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January 10, 2022
File: 2013-4388.00.A.01

Kevin Trew
CAO
Town of Outlook
400 Saskatchewan Avenue West
PO Box 518
Outlook, SK S0L 2N0

**Re: TOWN OF OUTLOOK
TRANSCANADA TRAIL PEDESTRIAN BRIDGE
BRIDGE REPAIR - OPINION OF PROBABLE COST**

Dear Kevin:

Further to our meeting on January 5, 2022, an updated Opinion of Probable Cost for the Town of Outlook TransCanada Trail Pedestrian Bridge Repairs is attached. These costs can be used in the development of the *Town's Investing in Canada Infrastructure Program (ICIP)* Application. The updated costs reflect inflation since the initial cost was prepared in 2013 and recent changes in market conditions due to the global pandemic.

The Opinion of Probable Cost also includes the costs for the comprehensive and recommended repairs as described in the 2013 report and installation of equipment required for the long-term monitoring of the structure. It also includes a 35% contingency and an estimate of engineering fees during design and construction.

Moving forward, following the completion of the bridge repairs, the implementation of annual inspections and instrument monitoring and budgeting for annual repair maintenance will be required to provide continued safety of the bridge. Based on the performance of the bridge, the frequency of the inspections can be reduced in the future to bi-annual inspections. It is estimated this would be in the range of \$6,000 - \$12,000 annually. This should be considered by Outlook when evaluating how to move forward.

As the ground movement at the two bridge abutments that caused the structural damage can be expected to continue, Outlook should plan on future interventions on the bridge over and above regular maintenance. The frequency of these interventions will be better understood after a period of monitoring. Once funding for bridge repairs is secured, we recommend that Outlook retain a geotechnical engineer to assist in the implementation of a monitoring plan to be installed as part of the bridge repair contract. Once installed, the monitoring data can be used to make a more informed decision on ongoing investment on the bridge while Outlook continues to secure future funding to implement a geotechnical solution that would reduce the impacts of slope movement on the structure.

Outlook also enquired about the cost of demolishing the structure. Based on previous studies into the controlled demolition and removal of the truss bridges as well as actual techniques used to remove similar structures in Saskatchewan, it is anticipated that the order of magnitude cost for removal would be in the range of \$35M - \$50M.

Our recommendations are based on the visual review of the existing bridge on our inspection. The scope of this investigation did not permit the physical examination and confirmation of all structural components of the existing bridge. It has been necessary to apply some interpretations and engineering judgment in some instances. If new information comes to light that might influence our conclusions, we would request to be informed to reassess our recommendations. The services provided by Associated Engineering (Sask.) Ltd. in the preparation of this report was conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Associated Engineering would be happy to discuss this further with Outlook if requested.

Yours truly,



Stephen Chiasson, P.Eng
Manager, Bridges & Structures

SC/np



Client: **Town of Outlook**
 Project: **Outlook Pedestrian Bridge
 Truss Bridge Rehabilitation**
 Details: Opinion of Probable Cost
 File: 20134388.00.E.06.00

Prepared by: DE
 Reviewed by: NC/SC
 Date: January 10, 2022
 Submission: ICIP Application

