

Municipality of Chatham-Kent

Infrastructure and Engineering Services

Engineering and Transportation Division

To: Mayor and Members of Council

From: Jason Cikatricis, C.E.T.,
Engineering Technologist - Engineering & Transportation Division

Date: November 21, 2019

Subject: Request for Proposal Award: RFP R19-393 Consulting Engineering Services for the Replacement of the McDougall Line Bridge over Government Drain #1, Community of Tilbury East.

Recommendations

It is recommended that:

1. The Request for Proposal R19-393 Consulting Engineering Services for the replacement of Bridge on McDougall Line over Government Drain #1, Community of Tilbury East, be awarded to GM Blueplan Engineering of London in the amount of \$137,487.10.
2. The Mayor and Clerk be authorized to sign the necessary agreements.

Background

The McDougall Line Bridge over Government Drain #1 was built in 1940. The structure has an East-West orientation and is located on McDougall Line 0.02 km West of Merlin Road in the Community of Tilbury East. This Slab on Concrete T-Girder Bridge carries 2 lanes of predominantly vehicular traffic across Government Drain #1 in 2 continuous spans with a total crossing length of 22 m and a maximum clearance of 3.5 m. The deck has a travel width of 6.9 m and an overall width of 7.8 m.

With an Average Annual Daily Traffic volume (AADT) of 400, the crossing is used by a mix of passenger vehicles, commercial vehicles, and agricultural vehicles with truck volumes accounting for less than 10 percent of the total traffic. The speed limit at the bridge location is 80 km/hr.

This bridge was first load posted in 2012 at a triple posting of 9/16/24 tonnes. Currently, this bridge has a triple load posting of 7 / 12 / 17 tonnes. Due to the current condition of this structure; it is inspected yearly with the recommendation to increase the monitoring to every 6 months.

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.

A Report was received by Council at the September 9, 2019 meeting recommending the divestment of this bridge (Appendix A). However, Council directed administration through a motion to move forward with the replacement of this bridge at that same meeting.



Figure 1. McDougall Line Bridge over Government Drain #1

Comments

This project is for the design and construction administration for the bridge replacement on McDougall Line over Government Drain #1.

As a condition of the Request for Proposal (RFP), all Respondents were required to submit three (3) bridge replacement options in their proposal complete with approx. construction costs and life expectancy. For the purposes of the RFP evaluation, the Respondent was to then recommend which option is preferred and provide engineering fees associated with the recommended option.

A variety of design options were provided in the RFP's with construction cost estimates ranging from \$2,000,000 to \$4,900,000. It should be noted that these are construction estimates only and may range plus or minus once tendered.

The recommended Respondent provided three (3) bridge replacement options in their proposal;

- The recommended option is an innovative design utilizing pre-fabricated steel girders and pre-fabricated concrete deck panels supported on concrete abutments. Due to the pre-fabrication process, high quality can be achieved with the shortest construction time. This option eliminates the need for a center pier thus preventing debris from accumulating, which saves on maintenance costs and eliminates the risks of upstream flooding. The service life is 75 years and the estimated construction costs are \$2,000,000. (including HST).
- The 2nd option is a traditional design with steel girders, cast-in-place concrete deck and concrete abutments. This option also eliminates the need for a center pier. The service life is 75 years and the estimated construction costs are \$2,000,000 (including HST).
- The 3rd option is comprised of concrete box girders, cast-in-place concrete distribution deck and concrete abutments. This option also eliminates the need for a center pier. The service life is 75 years and the estimated construction costs are \$2,200,000 (including HST).

Improvements to the intersection of Queens Line and McDougall Line are also part of this project. As the bridge will be fully closed and inaccessible during construction, it is recommended that the intersection be realigned to intersect Queens Line more efficiently to provide safe turning movement for vehicular traffic. The estimated construction costs for the intersection improvements are \$500,000.

Five (5) separate proposals were received by the Purchasing Officer on November 13, 2019 and forwarded to Engineering and Transportation Division for review and evaluation using the Council approved evaluation matrix (as shown in **Table 1**) provided in the proposal call to all submitting firms. The five (5) proposals are shown in **Table 2**. The proposals were received using a two-envelope system with the fee schedule submitted in a separate envelope opened by the panel only after the ratings had been determined.

