

## PART 1 - GENERAL

<u>1.1 Description</u>	.1	This section specifies the requirements for the placement of stone material for the retaining wall construction on structure #302 and the rock protection on structure #304 as shown on the plans.
<u>1.2 Related Work</u>	.1	Section 01 45 01 Weigh Scales.
<u>1.3 Existing Haul Roads</u>	.1	It is important that persons intending to bid on this work visits the site and a certain what preparatory work will be required for the following: <ul style="list-style-type: none"><li>.1 Access to site via public roads.</li><li>.2 Access to site via wharf approach road and parking areas.</li><li>.3 Access to the retaining wall structure.</li></ul>
	.2	The contractor will be solely responsible for construction and maintenance of haul roads, which will be incidental to the work.
	.3	The contractor will be responsible to make good any damage to public or private roads and structures.
<u>1.4 Measurement Procedures</u>	.1	<u>Core Stone, Filter Stone, Scour Stone and Armour Stone:</u> The core stone, filter stone, scour stone and armour stone will be measured in tonnes of material supplied and acceptably placed in the works to the lines and grades specified.
	.2	<u>Random Rip-Rap (R5) and Drainage Pad Stone:</u> The drainage pad stone and random Rip-Rap (R5) will be measured in tonnes of material supplied and acceptably placed in the works to the lines and grades specified.
	.3	Mobilization/demobilization of equipment to be included in the above pay items.
	.4	Haulage will be incidental to the work.
	.5	Construction and maintenance of haul roads will not be measured for payment.

## PART 2 - PRODUCT

### 2.1 Materials

- .1 Core Stone, Filter Stone, Scour Protection, Armour Stone, Random Rip-Rap (R5) and Drainage Pad Stone stone materials:

To be granite or basaltic rock that is angular, resistant to weathering and salt water, free from overburden, spoils and organic material. Free from cracks, seams or other defects which may impair durability; relative density 2.64 t/m<sup>3</sup>; slate and sandstone not acceptable. There will be no intermixing of different colours or types of rock when stone is obtained from different sources.

  - .1 The rock, when tested by the Micro Deval test method in accordance with MTO LS-618, shall a Micro Deval loss of not greater than 35%.
  - .2 When tested by the Freeze Thaw test method in accordance with MTO LS-514, the rock material shall have Freeze Thaw loss not greater than 15%.
- .2 Quarry stone individual rock is to be angular and greatest dimensions of each stone is not to exceed two times least dimension.
  - .1 Core Stone:
    - .1 Core stone to be in range of 0.10 kg to 100 kg as indicated on plan.
  - .2 Filter and Scour Stone:
    - .1 Filter stone sizes to be in the following ranges where shown on plan:
      - .1 Range of 200 kg to 400 kg and,
      - .2 Range of 400 kg to 800 kg.
  - .3 Armour Stone:
    - .1 The armour stone to be in the following ranges where shown on plan:
      - .1 Range of 3 tonnes to 5 tonnes and,
      - .2 Range of 4.5 tonnes to 7.5 tonnes.
  - .4 Random Rip-Rap (R5):
    - .1 Random rip-rap (R5) to be in range of 0.5 kg to 15 kg.
  - .5 Drainage Pad Stone:
    - .1 Drainage pad stone to be in range of 200 kg to 400 kg.

- |                          |    |  |
|--------------------------|----|--|
| <u>2.2 Filter Fabric</u> | .1 | Geotextile: in accordance with Section 31 32 21 Geotextiles. |
|--------------------------|----|--|

