

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC, Deputy City Manager,
Environment & Infrastructure

Subject: Contract Award: Tender RFT 2022-016 Springbank Reservoirs
1 & 3 Roof Membrane Replacement and Repairs Project –
Irregular Result

Date: May 10, 2022

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions **BE TAKEN** with respect to the Springbank Reservoirs 1 & 3 Roof Membrane Replacement and Repairs Project (EW3583):

- a) The bid submitted by Stone Town Construction Limited at its tendered price of \$9,268,377.75, excluding HST, **BE ACCEPTED** in accordance with the Procurement of Goods and Services Policy Section 8.10 (a) and 13.2 (b); it being noted that this is an irregular result because the cost exceeds the project budget; it also being noted that the bid submitted by Stone Town Construction Limited was the lowest of four bids received and meets the City's specifications and requirements;
- b) R.V. Anderson Associates Limited, 557 Southdale Road East, Suite 200, London, Ontario, N6E 1A2 **BE AUTHORIZED** to complete the contract administration and construction supervision required for this project as well as additional engineering activities, all in accordance with the estimate on file, at an upset amount of \$808,692.00 including contingencies and excluding HST, and in accordance with Section 15.2 (g) of the City of London's Procurement of Goods and Services Policy;
- c) the financing for the project **BE APPROVED** in accordance with the "Sources of Financing Report" attached hereto as Appendix A;
- d) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this project;
- e) the approvals given, herein, **BE CONDITIONAL** upon the Corporation entering into a formal contract with the consultant for the work;
- f) the approvals given herein **BE CONDITIONAL** upon the Corporation entering into a formal contract; and,
- g) the Mayor and City Clerk **BE AUTHORIZED** to execute any contract or other documents including railway purchase orders, if required, to give effect to these recommendations.

Executive Summary

Purpose

This report recommends the award of construction tender RFT 2022-016 for the Springbank Reservoirs 1 and 3 Roof Membrane Replacement and Repairs Project to Stone Town Construction Limited. It also recommends that the existing engineering agreement with R.V. Anderson Associates Limited be extended to include contract administration, construction supervision, and additional engineering activities required for the project.

The low bid for the construction contract resulting from the tendering process is identified as irregular because the cost exceeds the City's project budget. The construction procurement process was rigorous and established the cost of the project in the current dynamic capital construction environment. The project budget was previously set at \$3.0M based on previous condition assessment reports completed in 2018. The total amount of additional funding required to complete the project is approximately \$7.5M. This shortfall is proposed to be financed from the Water Capital Asset Renewal & Replacement Reserve Fund.

Context

The City of London Water Supply System includes several water storage reservoirs used for balancing flows for domestic drinking water, emergency firefighting needs, or to provide storage in the event of an interruption from the Lake Huron Area Water Supply System or the Elgin Area Water Supply System. Three of these reservoirs are located within the Springbank complex.

Inspections undertaken in 2018 identified the need to replace the roof membranes on both the Springbank Reservoir 1 and Reservoir 3 and to perform repairs to the roof structures of both reservoirs within the next 5 years. The leakage tests undertaken in the past (most recently in 2015) also identified a need to perform repairs.

The roof membrane of Springbank Reservoir 1 was last replaced in 1993. The roof membrane of Springbank Reservoir 3 was last replaced in 1992, with further improvements to roof drainage made in 1998.

Given the upcoming Replacement and Expansion of the Springbank Reservoir 2 planned for 2024, it is desirable to time this work so that no more than one Reservoir is out of service at a time.

Once the roof repairs are complete, the City will reinstate the soccer playing field managed by Parks and Recreation on the roof of Reservoir 1. The Springbank Community Gardens located to the south of Reservoir 3 will remain in use during this project, with access directed to Crestwood Drive.

Linkage to the Corporate Strategic Plan

The following report supports the Strategic Plan through the strategic focus area of Building a Sustainable City by maintaining safe and reliable water supply for water users in the City of London. This report supports the Strategic Plan in the following areas:

- Building a Sustainable City:
 - Infrastructure is built, maintained, and operated to meet the long-term needs of our community;

Analysis

1.1 Background Information

1.1 Previous Reports Related to this Matter

- Civic Works committee - October 20, 2020 - Award of Consulting Engineering Services for Detailed Design of the Springbank Reservoir 1 and 3 Roof Membrane Replacement and Reservoir Repairs RFP 20-44

2.0 Discussion and Considerations

2.1 Project Description

The Springbank Reservoirs 1 and 3 Roof Membrane Replacement and Repairs Project include:

- Removal of the existing soil cover and drainage system on each of the reservoirs as well as trucking, and storing of this soil material in a staging area located to the south of the Community Gardens on the closed section of the Commissioners Road West Right of Way;
- Removal of the existing roof membrane which has reached the end of its life expectancy on each reservoir;
- Placement of a new fibre-reinforced concrete topping;
- Replacement of the soil cover and new drainage system;
- In the case of Springbank Reservoir 1, restoration of the soccer playing fields; and,
- In the case of Springbank Reservoir 3, restoration of grass.