Table 1: Evaluation Matrix

Qualification Category	Qualification Criteria	Weighting
<i>Company Profile & Qualifications of the Project Team</i>	Project Manager and Senior Designers	18
	Technical Support Staff Design	10
	Contract Administration & Tech Support	8
<i>Management Qualifications</i>	Experience on Similar Projects	15
	Availability of Key Staff	5
	Local Office	3
<i>Project Implementation</i>	Approach and Methodology	15
	Scheduling / Understanding Key Activities	12
	Project Quality Assurance	12
<i>Price</i>	Project Fee	42
	TOTAL	140

Table 2: Summary of Evaluation Scores

Rank	Submitting Firm	Office Location	Final Score
1.	GM Blueplan Engineering Limited	London, ON	1262.6
2.	B.T. Engineering Inc.	London, ON	1047.2
3.	R.C. Spencer Associates Inc.	Chatham, ON	922.4
4.	Dillon Consulting Limited	Chatham, ON	888.7
5.	B.M Ross and Associates Limited	Goderich, ON	759.5

The proposal submitted by GM Blueplan Engineering Limited illustrated the staffing resources, methodology and quality controls necessary to initiate and successfully complete the project. Based on the panel review process, the proposal submitted by GM Blueplan Engineering Limited was deemed to be the preferred submission, ranked highest by the panel as identified in **Table 2**.

Conclusion

It is herein recommended that Council approve GM Blueplan Engineering Limited to proceed with the detailed design of their preferred option which is an innovative design utilizing pre-fabricated steel girders and pre-fabricated concrete deck panels supported on concrete abutments. The service life is anticipated to be 75 years and the estimated construction costs are \$2,000,000. (including HST) and \$500,000 for the intersection improvements to Queens Line and McDougall Line totaling \$2,500,000. This including the engineering costs amounts to \$2,637,489.10.

Should Council not approve the recommendation in this report and elects to divest this bridge, administration will proceed with initiating a new project to:

- Improve the intersection of Queens Line and McDougall Line as detailed above. Construction estimate of \$500,000.
- Remove the existing bridge structure and restore the drain banks. Construction estimate of \$400,000.
- Install a turn-around bulb on McDougall Line. Construction estimate of \$300,000.
- Total \$1,200,000 plus annual lifecycle savings.

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 Director of Public Works, the Director of Drainage, and the Clerk's Office were consulted in the preparation of this report.

Financial Implications

Costs associated with engineering consulting fees and disbursements will be funded as summarized in the following table:

**Proposal R19-393
Consulting Services for the replacement of the McDougall Line Bridge over
Government Drain #1
Community of Tilbury East**

Description	Total
A) Project Costs	
Recommended RFP	\$121,670.00
Plus HST 13%	\$15,817.10
Total Cost including HST	\$137,487.10
Less HST Rebate 11.24%	-\$13,675.71
Total Project Costs	\$123,811.39
B) Estimated Project Funding	
2019 Lifecycle Bridge Budget – 100%	\$123,811.39
Total Project Funding	\$123,811.39

The total current project costs listed above are to be funded from the Bridge Lifecycle account.

Prepared by:

Reviewed by:

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Engineering Technologist,
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Chris Thibert, P.Eng.
Director,
Engineering and Transportation

Reviewed by:

Thomas Kelly, P.Eng., MBA
General Manager
Infrastructure and Engineering Services

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

Tim Dick
Director, Drainage, Asset and Waste
Management

Ryan Brown
Director, Public Works

Attachments: Appendix A – Report at September 9, 2019 Council meeting

*Appendices part of the attached report are not included and are available upon request.

(RTC:\Infrastructure & Engineering\I&ES\2019\4194 – RFP Award Consulting Engineering Services – McDougall Line Bridge over Government Drain #1)

Municipality of Chatham-Kent

Infrastructure and Engineering Services

Engineering and Transportation Division

To: Mayor and Members of Council

From: Jason Cikatricis, C.E.T.,
Engineering Technologist - Engineering & Transportation Division

Date: August 26, 2019

Subject: McDougall Line Bridge over Government Drain #1, Community of
Tilbury East.

