

PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies requirements for the supply, stock piling, 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 (consisting of varying sizes of armour stone up to 25tons and concrete blocks) 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.
.3 Section 01 45 00 - Testing and Quality Controls.
- 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 cmpm: 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.
-

1.4 DEFINITIONS
(Cont'd)

- .4 Estimated Quantity:
 - .1 Volume in cubic metres material calculated to be above grade and within 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 3.16 metres below the Bench Mark PWC BM 1-2003.

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, informed of construction operations, in order

- 1.7 INTERFERENCE TO NAVIGATION (Cont'd) .5 (Cont'd)
that necessary Notices to Mariners may be issued.
- 1.8 REGULATORY REQUIREMENTS .1 Comply with municipal, provincial and 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.
- 1.9 MEASUREMENT FOR PAYMENT .1 Armour Stone (6 - 10 tonne): Measured in cubic metres of material supplied (cmpm) and stockpile within the limits specified on the drawings.
- .2 Armour Stone (6 - 10 tonne): Measured in cubic metres of material 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 any downtime and the supply and installation of a temporary barrier around the stockpile of armour stone.
- .7 There will be no additional payment for transportation of material from the stockpiled location to the work site.
-

1.9 MEASUREMENT
FOR PAYMENT
(Cont'd)

- .8 There will be no payment for any rock or armour stone that is washed out, removed, missing or deteriorated by weather or wave action.
- .9 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.
- .10 Construction and maintenance of haul roads over the existing breakwater or anywhere will not be measured for payment.
- .11 There will be no payment for the removal of existing armour stone, filter stone, concrete blocks and other material to gain access to the start of the new construction or to side cast material as indicated on the drawings.
- .12 There will be no payment for any material the contractor may have to use over the existing structure to reach out for placement of new or side-casted armour stone.

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 Stone sizes to be in the range of 6 tonne to 10 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. Contractor should not to expose full structure at any one time and should be protected each day.

- 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.

-
- 3.3 ARMOUR STONE .4 Place armour stone to a total layer thickness
(Cont'd) as indicated on the drawings.
- .5 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 don't create steep slopes when placing
to the grade lines as indicated on the
drawings.
- .6 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 .1 Contractor to salvage any armour stone
MATERIAL (consisting of varying sizes up to 25tons),
filter stone, concrete blocks and other
material to gain access to the site and
incorporate into new work.
- 3.5 ROCK MATERIAL .1 Should during the progress of the Work, any
WASHED OUT OF WORK 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.
-

PWGSC	RUBBLE MOUND BREAKWATER	Section 35 31 24
P/N R.072685.001		Page 8
BREAKWATER REFURBISHMENT		
ST.BRIDE'S, NL		AUGUST 2014

3.6 TOLERANCES .2 Completed component layers to be within the
(Cont'd) following tolerances of lines and grades
indicated:
.1 Armour stone +/-200 mm.