Item No.	Item	Unit	Approx. Quantity	Unit Cost	Extended Amount
1.0	Mobilization				
1.1	Mobilization and Demobilization (10%)	LS	1	\$1,080,000	\$1,080,000
1.2	Tree Removal	LS	1	\$50,000	\$50,000
				Sub-Total	\$1,130,000
2.0	Abutment Post-Tensioning				
2.1	Girder Weldments	kg	1,100	\$25.00	\$27,500
2.2	360 830/1035 MPa Hot Rolled Threadbar	m	90	\$50.00	\$4,500
2.3	Misc. Threadbar Accessories	ea	4	\$200	\$800
2.4	Deadman Weldments	kg	1,100	\$25.00	\$27,500
2.5	Deadman Excavation / Fill	m ³	80	\$300	\$24,000
2.6	Deadman Supply, Installation and Removal	ea	2	\$25,000	\$50,000
2.7	Stressing Operations	mhrs	320	\$100	\$32,000
				Sub-Total	\$166,300
3.0	Abutment Modifications				
3.1	Abutment Backwall Demolition	m ²	8	\$2,500	\$20,000
3.2	Abutment Excavation / Fill	m ³	35	\$300	\$10,500
3.3	Abutment Back Wall	ea	1	\$50,000	\$50,000
3.4	Abutment Bearings (Incl. Installation)	ea	2	\$30,000	\$60,000
3.5	Abutment Ramp	ea	1	\$50,000	\$50,000
				Sub-Total	\$190,500
4.0	Approach Span Modifications				
4.1	Approach Span Traveller (access)	LS	1	\$75,000	\$75,000
4.2	Supply Approach Girder Span Ties (Steel Only)	ea	24	\$2,600	\$62,400
4.3	360 830/1035 MPa Hot Rolled Threadbar	m	150	\$50.00	\$7,500
4.4	Misc. Threadbar Accessories	ea	24	\$200	\$4,800
4.5	Paint Removal	LS	1	\$15,000	\$15,000
4.6	Install Approach Girder Span Ties	mhrs	1,440	\$100	\$144,000
4.7	Pier Repairs and Grout Plinth	ea	12	\$25,000	\$300,000
				Sub-Total	\$608,700
5.0	Truss Post-Tensioning				
5.1	Install / Remove Truss Access	LS	1	\$250,000	\$250,000
5.2	Truss Strongbacks (4 req'd)	kg	1,900	\$25.00	\$47,500
5.3	0.6" Steel P/T Strand (Supply)	m	667	\$10.00	\$7,000
5.4	Misc. Strand Accessories (Supply)	LS	8	\$1,000	\$8,000
5.5	Install and Stress	mhrs	800	\$100	\$80,000
				Sub-Total	\$392,500



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Item No.	Item	Unit	Approx. Quantity	Unit Cost	Extended Amount
6.0	Truss Modifications				
6.1	Removal of Bay 1 Deck and Stringers	mhrs	224	\$100	\$22,400
6.2	Repl. Bay 1 Stringers and End Diaphragms (Supply and Inst)	kg	2,300	\$25.00	\$57,500
6.3	Temp. Support and Adjust Approach Girders at Pier	LS	1	\$250,000	\$250,000
6.4	Approach Girder Extensions	kg	1,000	\$25.00	\$25,000
6.5	Approach Girder Bearings and Diaphragm	ea	2	\$30,000	\$60,000
6.6	Removal of Approach Girder Support Leg	mhrs	480	\$100	\$48,000
6.7	Truss Span Bearing Modifications + Installation	ea	2	\$70,000	\$140,000
6.8	Existing Truss Repairs	LS	1	\$500,000	\$500,000
				Sub-Total	\$1,102,900
7.0	Other Recommended Repairs				
7.1	Retrofit West Abutment	LS	1	\$450,000.00	\$450,000
7.2	Replacement of Bearings at P2, P3, P4, P8, P9	LS	1	\$1,050,000.00	\$1,050,000
7.3	Reinforce 10th Bay Bottom Chords - Truss Span 1,2, 3	LS	1	\$400,000	\$400,000
7.4	Jack East Approach Span at E2	LS	1	\$500,000.00	\$500,000
7.5	Installation of Monitoring Instruments	LS	1	\$500,000.00	\$500,000
				Sub-Total	\$2,900,000
NET CONSTRUCTION COST					\$ 6,500,000
	Overhead (10%)				\$650,000
	Profit and Markup (10%)				\$166,400
	Risk (30%)				\$1,950,000
CONSTRUCTION COST					\$ 9,270,000
	Class D Estimate Contingency (35%)				\$3,245,000
	Detailed Design (8%)				\$740,000
	Detailed Inspection, including Materials Testing				\$100,000
	Temporary Works Design				\$150,000
	Construction Monitoring (Assumed 135 Days)				\$150,000
TOTAL PROJECT COST (Excluding taxes)					\$ 13,660,000