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, filter stone and core 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 15tons) in the area of the new work.

1.2 RELATED SECTIONS

.1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 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 5.773 metres below the Bench Mark PWC 9801.

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 Rock Fill Core (0.1kg - 400kg): Measured in cubic metres of material and supplied and placed (cmpm) in the work within the limits specified on the drawings.

.2 Filter Stone (400kg - 800kg): Measured in cubic metres of material and supplied and placed (cmpm) in the work within the limits specified on the drawings.

.3 Armour Stone (4 - 8 tonne): Measured in cubic metres of material and supplied and placed (cmpm) in the work within the limits specified on the drawings.

.4 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.

.5 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.

.6 There will be no additional payment for delays resulting from fishing operations.

1.9 MEASUREMENT FOR PAYMENT (Cont'd)

.7 There will be no additional payment for delays caused by vessel traffic.

.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 additional payment for the salvage, stockpiling and re-installation of existing material (armour stone, filter stone and other material). Measurement for payment for this work will be considered included in the lump sum portion of the project.

.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. There will be no separate payment.

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.

2.1 ROCK MATERIAL (Cont'd)

.5 Sulphate Soundness Determination maximum 12% by ASTM C88.

2.2 ROCK FILL CORE

.1 Material for new rock fill core to be blasted rock.

.2 Stone size shall be well graded between 0.1 kg to 400 kg.

.3 No more than 15% of core stone to weigh less than 20 kg.

.4 Silt content to be less than 3% by mass.

2.3 FILTER STONE

.1 Material for filter stone to be blasted rock or field stones.

.2 Stone size to be well graded between 200 kg to 800 kg, in categories specified, well graded within each category.

.3 Greatest dimension of each stone not to exceed two (2) times the least dimension.

2.4 ARMOUR STONE

.1 Material for armour stone to be blasted rock or field stones.

.2 Stone sizes to be in the range of 4 tonne to 10 tonne , in categories specified, well graded within each category. Larger stones will be accepted but must be fitted into the lines and grades shown on the drawings.

.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 and must protect 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 note the accessibility to this site is difficult. It's the contractors responsibility to maintain all roads getting to and from site when hauling material.

.2 Contractor will have to remove all existing material down to the grade lines shown on the drawings. Material should be sorted and stockpiled into of the various types of material for the project before re-installing material. Contractor should visit site to do his own assessment of the material that is to be re-moved, stockpiled and re-installed. PWGSC has calculated 4100m3 to be salvaged and recommends that the contractor perform their own approx. calculations on the varying sizes of rock. These quantities were adjusted in the unit price table. All salvaged material will not be measured and are considered included in the lump sum portion of the project.

3.3 ROCK FILL CORE

.1 Place rock fill core to lines, grades and dimensions indicated on the drawings. Contractor should realize the large distance required to place the rock fill core out into the water, supply necessary equipment to complete as shown on drawings.

.2 Side slopes to be as constructed as indicated on the drawings.

3.3 ROCK FILL CORE (Cont'd)

.3 Sequence construction operations such that sufficient armour and filter stone is placed to protect the core at all times.

.4 The 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, measurement for payment for this will be included in the cost of the supply and installing the above item.

3.4 FILTER STONE

.1 Place filter stone layers to grades, dimensions, profiles and cross sectional elements indicated on the drawings. Contractor should realize the large distance required to place the filter stone out into the water, supply necessary equipment to complete as shown on drawings.

.2 Place filter stone in layers as indicated on the drawings.

.3 Side slopes to be as constructed as indicated on the drawings.

.4 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.

.5 The 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, measurement for payment for this will be included in the cost of the supply and installing the above item.

3.5 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

3.5 ARMOUR STONE (Cont'd)

.1 (Cont'd)
the water and will not be permitted to enddump armourstone. Contractor to 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 as constructed as indicated on the drawings.

.4 Place armour stone to a total layer thickness 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 is 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.

3.6 SALVAGE MATERIAL

.1 Contractor to salvage any armour stone (consisting of varying sizes up to 15tons), filter stone and other material to gain access to the site and incorporate into new work.

3.7 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 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

3.7 ROCK MATERIAL WASHED OUT OF WORK (Cont'd)

.1 (Cont'd)
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.

3.8 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 Rock fill core +/-100 mm.
.2 Filter stone +/-150 mm.
.3 Armour stone +/-300 mm.

END