Recommendation

It is recommended that:

1. The Bridge on McDougall Line over Government Drain #1 be divested, closed and permanently removed from the bridge inventory once the remaining service life is zero, and the structure is deemed unsafe for crossing.

Background

Per the 2018-2022 Council Term Priorities (Appendix A) for growth; Council directed Administration to rationalize current inventory of bridges, roads, parks and buildings in support of new infrastructure investment.

In addition, the Infrastructure Innovation Committee presented at the January 21, 2019 Council meeting (Appendix B) whereby Chatham-Kent is to investigate opportunities to close roads and bridges to reduce infrastructure inventory where there is minimal impact to the public.

The McDougall Line Bridge over Government Drain #1 was built in 1940. The structure has an East-West orientation and is located on McDougall Line 0.02 km West of Merlin Road in the Community of Tilbury East. This Slab on Concrete T-Girder Bridge carries 2 lanes of predominantly vehicular traffic across Government Drain #1 in 2 continuous spans with a total crossing length of 22m and a maximum clearance of 3.5m. The deck has a travel width of 6.9 m and an overall width of 7.8 m.

With an Average Annual Daily Traffic volume (AADT) of 400, the crossing is used by a mix of passenger vehicles, commercial vehicles, and agricultural vehicles with truck volumes accounting for less than 10 percent of the total traffic. The speed limit at the bridge location is 80 km/hr. It has been observed that the majority of passenger vehicle traffic uses this road as an 800m short-cut to Queens Line from Merlin Road.

This bridge was first load posted in 2012 at a triple posting of 9/16/24 tonnes. Currently, this bridge has a triple load posting of 7 / 12 / 17 tonnes. Due to the current condition of this structure; it is inspected yearly with the recommendation to increase the monitoring to every 6 months.

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.

An Information Report was accepted by Council at the September 12, 2011 meeting (Appendix C), outlining the following information:

- The existing McDougall Line structure over Government Drain #1 is badly deteriorated and in need of rehabilitation or replacement within the next 1-2 years.
- A high-level replacement estimate of \$2,500,000 was presented.
- A Public Information Center (PIC) will be completed to engage the public and stakeholders to the condition of the structure and present various options for comments.
- An economic analysis associated with maintaining the structure will be completed.
- An economic analysis associated with closing the structure will be completed.
- A follow-up Report to Council summarizing all information gathered during the PIC will be provided as well as recommendations to Council regarding the future of the structure.

A PIC was held on November 2, 2011 in Ryder Hall at the Tilbury Memorial Arena, Community of Tilbury (Appendix D) that provided a variety of options with costs. The following options were presented:

1. Rehabilitate the existing structure at an estimated cost of \$1,000,000 - \$1,500,000 or more. This option would provide approximately 35 years of service.
2. Replace the existing structure at an estimated cost minimum of \$2,000,000 - \$2,500,000. This option would provide approximately 75 years of service.
3. Remove the existing structure and improve the local road fabric at an estimated cost of approx. \$769,500.
4. By removing this structure, it introduces 2 new permanent traffic routes:
 - Route 1 is a distance of 4.9 km and it consists of McDougall Line – Queens Line – Merlin Road
 - Route 2 is a distance of 6.2 km and it consists of McDougall Line – Baert Road – Coutts Line – Merlin Road

Background Continued

As requested by Council, an Update Report was accepted by Council at the December 5, 2011 meeting (Appendix E), outlining the following information:

- Recommendation to permanently remove this structure from the bridge inventory.
- Recommendation to allow administration to finalize the design to make improvements to McDougall Line and proceed with the tender and road reconstruction in 2012
- 75 year lifecycle analyses were provided for replacing the bridge and maintaining the road; and removing the bridge and upgrading and maintaining the road.
- A copy of the November 2, 2011 PIC was provided.
- A copy of stakeholder and public comments were provided from the November 2, 2011 PIC.

Council approved a motion “That administration prepare a costing for the rehabilitation or replacement of the structure at McDougall Line with future funding from the bridge lifecycle budget and its implications.”

Minutes from that meeting state that “the General Manager of Infrastructure and Engineering Services requested clarification from Council as to what additional costing information is required as the report contains the best estimate that administration can prepare. In order to prepare a more accurate costing, the job would have to go out to tender for both options to rehabilitate and replace.”

