

PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies requirements for the supply, installation and placement of varying sizes of armour stone to the dimensions shown and in the locations indicated on the drawings and the salvage, side-casted, removal and reinstallation of any existing material in the area of the new work.
- 1.2 RELATED SECTIONS .1 Section 01 33 00 - Submittal Procedures.
.2 Section 01 74 21- Construction/Demolition Waste Management and Disposal.
- 1.3 REFERENCES .1 American Society for Testing and Materials (ASTM)
.1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm Sieve in Mineral Aggregates by Washing.
.2 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire.
.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- 1.4 DEFINITIONS .1 cpm: Cubic metres place measurement.
.2 Cleared: Finally accepted or complying with plans and specifications.
.3 Grade: plane or planes above which all material is to be placed.
.4 Estimated Quantity:
.1 Volume in cubic metres material calculated to be above grade and within

1.4 DEFINITIONS
(Cont'd)

- .4 Estimated Quantity: (Cont'd)
 - .1 (Cont'd)
specified side slopes, unless otherwise specified.
- .5 Side Slope: inclined surface or plane from the crest elevation to the original ground line outside.
- .6 Chart Datum: Datum used for this project is the Lowest Normal Tide (L.N.T) which is assumed to be 2.937 metres below the Bench Mark CHS BM 91F9001.

1.5 SUBMITTALS

- .1 Submit to Departmental Representative for approval, 2 weeks before blasting, details of proposed blasting operations showing types and quantities of explosives, loading charges and patterns, type of blasting caps, blasting techniques, blast protection measures, time of blasting and other pertinent details. Submit subsequent changes to Departmental Representative before proceeding.
- .2 Submit to Departmental Representative complete photographic and descriptive record of buildings, roads and structures in general area of Project Work, before blasting is started. Describe buildings both inside and out. Record existing cracks in walls or structural components.
- .3 Samples
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Inform Departmental Representative of proposed source of materials and provide access for sampling at least 2 weeks prior to commencing Work.
 - .3 Submit 20 to 70 kg samples representative of quarry, minimum 2 weeks prior to beginning Work.
 - .4 Ship samples prepaid to Departmental Representative for approval.

1.6 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 for disposal paper, plastic, polystyrene, and corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .3 Divert unused geotextiles from landfill to plastic recycling facility as approved by Departmental Representative.
- .4 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
- .5 Divert unused concrete materials from landfill to local quarry facility as approved by Departmental Representative.
- .6 Fold up metal banding, flatten and place in designated area for recycling.

1.7 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,

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- 1.7 INTERFERENCE .5 (Cont'd)
TO NAVIGATION informed of construction operations, in order
(Cont'd) that necessary Notices to Mariners may be
issued.
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- 1.8 REGULATORY .1 Comply with municipal, provincial and
REQUIREMENTS national codes and regulations relating to
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.
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- 1.9 MEASUREMENT .1 Armour Stone (4 - 6 tonne): Measured in cubic
FOR PAYMENT metres of material and supplied and placed
(cmpm) in the work within the limits specified
on the drawings.
- .2 Armour Stone (6 - 8 tonne): Measured in cubic
metres of material and supplied and placed
(cmpm) in the work within the limits specified
on the drawings.
- .3 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 200 mm of the specific
elevation. Quantities will be based on a
as-built survey. Any material placed outside
the lines and grades as shown on the drawings
will be not be measured.
- .4 There will be no additional payment for
delays resulting from fishing operations.
- .5 There will be no additional payment for
delays caused by vessel traffic.
- .6 There will be no additional payment for
downtime.
- .7 There will be no payment for any rock or
armour stone that is washed out, removed,
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- 1.9 MEASUREMENT FOR PAYMENT (Cont'd)
- .7 (Cont'd) missing or deteriorated by weather or wave action.
 - .8 Contractor is to provide cross sections to the Departmental Representative at 10 metre stations to show that lines and grades have been achieved as shown on the drawings over each type of material. Measurement for payment for this will be considered included in the cost of the supply and installation of the materials. There will be no separate payment.
 - .9 Construction and maintenance of haul roads over the existing breakwater or anywhere will not be measured for payment.
 - .10 There will be no payment for the removal of existing armour stone or filter stone to gain excess to the start of the new construction or to side cast material as indicated on the drawings.

PART 2 - PRODUCTS

- 2.1 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.
- 2.2 ARMOUR STONE
- .1 Material for armour stone to be blasted rock or field stones.

- 2.2 ARMOUR STONE (Cont'd) .2 Stone sizes to be in the range of 4 tonne to 8 tonne , in categories specified, well graded within each category.
- .3 Greatest dimension of each stone not to exceed two (2) times least dimension.

PART 3 - EXECUTION

- 3.1 GENERAL .1 Contractors will not be permitted to work from any existing concrete wharf deck or pavement unless it is protected to the satisfaction of the Departmental Representative. Any damage will be the responsibility of the contractor to repair.

- 3.2 PREPARATION .1 The Contractor is solely responsible for the construction and maintenance of haul roads. Haul roads are to be removed after completion of work and sites returned to their original condition.

- 3.3 ARMOUR STONE .1 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.
- .2 Dumping of armour stone will not be permitted. Each stone will be lifted and individually placed.
- .3 Side slopes to be 1.5 horizontal to 1.0 vertical unless otherwise indicated on the drawings.
- .4 Place armour stone to a total layer thickness as indicated on the drawings.

- 3.3 ARMOUR STONE .5 Choose stones and place them in such a way
(Cont'd) 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 don't create steep slopes when placing to the grade lines as indicated on the drawings.
- .6 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.
- .7 Contractor to provide cross sections to the Departmental Representative at 10 metre stations to show that lines and grades have been achieved as shown on the drawings. Measurement for payment for this work will be included in the cost of the supply and installing the above item.
- 3.4 SALVAGE MATERIAL .1 Contractor to salvage any armour stone and filter stone to gain access to the site and incorporate into new work.
- 3.5 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.

- 3.6 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 Armour stone +/-200 mm.