

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Shop Drawings and Other Submittal Procedures.
- .2 Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .3 Section 01 35 44 - Environmental Mitigation
- .4 Section 02 41 16 - Sitework Demolition and Removal
- .5 Section 31 23 10 - Excavation, Trenching and Backfilling
- .6 Section 31 32 21 - Geotextiles.
- .7 Section 31 05 17 - Aggregate Materials.

### **1.02 MEASUREMENT PROCEDURES**

- .1 Underlayer stone and armour stone for the shore protection in the area indicated on the drawings will be paid in a lump sum payment.
  - .1 Include the supply and installation of geotextile as indicated on the drawings.
- .2 There will be no payment made for any material or stone placed beyond limits indicated on the drawings. The final contract grade must be within 150 mm of the specific elevation. Quantities will be based on an as-built survey. Any material placed outside the lines and grades as shown on the drawings will be not be measured.
- .3 There will be no additional payment for delays caused by vessel traffic.
- .4 There will be no additional payment for downtime.
- .5 There will be no payment for any rock fill core, filter stone or armour stone that is washed out, removed, missing or deteriorated by weather or wave action, placed outside design limits, unless pre-approved by the Departmental Representative.
- .6 Mobilization/demobilization of equipment will be paid under section 02 41 16.
- .7 Construction and maintenance of haul roads will be included in section 02 41 16.
- .8 Excavation and backfill will be included in the unit price for each item listed under this contract.

### **1.03 REFERENCE STANDARDS**

- .1 American Association of State Highway and Transportation Officials (AASHTO) / Standard Specifications for Transportation Materials and Methods of Sampling and Testing, 25th Edition, 2005.

- .1 AASHTO M 288-05, Geotextile Specification for Highway Applications.
- .2 American Society for Testing and Materials International (ASTM)
  - .1 [ASTM C 127-04](#), Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
  - .2 [ASTM C 535-03e1](#), Standard Test Method for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3 [ASTM C 136-05](#), Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .3 Canadian General Standards Board (CGSB)
  - .1 [CAN/CGSB-8.1-88](#), Sieves, Testing, Woven Wire, Inch Series.
  - .2 [CAN/CGSB-8.2-M88](#), Sieves, Testing, Woven Wire, Metric.

#### 1.04 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste material in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

#### 1.05 INTERFERENCE TO NAVIGATION

- .1 Be familiar with vessel movements and fishery activities in area affected by construction operations.
- .2 Plan and execute work, in a manner that will not impede navigation, including movement of vessels at the facility.
- .3 Plan and execute work, in a manner that will not interfere with fishing operations or access to marine structures by land or water.
- .4 Departmental Representative will not be responsible for loss of time, equipment, material or any other charges related to interference with moored vessels in the harbour or other Contractor's operations.
- .5 Keep the Marine Communications and Traffic Services' Centre, Fisheries and Oceans Canada, informed of construction operations, in order that necessary Notices to Mariners may be issued.

#### 1.06 REGULATORY REQUIREMENTS

- .1 Comply with municipal, provincial and national codes and regulations relating to the project. Refer to the attachments.
- .2 Mark floating equipment with sound and light signals in accordance with Collision Regulations made pursuant to the Canada Shipping Act and Notice to Mariners.
- .2 Adhere to schedule and take immediate action to correct any slippage by effectively altering existing construction operations or mobilizing other equipment. Notify Departmental Representative of corrective action to be taken.

## 1.07 INSPECTION OF SITE

- .1 Contractor to visit site of Work and become thoroughly familiar with extent and nature of Work and conditions affecting Work before bidding.

## PART 2 PRODUCTS

### 2.01 ROCK MATERIAL

- .1 Hard, angular rock free from cracks, seams and other defects which may impair durability.
- .2 Relative density, 2.65 minimum.
- .3 Absorption, 1.5 to 2.0% maximum as determined by ASTM C127 test procedure.
- .4 Durability, less than 35% abrasion Wear, ASTM C535 test procedure.
- .5 Sulphate Soundness Determination maximum 12% by ASTM C88-05.

