

Municipality of Chatham-Kent

Infrastructure and Engineering Services

Engineering and Transportation Division

To: Mayor and Members of Council

From: Eric Gerrard, P.Eng.,
Engineering Technologist

Date: February 19, 2021

Subject: Tender Award: Contract T20-361 – Sinclair Line over Nesbitt Drain
Culvert Replacement, Community of Harwich.

Recommendations

It is recommended that:

1. The tender in the amount of \$194,360.00 (including HST) for the work associated with Contract T20-361 - Sinclair Line over Nesbitt Drain Culvert Replacement, Community of Harwich be awarded to Clarke Construction Inc. of Blenheim, Ontario.
2. The Mayor and Clerk be authorized to enter into the recommended agreements.

Background

The Sinclair Line Culvert over Nesbitt Drain has an unknown year of construction, but it is estimated between 1930 and 1950, has a west-east orientation, and is located on Sinclair Line 2.0 km west of Kent Bridge Road in the Community of Harwich. This concrete culvert carries 2 narrow lanes of predominantly vehicular traffic across the Nesbitt Drain with an existing span of 2.4 m and a total length of 7.4 m. The roadway has a travel width of 5.0 m.

With an Average Annual Daily Traffic volume (AADT) of less than 100, the crossing is lightly used with truck volumes accounting for less than 10 percent of the total traffic. The posted speed limit at the culvert location is 80 km/hr.

Bi-annual inspections are required on structures with spans exceeding 3.0 m and are conducted by the Municipality of Chatham-Kent (as legislated under the *Public Transportation and Highway Improvement Act*) to continually monitor the condition of the structures and to ensure public safety. The Sinclair Line structure has a span less than 3.0 m, however it was still monitored periodically by Chatham-Kent staff.

In October 2019, the Sinclair Line structure was inspected by Chatham-Kent Engineering staff and was noted as having the following issues:

- Isolated areas of delamination and spalling of the soffit. A large area of severe delamination and spalling with exposed corroded rebar was noted under the roadway
- Wide vertical cracking noted on both walls and the footings
- Areas of moisture penetration on the soffit at both culvert ends
- Exposed footings with joint separation between the walls and footings
- Movement cracking noted on the wingwalls suggesting structure movement/rotation.



Figure 1. Sinclair Line over Nesbitt Drain – North Culvert End with Movement Cracking



Figure 2. Sinclair Line over Nesbitt Drain – Soffit with Delamination and Spalling with Exposed Rebar



Figure 3. Sinclair Line over Nesbitt Drain – Wide Vertical Cracking on Culvert Walls / Footing Joint Separation

Comments

This contract consists of the following work:

- Installation of bird netting and Species at Risk (SAR) barn swallow nesting structure prior to construction.
- Installation of site isolation and drain bypass.
- Removal of the existing concrete culvert including footings.
- Supply and installation of new 3.05 m diameter polymer coated corrugated steel pipe culvert.
- Supply, installation, and compaction of new granular backfill and road base.
- Supply and installation of new rip-rap slope protection at each culvert end.

Bell Canada has existing utilities at this site that require relocation onto new hydro poles. The replacement of hydro poles, and the relocation of the Bell utilities, are not included in this contract.

This structure replacement will provide approximately 50 to 75 years of service.

Innovation

Multiple structure type options were considered for the replacement structure, including steel and concrete options. Quotes were obtained for both precast concrete box culvert sections, as well as polymer coated corrugated steel pipe (CSP) options. Due to the fact that the costs for the precast concrete box culvert exceeded the costs of the steel pipe, and the site has sufficient cover over the culvert to allow the installation of a CSP, the CSP pipe option was chosen.

CSP's are offered with three main protective material properties (galvanized, aluminized, polymer coated). Of the three steel pipe options, the polymer coating provides the best protection against corrosion of the steel, which is typically the main source of deterioration in CSP culverts. The polymer coated CSP was selected due to the added durability and increased lifespan that is recognized in the industry.

The length of the CSP replacement is longer than the existing concrete culvert in order to provide additional road width, and eliminate the need for guiderails to be installed. According to the Roadside Safety Manual, if adequate width is provided (often referred to as the clear zone) then guiderails can be eliminated. The elimination of guiderails provides immediate and future lifecycle cost savings and provides more functionality to the farming community.

In order to save on consulting engineering costs, this project was designed and will be managed internally by Chatham-Kent Engineering staff. As part of the design process, it was determined that the Bell utilities were in conflict with the CSP replacement, and relocation is required. The relocation is being completed in advance of construction to avoid additional construction costs, mitigate delays, and expedite the construction schedule.

