

PART 1 - GENERAL1.1 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.

1.2 SUBMITTALS

- .1 Samples
 - .1 Submit samples as directed by Departmental Representative.
 - .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.

1.3 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.

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- .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.

1.4 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.

1.5 MEASUREMENT FOR PAYMENT

- .1 Armour Stone (8-10 tonne): Measured in cubic metres of material and supplied and placed (CMPM) in the work within the limits specified on the drawings. The crest width for the armour stone is to be 6,000mm, as noted 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 200 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 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 armour stone that is washed out, removed, missing or deteriorated by weather or wave action.
- .6 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.
- .7 Construction, maintenance and removal of haul roads will not be measured for payment.
- .8 Contractor may salvage, stockpile, sort and re-install any armour stone as indicated on the drawings. Also any material required to gain access to the site or indicated for removal/stockpiling can be incorporated into new work and replaced with new armour stone to the original conditions. Contractor is to make his own assessment on location where to stockpile the removed material. There will be no separate payment for this work.
- .9 There will be no payment for any material that the contractor may have to place over existing or new armour stone to construct new structure out to required limits. There will be no separate payment for this work.

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 8 to 10 tonnes, 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 take note, there are existing light poles, steep hills, power lines, Paved road, public traffic, concrete spray wall and guard rail in the area of work. At times there is a very high tourist activity in this area. Contractor to take precaution when excavating, salvaging and placing all material. 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 note the

accessibility to this site will consist of narrow roads and steep hills. It is the Contractor's responsibility to maintain all roads getting to and from site when hauling material.

- .2 Contractor may remove existing material at the start of the breakwater repairs. All material removed will be reused in new work and the contractor should visit site to do his own assessment of the size of the material that may be removed, side-casted, stockpiled and re-installed. Contractor may have to import material to be placed over new structure to reach out for placement of new material. Any of this work or material will not be measured and will be considered included in the lump sum portion of the project.
- .3 Contractor must protect work site at the end of each day with armour stone to stop any washout that may occur from wave or sea action. The Contractor will be responsible for any wash out that occurs even if protected.
- .4 Contractor will have to provide verification that each type of material was installed to the limits.

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 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.
- .5 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.
- .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. Armour stone must be installed to +/-200mm of the grade lines provided on the drawings. Quantities will be adjusted to the installed grade or to the maximum of +/-100mm of the lines 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 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 of carelessness of the Contractor or their employees or from any other cause, be dumped into the water near the Work or anywhere within the work area 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 SALVAGE MATERIAL .1 Contractor may salvage, stockpile and re-install any armour stone to gain access to the site or indicated and incorporate into new work.
- 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.