

31 May 2018

Terry Hoekstra, C.E.T.
Manager of Engineering and Capital Projects
Town of Cobourg
740 Division Street, Building 7
Cobourg, ON K9A 0H6

Dear Sir:

re: Monk Street – Repairs of Shoreline Structure
Our File: 17-2769

The existing shore protection works have been damaged during periods of high water levels in 2017. Access to portions of the park, located between the shoreline and Monks Road, has been closed. Shoreplan Engineering Limited (Shoreplan) has been retained to review the damage and prepare a temporary repair plan that can be implemented quickly and protect the park until a permanent shore protection design can be completed and the project funded. The ultimate shore protection design is likely to include the reconfiguration of the protection structure from an armour stone seawall to an armour stone revetment. For that reason, the work proposed herein is intended to be of nominal cost and as much as possible completed out of water to accommodate quick approval process. The work will extend the function of the original seawall and allow for the park to be re-opened for public use.

The shoreline was reviewed by staff of Shoreplan and aerial photography and topography was completed by AG-AUV. The results of the survey were used to locate and identify areas to be repaired and the nature of the repairs to be completed. The proposed work is illustrated on Drawing 17-2769-01 dated 2018 05 31. Revision 2. Three types of typical repairs were identified and these are illustrated as Sections A, B and C.

Section A is the least intricate and is applied where rip rap has been lost at the top of seawall behind the cap stone. It involves the placement of a geotextile, addition of rip rap, placement of granular fill on the slope and placement of top soil and sod. A total of six areas have been identified as requiring this type of repair. In one of these areas a stone in the second row has “slipped” out of the seawall and it is to be “pushed” back in to the gap as much as possible without the removal of the upper rows of stone.

Work in section B is the similar to section A, except that the top stone has fallen into the cavity created by the lost rip rap. The fallen armour stones

have to be first lifted and reset on the lower stone in the typical stacked stone configuration. This is then followed by the same repair described for Section A. As noted above, it involves the placement of a geotextile, addition of rip rap, placement of granular fill on the slope and placement of top soil and sod. One area has been identified as requiring this type of repair.

Section C is more complex and involves the removal of a portion of a collapsed seawall except for the bottom two rows and toe stone and resetting of these stones in the original configuration, and backfilling of the seawall with rip rap and installation of geotextile between the original bank and the new rip rap. The upper bank is to be regraded to the original slope sand the surface top soiled and sodded. It is anticipated that the existing armour stones will be reused in their original locations and adjusted as required. However it is possible that some of the stone may fracture during handling or a stable placement cannot be achieved. In this case new armour stone may need to be brought to the site and added or substituted as required. One area has been identified as requiring this type of repair.

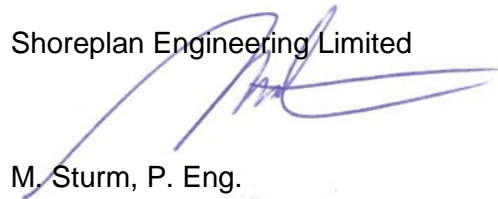
In addition to these three types of repairs we suggest that small “top up” of rip rap is carried out as per filed instruction of the design engineer or the Town staff and top soil and sod installed where ever the soil in the bank has been exposed. .

The estimated quantities of the material to be used are provided in the attached Schedule of Quantities and Unit prices. We provide two copies of the Schedule, one without prices and one with prices. Please note that these quantities may change as there could have been more damage since the site was reviewed and surveyed. The total estimated cost is the repairs is approximately \$33,600 plus HST.

In summary, the proposed improvements will restore the function of the previous seawall at a relatively modest cost. We expect that the work can be completed in approximately one week using a land based operation.

Yours truly

Shoreplan Engineering Limited



M. Sturm, P. Eng.

TOWN OF COBOURG
MONK STREET SHORELINE PROTECTION REPAIRS

Form of Tender - Page 1 of 2

CONTRACT No. 000000

CONTRACT ITEMS

The tender is made up as follows for the supply and installation of the complete work, including all labour, equipment, and materials, as specified herein, shown on the plans:

| ITEM | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL |
|-------------------------------------|--|--------------|--------|---------------|----------|
| SECTION "A" - CONTRACT ITEMS | | | | | |
| 1.0 | ACCESS SITE PREPARATION, SITE MAINTENANCE AND RESTORATION INCLUDING MOB/DEMOBILIZATION | 1 | L.S. | \$ _____ | \$ _____ |
| 2.0 | SUPPLY AND PLACEMENT OF GEOTEXTILE | 120 | sq. m. | \$ _____ | \$ _____ |
| 3.0 | SUPPLY AND PLACEMENT OF 225-450 MM RIP RAP | 150 | tonnes | \$ _____ | \$ _____ |
| 4.0 | ADJUSTMENT/RELOCATION OF ARMOUR STONE | 1 | L.S. | \$ _____ | \$ _____ |
| 5.0 | SUPPLY AND PLACEMENT OF GRANULAR "A" | 60 | tonnes | \$ _____ | \$ _____ |
| 6.0 | SUPPLY AND PLACEMENT OF TOP SOILS AND SOD | 130 | each | \$ _____ | \$ _____ |
| | | | | \$ _____ | \$ _____ |

TOTAL AMOUNT OF TENDER SECTION "A" (Items 1 to 6) \$

PROVISIONAL ITEMS - SECTION "B"

| ITEM | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL |
|------|--------------------------------|--------------|-------|---------------|----------|
| 8.0 | EXTRA MATERIAL | | | | |
| | i) ARMOUR STONE, 3 TO 5 TONNES | 1 | tonne | \$ _____ | \$ _____ |

TOWN OF COBOURG
MONK STREET SHORELINE PROTECTION REPAIRS
CONTRACT No. 000000

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| ITEM | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL |
|---|--|--------------|--------|---------------|--------------------|
| SECTION "A" - CONTRACT ITEMS | | | | | |
| 1.0 | ACCESS SITE PREPARATION, SITE MAINTENANCE AND RESTORATION INCLUDING MOB/DEMOBILIZATION | 1 | L.S. | \$ 8,000.00 | \$ 8,000.00 |
| 2.0 | SUPPLY AND PLACEMENT OF GEOTEXTILE | 120 | sq. m. | \$ 8.00 | \$ 960.00 |
| 3.0 | SUPPLY AND PLACEMENT OF 225-450 MM RIP RAP | 150 | tonnes | \$ 80.00 | \$ 12,000.00 |
| 4.0 | ADJUSTMENT/RELOCATION OF ARMOUR STONE | 1 | L.S. | \$ 5,500.00 | \$ 5,500.00 |
| 5.0 | SUPPLY AND PLACEMENT OF GRANULAR "A" | 120 | tonnes | \$ 40.00 | \$ 4,800.00 |
| 6.0 | SUPPLY AND PLACEMENT OF TOP SOILS AND SOD | 130 | each | \$ 18.00 | \$ 2,340.00 |
| | | | | \$ | \$ |
| TOTAL AMOUNT OF TENDER SECTION "A" (Items 1 to 6) \$ | | | | | \$33,600.00 |

PROVISIONAL ITEMS - SECTION "B"

| ITEM | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL |
|------|--------------------------------|--------------|-------|---------------|-------------|
| 8.0 | EXTRA MATERIAL | | | | |
| | i) ARMOUR STONE, 3 TO 5 TONNES | 30 | tonne | \$ 150.00 | \$ 4,500.00 |