

PART 1 - GENERAL

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| <u>1.1 RELATED WORK</u> | .1 | Section 31 53 13 - Timber Cribwork. |
| <u>1.2 MEASUREMENT FOR PAYMENT</u> | .1 | Rock mattress will not be measured for payment and is to be included in the lump sum arrangement. Allow for all costs in the lump sum including base layer, bearing layer, the cost of all plant, labour, equipment and materials required to complete the work. |
| | .2 | Dredging Prior to Rock Mattress Placement will not be measured separately for payment as it depends in part on the Contractor's methodology. |
| | .3 | Provide a sounding survey to PWGSC, taken in the presence of the inspector, before and following placement of rock mattress. No separate payment will be made for the sounding survey. |
| | .4 | Scour Protection: Supply and placement of scour protection, including the cost of all plant, labour, equipment and materials required to complete the work as specified, will not be measured for payment and is to be included in the lump sum arrangement. |
| | .5 | Confirm with Departmental Representative that dredged bottom is suitable for rock mattress placement, prior to installing rock mattress. If the average depth of excavation is greater than -8.0m as noted on the drawings, the Departmental Representative will follow the change order process for additional quantities of excavation, rock mattress and scour protection. |

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.

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 off 100 and 150 mm respectively. A minimum of 50% of the total bearing layer will contain stones with individual weight of 5 kg.
- .2 Rock scour protection:

- .1 Quarried rock: uniformly graded.
- .2 Quarried rock: to be free from splits, seams or defects likely to impair its soundness during handling or by action of water and to approval of Departmental Representative.
- .3 Relative density (formally specific gravity): to ASTM C127, not less than 2.65.
- .4 Absorption, 1.5 to 2.0% maximum as determined by ASTM C127 test procedure.
- .5 Durability, less than 35% abrasion wear, ASTM C535 test procedure.
- .6 Sulphate Soundness Determination maximum 12% by ASTM C88.
- .7 Rock, cubical and angular in shape with ratio of maximum to minimum dimensions of less than 2.
- .8 Stone sizes for scour protection will be in the range indicated on the drawings.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Rock mattress is to be placed only after dredged bottom has been approved by Departmental Representative.
- .2 Sound area in presence of the inspector before placing mattress material, and record elevation of bottom on which mattress to be placed.

3.2 PLACEMENT

- .1 Ensure that no frozen material is used during placement.
- .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.

- .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.

3.3 SCOUR PROTECTION

- .1 Place scour protection to details as indicated as soon as practicable after placement of cribs.

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

	ROCK MATTRESS	Section 31 36 19
P/N: R.100138.001		Page 6
Harbour Development		
Prosser Rock, St. John's, NL		2019-01-01

approved by the Departmental
Representative will be quarried and placed
in the work.