Construction of this tendered project will start in the spring of 2022 with work on Springbank Reservoir 1 anticipated to proceed between May and October 2022. The Work on Springbank Reservoir 3 is anticipated to take place between April and October 2023.

2.2 Design Considerations

During the detailed design the consultant identified options for high density polyethylene (HDPE), ethylene propylene diene terpolymer (EPDM), and fibre-reinforced concrete topping. Based on a lifecycle analysis and a review of the limited space in the area to store the soil materials removed from the roof during the work, it was decided to proceed with the fibre-reinforced concrete topping. This type of waterproofing has a longer life expectancy of 70-75 years vs the 20-25 years for the HDPE and the EPDM membranes.

While the initial cost of the concrete topping is higher, it is expected to result in significant long-term lifecycle savings to the City. With the longer service life, the concrete topping avoids two cycles of membrane replacement that would be required if HDPE or EPDM membranes were used. The estimated increase in cost related to the concrete topping is approximately \$3M (in 2022 dollars) which is roughly equal to the costs necessary to replace the membranes one time (e.g., site works, mobilization, etc.). This results in a net cost savings of approximately \$6M without accounting for inflation.

It should be noted that reducing the amount of replacements also reduces the disruption to the surrounding residents and the disruption of public uses to the park.

2.3 Addressing the Need for Action on Climate Change

On April 23, 2019, the following was approved by Municipal Council with respect to climate change:

Therefore, a climate emergency be declared by the City of London for the purposes of naming, framing, and deepening our commitment to protecting our economy, our ecosystems, and our community from climate change.

The decision to select the concrete topping provides the benefit of reducing the number of times the soil cover over the reservoirs needs to be removed and replaced which has significant costs and transportation needs. This will reduce the amount of fossil fuels burned for future maintenance needs for the membrane. Repairing the existing concrete structures and extending their life expectancy is also preferable to demolishing and rebuilding new structures with an overall lower greenhouse gas impact.

3.0 Financial Impact/Considerations

3.1 Tender Summary

The construction Tender (RFT2022-016) was posted on March 8, 2022. Tenders for the Springbank Reservoirs 1 & 3 Roof Membrane Replacement and Repairs Project (RFT2022-016) were opened on March 23, 2022. Four contractors submitted their prices as listed below, excluding HST:

Contractor	Company Name	Tender Price Submitted
1.	Stone Town Construction Limited	\$9,268,377.75
2.	Algoma Contractors Inc.	\$9,599,536.96
3.	Hayman Construction Inc.	\$11,558,005.38
4.	Kingdom Construction Limited	\$13,777,325.18

All tenders have been reviewed by the City's consultant and by staff in Environment and Infrastructure. All bids include the required \$800,000 tender contingency amount. No mathematical errors were found, and the bids were determined to be compliant. The result of the tendering process indicates a competitive process; however, the low tender exceeds the approved funds for the project.

This project is unusual and includes aspects that are challenging to accurately estimate. For example, the soil cover on the reservoirs must be removed and placed using small equipment due to the loading on the reservoir roof, resulting in higher than typical labour costs and a higher price per cubic metre than most soil removal contracts.

Based on the tender analysis and comparison against the budget estimate, the project exceedance can be attributed to several factors:

- More significant reservoir repairs compared to the scope of the original budget estimate;
- Utilization of a more robust waterproofing material with three times the life expectancy for significant lifecycle savings for the City (per section 2.2 above);
- Uncertainty and risk with respect to inflation, supply chain challenges, material fabrication, and potential impacts to project timelines;

- Notably high fuel costs due to the current world situation;
- Escalating construction costs and projected further increases over the two-year project duration;
- Labour shortages and increasing costs for skilled labour. It being noted that this is a labour intensive project;
- Environmental abatement costs and disposal rates associated with new provincial regulations, with respect excess soil on this project (2023 only);
- Various project constraints and associated risks, including habitat protection and working around the City's community garden;
- Rapidly increasing project insurance costs over the past few years;
- Uncertainty regarding future impacts of COVID-19 and the uncertainty of the permanent removal restrictions that are presently coming into effect.

