

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 - Engineering & Transportation Division

Date: August 25, 2020

Subject: Tender Award: Contract T20-268 – New Scotland Line over Ross Drain Culvert Replacement, Community of Howard.

Recommendations

It is recommended that:

1. The tender in the amount of \$347,215.10 (including HST) for the work associated with Contract T20-268; New Scotland Line over Ross Drain Culvert Replacement, Community of Howard, be awarded to South Shore Contracting of Essex, Ontario.
2. The Mayor and Clerk be authorized to enter into the recommended agreements.

Background

The New Scotland Line over Ross Drain structure was constructed in 1968 and has a south-north orientation located on New Scotland Line approximately 1.5 km northeast of Kent Bridge Road in the Community of Howard. This concrete culvert carries 2 lanes of predominantly vehicular traffic across the Ross Drain with an existing span of 3.65 m with a total length of 20.0 m. The roadway has a travel width of 6.0 m.

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

Bi-annual inspections have been 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. All structures form part of the comprehensive 20-year Plan managed by the Engineering and Transportation Division. The New Scotland Line structure was identified through the 20-year plan as a candidate for replacement.

As per the 2017 Ontario Structure Inspection Manual (OSIM) inspection, the New Scotland Line structure was documented as having:

- Very severe disintegration and exposed corroded rebar at the barrel ends with severe delamination and spalling resulting in potential loss of strength
- Cracking with efflorescence and moisture penetration throughout the walls and soffit of the culvert

In July 2018, the New Scotland Line structure was inspected by Chatham-Kent Engineering staff to confirm the above mentioned defects, and proceed with a replacement design.



Figure 1. New Scotland Line over Ross Drain – South Culvert End



Figure 2. New Scotland Line over Ross Drain – Interior Barrel

Comments

This contract consists of the following work:

- Excavation and removal of the existing concrete culvert, including footings
- Installation of new precast concrete box culvert
- Application of bridge deck waterproofing
- Backfill and reinstate road profile with improved roadside safety
- Installation of rip-rap erosion protection at culvert ends.

This replacement will provide approximately 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 sections, as well as corrugated steel pipe (CSP) options (galvanized, aluminized, polymer coated). Even though the steel options have comparable upfront cost, concrete options provide other additional benefits that make this a preferred structure type for this application.

Precast concrete box culverts are structurally superior and have higher durability resulting in less maintenance over the life of the structure. In terms of future rehabilitations to extend the life of the structure, concrete culverts provide various rehabilitation options when compared to steel pipes; where rehabilitation options are

limited and typically require full replacement. Additionally, the higher complexity of CSP installations can result in increased risks for incorrect installations, which can significantly reduce the lifespan of the culvert.

Due to design requirements, CSP structures require a minimum depth of cover above the pipe. The cover requirements for the size of CSP required cannot be achieved at this location without alterations to the road profile; resulting in higher construction costs.

The precast concrete box option was selected, as this will provide a better quality product and result in lower lifecycle costs to the Municipality when compared to the CSP products.

The replacement design for the culvert in the tender allowed for either a precast concrete structure or a cast-in-place concrete structure. This option allows contractors the option to source the precast components and complete the installation; or supply and install the formwork and reinforcing steel and cast the concrete in place. This flexibility will leverage the most economical option with the same long-term durability. Allowing this option will also ensure precast suppliers provide the best price to stay competitive. None of the bidders chose a cast-in-place option for this contract.

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 and remains to be a valuable, innovative tool that continues to provide a large number of bids and very competitively priced bids. However, once mobilized to site the contractor must complete the contract within the allocated working days.

The Tender was let on July 13, 2020 and the Purchasing Officer received the digitally submitted tenders on August 20, 2020.

The tender results for are as follows:

Bidder	Location	Bid (including HST)
South Shore Contracting of Essex County Inc.	Essex, ON	\$347,215.10
Clarke Construction Inc.	Blenheim, ON	\$378,550.00
Murray Mills Excavating & Trucking (Sarnia) Ltd.	Sarnia, ON	\$399,195.63*
Sterling Ridge Infrastructure Inc.	Windsor, ON	\$413,693.00
Schouten Excavating Inc.	Watford, ON	\$474,995.50
Nevan Construction Inc.	Kingsville, ON	\$479,120.00

* Denotes the bid contained a clerical error and did affect the ranking.

Per the terms of the tender, work may commence after tender award with a total completion date of November 26, 2021. The road will be closed for the duration of construction, however a posted detour will be in place.

The lowest tender bid submitted by South Shore Contracting of Essex County Inc. was approximately 20% lower than the Engineer's 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 Chatham-Kent's Engineering and Transportation Division.

Financial Implications

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

Financial Implications
New Scotland Line over Ross Drain Culvert Replacement
Project Costs

Recommended Tender ^A (Including HST)	\$ 347,215.10
Less HST Rebate 11.24%	- \$ 34,537.15
Total Current Project Costs	\$ 312,677.95
Total Current Project Funding	\$ 312,677.95

Note A: A species at risk mitigation work allowance is carried in this contract as a total of \$10,000. A material testing and inspection allowance is carried in this contract as a total of \$7,500. Contingency is carried in this contract as a total of \$40,000. 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.

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.

The culvert project costs listed above will be funded from Bridge Lifecycle.

Prepared by:

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Consulted and confirmed the content of the consultation section of the report by:

Jennifer Scherle
Purchasing Officer

Attachments: None

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