### 2.02 CORE MATERIAL

- .1 Material for new rock fill to be blasted rock.
- .2 Stone size shall be well graded between sizes as indicated on the drawings.
- .3 No more than 5% of core stone to weigh less than 20 kg.
- .4 Silt content to be less than 1% by mass.

### 2.03 FILTER/ARMOUR STONE

- .1 Material for filter/Armour stone to be blasted rock.
- .2 Stone size to be well graded between sizes indicated on the drawings in categories specified, well graded within each category.
- .3 Greatest dimension of each stone not to exceed two (2) times the least dimension.

### 2.04 GEOTEXTILE

- .1 In accordance with Section 31 32 21 - Geotextile.

## PART 3 EXECUTION

### 3.01 GENERAL

- .1 Do not place material under poor weather conditions.
- .2 Execute work in such a manner to protect core material from storm wave action or tidal erosion damage. Replace material lost due to storm or erosion damage at no additional cost to the Contract.

### 3.02 PREPARATION

- .1 Haul roads: construct and maintain haul roads, see section 01 35 44 and 02 41 16.

### 3.03 CORE MATERIAL

- .1 Place rock fill to lines, grades and dimensions indicated on the drawings. Contractor should realize the large distance required to place the rock fill core out into the water, supply necessary equipment to complete as shown on drawings.
- .2 Side slopes to be 1.5 horizontal to 1.0 vertical unless otherwise indicated on the drawings.
- .3 Due to geotechnical conditions, placement of core stone by "benching" the slope and/or deliberately over steepening the slope and allowing it to fail will not be allowed.
- .4 Sequence construction operations such that sufficient armour and filter stone is placed to protect the core at all times.

### 3.04 FILTER/ARMOUR STONE

- .1 Place filter/Armour stone layers to grades, dimensions, profiles and cross sectional elements indicated on the drawings. Contractor should realize the large distance required to place the filter stone out into the water, supply necessary equipment to complete as shown on drawings.
- .2 Place filter/Armour stone in layers as indicated on the drawings.
- .3 Side slopes to be 1.5 horizontal to 1.0 vertical unless otherwise indicated on the drawings.
- .4 Do not transport different categories of material in the same truckload. If rocks of markedly different sizes are present in the same load, Departmental Representative reserves the right to have each rock measured separately and sorted prior to installing in structure.
- .5 Place armour stone to lines, grades and dimensions indicated on the drawings. Contractor should realize the large distance required to place the armour stone out into the water, supply necessary equipment to complete as shown on drawings.
- .6 Dumping of armour stone will not be permitted. Each stone will be lifted and individually placed.

- .7 Place armour stone to a total layer thickness as indicated on the drawings.
- .8 Choose stones and place them in such a way that the whole structure will be bonded and consolidated to as great an extent as nature or rock will allow. Rocks should vary in size so they do not create steep slopes when placing to the grade lines as indicated on the drawings.

### 3.05 ROCK MATERIAL WASHED OUT OF WORK

- .1 Should during the progress of the Work, any rock material be washed out of the Work, or through neglect or carelessness of the Contractor or their employees or from any other cause, be dumped into the water near the Work or anywhere within the harbour or channel so as to interfere in the opinion of the Departmental Representative with actual depths of water and/or impede navigation, it will be removed by the Contractor when ordered to do so by the Departmental Representative. Any material washed out of the Work or displaced beyond the contract limits will be replaced by the Contractor at no cost to Canada.

### 3.06 TOLERANCES

- .1 Note: These tolerances are not to be considered pay limits but are specified to ensure Contractor keeps within acceptable lines and grades.
- .2 Completed component layers to be within the following tolerances of lines and grades indicated:
  - .1 Core Material:  $\pm 150$  mm
  - .2 Filter stone  $\pm 150$  mm
  - .3 Armour/Toe stone:  $\pm 150$ mm
  - .4 Do not place material under poor weather conditions.
  - .5 Any material placed  $\pm 150$ mm outside the footprint, not approved by the Departmental Representative, will not be measured for payment.

END OF SECTION