

## **PART 1 - GENERAL**

### **1.1 RELATED WORK**

- .1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Section 31 53 13 - Timber Cribwork.
- .3 Section 35 20 23 - Dredging.

### **1.2 MEASUREMENT FOR PAYMENT**

- .1 Rock Mattress: as specified including base layer, bearing layer, the cost of all plant, labour, equipment and materials required to complete the work, will be measured in cubic metres place measure (CMPM) of material placed in work within the limits indicated. The volume of material will be determined in place from measurements taken prior to and at completion of the work. The Contractor is cautioned to make their assessment of the volume of material that may end up outside the pay limits shown on the drawings, as there will be no additional payment for rock mattress outside the pay limits on the drawing.
- .2 Rock mattress required to compensate for excessive removal of suitable material or over blasting under crib area to bring area to grade elevation will not be measured.
- .3 Rock mattress placed in area under crib where unsuitable material is removed will be measured.
- .4 Provide a sounding survey, taken in the presence of the inspector, before and following placement of rock mattress. No separate payment will be made for the sounding survey. Areas are to be sounded at a minimum 1.5 m x 1.5 m UTM grid to approval of Departmental Representative.

### **1.3 REFERENCES**

- .1 American Society for Testing and Materials (ASTM).
  - .1 ASTM C88-05, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
  - .2 ASTM C127-07, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
  - .3 ASTM C535-03e1, Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

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**1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Collect and separate plastic, paper packaging, corrugated cardboard, in accordance with Waste Management Plan.
- .3 Place materials defined as hazardous or toxic in designated containers.
- .4 Fold up metal banding, flatten and place in designated area for recycling.
- .5 Divert left over aggregate material from landfill to a local facility as approved by Departmental Representative.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- .1 Mattress material to following requirements:
  - .1 Crushed quarry stone consisting of hard durable particles free from silt, clay lumps, organic matter, frozen material and other deleterious materials, and free from splits, seams or defects likely to impair its soundness during handling or under action of water.
  - .2 Relative density (formally specific gravity): to ASTM C127 (AASHTO T85), not less than 2.65.
  - .3 Base layer will be uniformly graded quarry run rock ranging in weight from 45 to 400 kg. A minimum of 50% of the total base layer will contain stones with individual weights of 200 kg. No more than 5% by weight to be rocks weighing less than 10 kg.
  - .4 Bearing layer will be uniformly graded quarry run rock ranging in weight from 2 to 7 kg with average rock dimensions of 100 and 150 mm respectively. A minimum of 50% of the total bearing layer will contain stones with individual weight of 5 kg.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- .1 Dredge/Excavate area where mattress is to be placed to bedrock or hard bottom, as indicated on the drawings, as per Section 35 20 23 - Dredging. Contractor and inspector to agree on site as to dredge depths required to reach bedrock or hard bottom. Excavated sea bottom material must be stockpiled on site for a minimum of 24 hours to drain before transporting to designated waste disposal site using watertight trucks.
- .2 Confirm with Departmental Representative that excavated area is adequate for placement of rock mattress.
- .3 Dredge/excavate area where mattress is to be placed in accordance with Section 35 20 23 - Dredging, as indicated on the drawings.
- .4 Sound area in presence of Inspector before placing mattress material, and record elevation of bottom material on which mattress to be placed.

#### **3.2 PLACEMENT**

- .1 Ensure that no frozen material is used in placing.
- .2 Do not place mattress material until bottom area has been approved by Departmental Representative.
- .3 Place mattress materials to elevations and dimensions as indicated. Contractor shall ensure rock mattress will bear on hard bottom.
- .4 Prevent segregation in placing of material sizes. Do not drop material through water.
- .5 Do not place material during weather judged unsuitable by Departmental Representative.
- .6 Place material immediately prior to planned placement of timber cribs.
- .7 Level top surface of mattress to specified grade. Use sweep beam suspended from barge as screed to level surface of each mattress layer. Other methods of leveling may be employed subject to approval of Departmental Representative.
- .8 In areas where the depth of the rock mattress to be placed is less than the 600 mm required for the full thickness of the bearing layer, only place the required thickness of bearing layer to reach the required crib seat elevation.

**PART 3 – EXECUTION**  
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**3.3 ROCK SCOUR PROTECTION**

- .1 Place rock scour protection to details as indicated as soon as practicable after placement of cribs, and as per Section 31 37 10 - Rip-Rap.

**3.4 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 workmen 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.

**3.5 TOLERANCES**

- .1 Surface of bearing layer to be parallel with elevation as indicated with mean elevation of surface within 50 mm of elevations as indicated.
- .2 Surface of base layer to be parallel with elevation as indicated with mean elevation of surface within 100 mm of elevations as indicated.
- .3 Establish mean elevation from spot elevations taken at 2 m intervals. Do not allow spot elevation to differ more than 50 mm from mean.
- .4 Scour protection: +/- 100 mm. This tolerance is not to be considered pay limits but is specified to ensure the Contractor keeps with acceptable lines and grades to ensure adequate protection and adequate berthing depths.

**3.6 TESTING**

- .1 Submit rock material samples for testing to testing laboratory approved by the Departmental Representative prior to commencement of quarry production. Allow sufficient lead time to perform and report tests before start of production.
- .2 Contractor will be responsible for procurement of samples for testing and arrange and pay for shipment of samples to testing laboratory.

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**3.6 TESTING**  
**(CONT'D)**

- .3 Departmental Representative will pay for costs associated with laboratory testing. The cost of re-testing due to samples failing to meet the requirements of the contract will be borne by the Contractor.
- .4 Only materials satisfactorily tested and approved by the Departmental Representative will be quarried and placed in the work.