3.3 Consultant Services

R.V. Anderson Associates Limited (RVA) was awarded the detailed design of the Springbank Reservoirs 1 & 3 Roof Membrane Replacement and Repairs Project by Council on October 27, 2020. With the consultant's knowledge and performance during the preliminary and detailed design phases of the project, the consultant was invited to submit a proposal to carry out the contract administration, construction supervision, and additional engineering activities associated with this final phase. Staff have reviewed the fee submission, including the time allocated to each project task, along with hourly rates provided by each of the consultant's staff members. The review of assigned personnel and hourly rates for various activities are in alignment with the original competitive procurement and with other infrastructure assignments.

The continued use of RVA on this project for construction administration phase is of financial advantage to the City because the firm has specific knowledge of the project and has undertaken work for which duplication would be required if another firm were to be selected. The City's requirement for the creation of record drawings following construction requires the reviewing professional engineer to seal the drawings based on field verification and ongoing involvement. This requirement promotes consultant accountability for the design. In accordance with Section 15.2(g) of the Procurement of Goods and Services Policy, Civic Administration is recommending that R.V. Anderson Associates Limited be authorized to carry out the remainder of engineering services, as contract administrators, and complete the project for a fee estimate of \$808,692.00, excluding HST.

3.4 Capital Funding

The approved budget of \$3.0 M reflects the 2018 condition assessment estimate (capital project EW3583). Approximately \$325,000 of this budget has been expended on design fees. The total costs to complete the project exceed the available budget by approximately \$7.5M. The remainder of project shortfall is proposed to be funded from the Waterworks Renewal Reserve Fund. Funding sources are identified in the Source of Financing Report, attached as Appendix A. The contract would be managed carefully to potentially realize cost efficiencies and surpluses from the contingency amounts that are identified in both the construction and engineering contracts.

While there is capacity to fund this additional amount from the Waterworks Renewal Reserve Fund, the long-term health of this reserve fund is critically important. Staff will be re-examining existing capital plans to ensure this reserve recovers and stays healthy in the long term. This will be reflected in future multi-year budget submissions.

Due to construction conflicts with this work, the Springbank Reservoir #2 Reconstruction

and Expansion project will be deferred by at least one year, which will also alleviate pressure on the Waterworks Renewal Reserve Fund. The associated budgetary changes will be completed through the 2023 Budget Update process.

3.5 Operating Costs

There will be no change in operating cost for the reservoir once the work is completed.

4.0 Other Considerations

4.1 Procurement Process

The procurement policy provides the option to not award the tender, given the value exceeds the City Council approved budget. However, a non-award would require the current procurement process to be terminated. Any re-initiation of the project in the future would need to consider sufficient passage of time and a change of project scope for the integrity of the procurement process. Identifying project scope changes would be challenging given the nature of the project. Additional challenges associated with non-award and future project re-initiation would include:

- Re-initiating the project in the future may have further cost uncertainty given construction price increases and ongoing global supply chain challenges;
- As there were four compliant bids with a range of prices, there is no indication that another tender call would produce a lower contract price;
- The existing membranes are at the end of their expected useful life and recent reservoir inspections have found signs of deterioration. Since this membrane prevents water intrusion into the reservoir, delays will increase the risk to drinking water quality.

4.2 Process Improvement

The results of this tender have prompted administration to scrutinize existing project management processes to improve cost estimate reliability and budget alignment. This project reinforces the importance of regularly reviewing approved budgets relative to project cost estimates at various phases throughout the project, particularly for complex projects with an extended construction procurement phase proceeding in parallel with design completion. This is particularly true in the current environment of cost volatility due to industry supply chain and labour pressures. For other large complex projects with unique elements for which cost estimating databases are limited and volatility is higher, risk-based cost estimating and third-party estimate reviews are process improvements that will be considered.

Conclusion

The procurement process was rigorous and established the cost and value of the project in the current dynamic capital construction environment. Civic Administration has reviewed the tender bids, created a financing plan, and recommends that the construction contract for the Springbank Reservoirs 1 & 3 Roof Membrane Replacement and Repairs be awarded to Stone Town Construction Limited. It is also recommended that R.V. Anderson Associates Limited be authorized to carry out the contract administration and inspection to complete this project in accordance with Section 15.2 (g) of the City of London's Procurement of Goods and Services Policy.

Prepared by: Patricia Lupton, P.Eng., Acting Division Manager, Water Engineering

Submitted by: Aaron Rozentals, GDPA, P. Eng., Acting Director, Water, Wastewater, and Stormwater

Recommended by: Kelly Scherr, P. Eng., MBA, FEC
Deputy City Manager, Environment and Infrastructure

Attach: Appendix "A" – Sources of Financing
Appendix "B" – Location Plan

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