Minutes from that meeting stated that a Councillor “is changing the recommendation put forward by staff and that Council needs a more fulsome report on how this change will impact other bridge projects.”

As requested by Council, an Update Information Report was accepted by Council at the March 5, 2012 meeting (Appendix F), outlining the following information:

- Option #1 - Do nothing
- Option #2 - Bridge Rehabilitation costs estimated at approx. \$1,000,000 - \$1,500,000 plus Engineering costs.
- Option #3 - Bridge Replacement costs estimated at approx. \$2,000,000 - \$2,500,000 based on costs for a recently replaced structure of similar size.
- Option #4 - Removal of the existing bridge and make Improvements to McDougall Line for an estimated cost of approx. \$769,500 plus property acquisition. The upgrades include:
 - Removal of the existing bridge.
 - Construct new Cul-de-sac at east end of McDougall Line.
 - Improvements to the intersection of Queens Line and McDougall Line.
 - Improvements to the intersection of McDougall line and Baert Road.
 - Surface treatment along the length of McDougall Line.

Option #2, for a modified bridge rehabilitation to be prioritized, was supported by Council through a motion at the March 5, 2012 meeting.

Based on the lack of funding for bridges, an Information Report was accepted by Council at the June 10, 2013 meeting (Appendix G), outlining an Investment and Divestment Strategy. Various structures were identified for Investment and Divestment with the associated years of investment or divestment.

According to the Divestment schedule, The McDougall Line Bridge over Government Drain #1 was scheduled for divestment in 2013.



Figure 1. Key Plan of Bridge Location



Figure 2. Overall view of the McDougall Line Bridge over Government Drain #1



Figure 3. Underside view of deck and girders and top view of concrete railing

Comments

Due to the very poor overall condition of this structure, it is load posted at the lowest rating possible for a triple posting. Unless this structure is divested, in order to avoid issues resulting from a complete closure, administration needs to continue to move forward with procuring an Engineering Consultant to complete the detailed design and construction for a structure replacement.

Should Council not support recommendation #1 to close, divest, and remove the McDougall Line structure over Government Drain #1 from the inventory, administration will proceed with retaining Consulting Engineering services for design and contract administration duties associated with a structure replacement.

Complete replacement is the only available option as the level of deterioration has surpassed the value of any remaining life of the structure elements.

The approximate cost to replace this structure as identified in the March 5, 2012 report is \$2,000,000 to \$ 2,500,000. As this estimate was provided in 2012, an assumed inflation and market adjustment would need to be applied to bring the adjustment to 2019 costs.

Areas of Strategic Focus and Critical Success Factors

The recommendation in this report supports the following areas of strategic focus:

- Economic Prosperity:
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- Has the potential to support all areas of strategic focus & critical success factors
- Neutral issues (does not support negatively or positively)

Consultation

The Director and Managers of Public Works, the Director of Drainage, were consulted in the preparation of this report.

Financial Implications

As a result of removing this structure from the bridge inventory, a savings of approximately \$2,500,000 can be achieved through initial investment, associated lifecycle, and maintenance costs (based on 2012 estimates).

As a result of removing this structure from the bridge inventory, an initial investment of approximately \$800,000 will be required in road upgrades to McDougall Line and removal of the structure (based on 2012 estimates).

Prepared by:

Reviewed by:

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Chris Thibert, P.Eng.
Director,
Engineering and Transportation

Reviewed by:

Thomas Kelly, P.Eng., MBA
General Manager
Infrastructure and Engineering Services

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

Tim Dick
Director, Drainage, Asset and Waste
Management

Ryan Brown
Director, Public Works

Attachments: Appendix A – 2018-2022 Council Term Priorities
 Appendix B – Report at January 21, 2019 Council meeting
 Appendix C – Report at September 12, 2011 Council meeting
 Appendix D – PIC held November 2, 2011
 Appendix E – Report at December 5, 2011 Council meeting
 Appendix F – Report at March 5, 2012 Council meeting
 Appendix G - Report at June 10, 2013 Council meeting

(RTC:\Infrastructure & Engineering\I&ES\2019\4163 – Approval to replace bridge –
McDougall Line Bridge over Government Drain #1)