

VIA EMAIL ONLY

December 13, 2022

John Yungblut, Director of Public Works
Township of Huron-Kinloss
21 Queen Street, Box 130
Ripley, ON N0G 2R0

RE: Repairs to Bell Bridge H38

Following a site review of the structure and review of supplied documentation, we have prepared a list of our repair recommendations and probable costs for the rehabilitation of the Bell Bridge H38.

Background

The bridge is a 3-span structure with a concrete deck cast on 5 lines of precast concrete girders built in 1963. The spans are 13.9 – 19.2 – 13.9 m. The bridge deck cross-section allows for 2 lanes of 3.5 m traffic plus side clearances of 0.7 m each. Along the sides of the deck, there are concrete curbs, steel post-and-panel railings and a short length of concrete parapet wall at each end.

The structure was rehabilitated in 2011. This rehabilitation program consisted of cleaning and recoating of the steel posts and panels. Outside of the rehabilitation in 2011 no other known work has been completed at the structure.

Discussion of Recommended Repairs

The asphalt over the structure is in fair to poor condition. The deck top condition is unknown, but we suspect some deck patches will be required given the condition of the asphalt on the deck. The expansion joints are filled with debris and are assumed to be leaking. At various locations, the ends of the girders have concrete spalling off, presumable from exposure to the leaking joints above. It is proposed to remove the existing asphalt, concrete patch the deck top and girder ends, remove the expansion joints and convert to semi integral abutments and link slabs over the piers, and other miscellaneous site work. This will ensure salt-laden water from

the road surface will not get down to the ends of the girders again. As the curbs and barriers are considered in fair to good condition and the barriers were recoated in 2011, we propose that they are not repaired or replaced at this time. We suspect that work will not be required for about 20 years and can be completed with staged construction.

Rehabilitation Cost Breakdown Road Closed

1.	Mobilization, demobilization	\$	25,000
2.	Traffic control – Road Closed		15,000
3.	Removals incl asphalt and waterproofing		50,000
4.	Temporary access platforms		30,000
5.	Environmental protection		10,000
6.	Concrete removals		
	a. Deck top 2 m ³ @ \$3,000		6,000
	b. Girders 0.5 m ³ @ \$20,000		10,000
7.	Concrete patch repairs		
	a. Deck top 2 m ³ @ \$3,000		6,000
	b. Girders 0.5 m ³ @ \$30,000		15,000
8.	Reinforced concrete		
	a. Semi Integral abutment components and ballast walls		80,000
	b. Link slab over piers		30,000
	c. Curbs and wall at abutment and piers		30,000
9.	Jacking and shoring at abutments		60,000
10.	Replace abutment bearings 10 Ea. @ \$1,200		12,000
11.	Waterproofing and route and seal		29,000
12.	Asphalt pavement 160t @ \$300		48,000
13.	Excavate and backfill abutments		15,000
14.	Granular A 100t @ \$30		3,000
15.	Steel beam guiderail and end treatments		
	a. Structure attachments 4 @ \$2,000		8,000
	b. Steel beam guiderail 61m @ \$250		15,250
	c. MASH SKT, end treatments 4 @ \$6,000		24,000
16.	Regrade approaches, restore shoulders, site restoration		15,000
17.	Bonding and Insurance		14,000
			<u>14,000</u>
		Subtotal	\$550,250
18.	Contingency allowance (15% +/-)		80,000
19.	Engineering		80,000
		Total Probable Cost	<u>\$710,250</u> + HST

Rehabilitation Cost Breakdown Staged construction

1. Mobilization, demobilization	\$ 40,000
2. Traffic control – Road Closed	110,000
3. Roadway protection	50,000
4. Removals incl asphalt and waterproofing	80,000
5. Temporary access platforms	50,000
6. Environmental protection	10,000
7. Concrete removals	
a. Deck top 2 m ³ @ \$3,000	6,000
b. Girders 0.5 m ³ @ \$20,000	10,000
8. Concrete patch repairs	
a. Deck top 2 m ³ @ \$3,000	6,000
b. Girders 0.5 m ³ @ \$30,000	15,000
9. Reinforced concrete	
a. Semi Integral abutment components and ballast walls	160,000
b. Link slab over piers	80,000
c. Curbs and wall at abutment and piers	50,000
10. Jacking and shoring at abutments	110,000
11. Replace abutment bearings 10 Ea. @ \$1,200	12,000
12. Waterproofing and route and seal	37,000
13. Asphalt pavement 160t @ \$350	56,000
14. Excavate and backfill abutments	30,000
15. Granular A 100t @ \$30	3,000
16. Steel beam guiderail and end treatments	
a. Structure attachments 4 @ \$2,000	8,000
b. Steel beam guiderail 61m @ \$250	15,250
c. MASH SKT, end treatments 4 @ \$6,000	24,000
17. Regrade approaches, restore shoulders, site restoration	15,000
18. Bonding and Insurance	<u>25,000</u>
	Subtotal
	\$1,002,250
19. Contingency allowance (15% +/-)	150,000
20. Engineering	140,000
	Total Probable Cost
	<u>\$1,292,250</u> + HST

We recommended that the Township consider the impact of prices that are 15% over the anticipated construction costs.

We suspect that the construction duration with road closure would be approximately 12 weeks. Implementation of staged traffic control for the duration of the project would increase the construction duration to approximately 18 weeks.

As requested, we have also considered the possibility of limiting the closure period to a shorter period and specifying staged construction for some of the surface work. While this will reduce the duration of the closure period, we anticipate that the total construction period will be increased to 15 weeks and the cost will be about halfway between the staged construction estimate and the closure option.

Approval Requirements


Approval from the Saugeen Valley Conservation Authority (SVCA) would be required for rehabilitation of this structure. During our site visit no bird nests were observed. If there are existing bird nests, they will need to be removed prior to April 1 and methods implemented to prevent the birds from re-establishing or if construction would be started prior to this date. The above list of repairs requires no in water work. Once the scope of work is confirmed the approval process will be initiated.

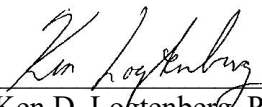
Concluding Comments

Probable cost estimates for the closure and staged construction options have been provided for your review and consideration. We have to clarify that the pricing provided is based on what we have experienced the last couple years but it has become more difficult to predict tender prices. We will let you review the alternatives and let us know which way the Township would like to proceed.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per  _____
Jeff Jones, P. Eng.

Per  _____
Ken D. Logtenberg, P. Eng.

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