of failure and further collapse may occur at any time with little or no warning. Such collapses are not anticipated to be catastrophic but would encroach on the roadway shoulders.

Further investigation and assessment of the approaches by a geotechnical engineer is recommended.

Closing

Keystone Bridge Management Corp. is pleased to report on the wading inspection of the underside of the Andrews ville Bridge. We hope this assessment is sufficient for your purposes and will help guide the long term management of this bridge.

Harold Kleywegt, P.Eng.

(34 captioned images follow)



Image 1. Thinning of bottom flange of Stringer 2 in Bay 3



Image 2. Stringers 3 & 4 in Bay 3 looking downstream



Image 3. South end of Floor Beam between Bays 1 & 2.



Image 4. Close up of Image 3. Rust dangling from spider webs



Image 5. Truss Bay 1 adjacent pier, looking downstream



Image 6. Typical corrosion on stringers Bay 1



Image 7. Truss Stringer 1 at Pier Bearing



Image 8. Truss Stringer 2 at Pier Bearing



Image 9. Truss Stringer 3 at Pier Bearing



Image 10. Truss Stringer 4 at Pier Bearing



Image 11. Truss Stringer 5 at Pier Bearing



Image 12. Perforation of Approach Stringer 2 before probing



Image 13. Perforation of Approach Stringer 2 after probing



Image 14. Perforation near centre of Approach Stringer 2 west bay.



Image 15. General view of west bay of approach span looking downstream. Perforations circled.



Image 16. Truss Bay 1 looking west



Image 17. Truss Bay 2 looking west



Image 18. Truss Bay 3 looking west



Image 19. Truss Bay 4 looking west



Image 20. Truss Bay 5 looking west



Image 21. Truss Bay 6 looking west



Image 22. Truss Bay 7 looking west



Image 23. West abutment



Image 24. South bottom chord between Bays 6 and 7. (Typical condition)



Image 25. Stringer 5 bearing area at east abutment



Image 26. Splice on Stringer 4 at east abutment



Image 27. Stringer 3 bearing area at east abutment



Image 28. Perforated Stringer 2 at east abutment bearing



Image 29. Close up of perforated Stringer 2 at east abutment



Image 30. Stringer 1 bearing area at east abutment



Image 31. South girder interior side bearing area at east abutment



Image 32. North girder interior side bearing area at east abutment



Image 33. East bay of east approach span with perforation in Stringer 2



Image 34. Close-up of perforation shown in Image 33