### PART 3 - EXECUTION

- |                         |    |  |
|-------------------------|----|--|
| <u>3.1 Preparation</u>  | .1 | Haul roads: construct and maintain haul roads.   |
|                         | .2 | Remove ice and snow that may affect placement of rock.   |
| <u>3.2 Core Stone</u>   | .1 | Place core stones to lines, grades and dimensions as indicated on plan.  |
|                         | .2 | Execute work in a manner to protect core material from storm and erosion damage. Replacement of material lost due to storm or erosion damage will be the contractor's responsibility.  |
|                         | .3 | Notwithstanding 3.2.2, do not extend core material more than 10 metres beyond filter stone.  |
|                         | .4 | Core stone can be placed with aid of mechanical means or other approved method subject to the departmental representative review and approval.   |
| <u>3.3 Filter Stone</u> | .1 | Place the filter stone to lines, grades and dimension as indicated on plan.  |
|                         | .2 | Place stones in manner approved by the Departmental Representative to secure surface and create a stable mass.   |
|                         | .3 | Above elevation 1.0m Chart Datum, do not extend filter stone material more than 10 m beyond the armour stone.  |
|                         | .4 | Material may be placed with the aid of mechanical means or other approved method subject to Engineer's review and approval. However, the contractor shall note that due to the side slopes of the rock protection, some shaping may be required. |

- |     |                                |    |  |
|-----|--------------------------------|----|--|
| 3.4 | <u>Scour Stone</u>             | .1 | Place the scour stone protection to lines, grades and dimension as indicated on plan.  |
|     |                                | .2 | Material may be placed by end dumping.   |
| 3.5 | <u>Armour Stone</u>            | .1 | Place armour stone to the lines and grades and dimensions shown on plan.   |
|     |                                | .2 | Place each unit individually using a crane or other mechanical means to the lines and grades and dimensions shown on plan. Do not dump the armour units. Commence placing at the toe of slope and proceed up the slope. Place each unit so that it is stable, secure on slope and supported by units below. Control placement of armour units so as to produce a uniform and continuous cover. |
|     |                                | .3 | Place two layers of armour stone as shown on plan.   |
| 3.6 | <u>Random<br/>Rip-Rap (R5)</u> | .1 | Fine grade areas to be backfilled with stone to uniform, even surfaces. Compact to provide firm bed.   |
|     |                                | .2 | Line bottom and sides of areas to be filled with stone with filter fabric on prepared surfaces in accordance with Section 31 32 21 Geotextiles and as indicated. Place rip-rap on filter fabric so as to avoid puncturing filter fabric. Do not drive vehicles directly on filter fabric.  |
|     |                                | .3 | Place stone to thickness and details as indicated.   |
|     |                                | .4 | Place stone in manner approved by Departmental Representative to create a firm compacted, very dense stable mass. Place larger stones at bottom. Top of stone fill to be of finer gradation suitable to receive filter fabric and granular sub-base or base.   |
|     |                                | .5 | Finish surface evenly, free of loose areas and neat in appearance.   |
|     |                                | .6 | Mechanically place the stone. No end dumping will be permitted.  |
| 3.7 | <u>Drainage Pad</u>            | .1 | Place the drainage pad stone to lines, grades and  |

<u>Stone</u>		dimension as indicated on plan.
	.2	Material may be placed by end dumping.
<u>3.8 Protection</u>	.1	Take into account anticipated weather conditions and degree of exposure of site and tidal conditions in setting requirements for protection.
	.2	Schedule and carry out construction so that each phase of work is not left longer than necessary.
	.3	Replacement of core stone, filter stone, scour stone, armour stone, scour pad and random rip rap (R5) lost due to storm or tidal erosion will be the responsibility of the Contractors.
<u>3.9 Inspection</u>	.1	Provide inspector with equipment to assist in inspection to prove no stones have been placed in the channel.
<u>3.10 Tolerances</u>	.1	Complete component layers to be within following tolerances of lines and grades as indicated:
	.1	Core stone: plus or minus 100mm.
	.2	Filter stone layer plus or minus 300mm.
	.3	Scour stone layer: plus or minus 300mm.
	.4	Armour stone layer: plus or minus 300mm.
	.5	Drainage pad: plus or minus 300mm.