As part of the environmental review requirements, Chatham-Kent Engineering staff performed a site assessment and desktop study to determine any potential species that may be adversely affected by the scope of the project. Species at Risk (SAR) eastern foxsnake have potential habitat within the site and SAR barn swallow nests were present in the existing concrete culvert. Proper mitigation measures have been incorporated into the contract to accommodate for SAR eastern foxsnake and SAR barn swallows.

This tender allows the bidders to choose their preferred construction schedule within a two (2) year window. This method has been implemented to allow the contractor additional flexibility when scheduling the work. Due to this flexibility, Chatham-Kent receives a large number of bidders and more competitive prices. However, once mobilized to site the Contractor must complete the contract within the allocated working days.

The Tender was published on January 8, 2021, and the Purchasing Officer received the digitally submitted tenders for the work on February 11, 2021. The following table summarizes the bids received.

The tender results for are as follows:

Bidder	Location	Bid (including HST)
Clarke Construction Inc.	Blenheim, ON	\$ 194,360.00
Darrell Dick Excavating	Wallacetown, ON	\$ 211,743.77 *
Delway Contractors Ltd.	Chatham, ON	\$ 224,870.00
Dig 'R Wright Excavating Inc.	Blenheim, ON	\$ 226,559.35
Murray Mills Excavating & Trucking (Sarnia) Ltd.	Sarnia, ON	\$ 235,080.68 *
Intrepid General Limited	Belle River, ON	\$ 236,994.11
Henry Heyink Construction Ltd.	Chatham, ON	\$ 248,848.60
Sterling Ridge Infrastructure Inc.	LaSalle, ON	\$ 282,048.00

* Denotes the bid contained a clerical error but did not affect the ranking.

Per the terms of the tender, work may commence after tender award with a total completion date of November 25, 2022. The road will be closed for the duration of construction and a detour will be in place.

The lowest tender bid submitted by Clarke Construction Inc. was approximately 39% lower than the budget estimate.

Areas of Strategic Focus and Critical Success Factors

The recommendations in this report support the following areas of strategic focus:

- Economic Prosperity:**
Chatham-Kent is an innovative and thriving community with a diversified economy
- A Healthy and Safe Community:** Chatham-Kent is a healthy and safe community with sustainable population growth
- People and Culture:**
Chatham-Kent is recognized as a culturally vibrant, dynamic, and creative community
- Environmental Sustainability:**
Chatham-Kent is a community that is environmentally sustainable and promotes stewardship of our natural resources

The recommendations in this report support the following critical success factors:

- Financial Sustainability:**
The Corporation of the Municipality of Chatham-Kent is financially sustainable
- Open, Transparent and Effective Governance:**
The Corporation of the Municipality of Chatham-Kent is open, transparent and effectively governed with efficient and bold, visionary leadership
- Has the potential to support all areas of strategic focus & critical success factors**
- Neutral issues (does not support negatively or positively)**

Consultation

The Tenders were opened by the Purchasing Officer and reviewed by the Engineering and Transportation Division.

Financial Implications

Project fees associated with this contract will be funded as summarized in the following table:

Financial Implications
T20-361 Sinclair Line over Nesbitt Drain Culvert Replacement
Project Costs

Recommended Tender ^A (Including HST)	\$ 194,360.00
Less HST Rebate 11.24%	- \$ 19,332.80
Total Current Project Costs	\$ 175,027.20
Total Current Project Funding	\$ 175,027.20

Note A: A species at risk mitigation work allowance is carried in this contract as a total of \$15,000. A material testing allowance is carried in this contract as a total of \$7,500. Contingency is carried in this contract as a total of \$25,000. These amounts are accounted for in the recommended tender.

The species at risk mitigation allowance may or may not be expended and is recommended to cover the expenses required to identify, protect and relocate any species at risk encountered during the course of the project. Nesbitt Drain is a suspected habitat for certain aquatic species at risk identified by the Ontario Department of Fisheries.

Contingency allowance may or may not be expended and is recommended to address any unforeseen issues which present during the course of the project and are not covered by the contract specifications.

Materials Testing and Inspection allowance may or may not be expended and is recommended to test and inspect construction materials for compliance with the contract specifications during the course of the project.

All engineering development, including design and project management, was completed internally by Chatham-Kent Engineering staff. No external consulting engineering fees were required for the design of this project.

The culvert project costs listed above will be funded from Minor Culverts Lifecycle Reserve.

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Attachments: None

(RTC:\Infrastructure & Engineering\I&ES\2020\4346 – Contract Award T20-361 Sinclair
Line over Nesbitt Drain Culvert Replacement)