

PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies supply, placement and compaction of rockfill as required or as directed by Departmental Representative.
- 1.2 RELATED REQUIREMENTS .1 Section 31 23 33.01 - Excavating, Trenching and Backfilling.
.2 Section 31 32 19.01 - Geotextiles.
- 1.3 REFERENCES .1 ASTM International
.1 ASTM D 698-07e1, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).
.2 Underwriters' Laboratories of Canada (ULC)
- 1.4 MEASUREMENT FOR PAYMENT .1 Common Gravel Fill (Obtained from Dredging): The measurement for payment is measured by the cubic metre placed measure (CMPM). The volume of material will be determined in place from measurements taken prior to and of completion of the work. This material will be excavated from construction site which will include ballast rock, site rock fill and dredging materials as approved by the Departmental Representative. The materials will be stored on site or an approved site, then reused behind the cribwork and upland area as indicated on drawings. Material will be placed and compacted as indicated on the project drawings.
.1 All unsuitable materials and excess materials are to be transported and disposed of at an approved local waste disposal site as indicated in Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

- 1.4 MEASUREMENT FOR .2
PAYMENT
(Cont'd)
- .2 Rock Fill (100 mm minus) (parking area): Supply, placement of common fill will be measured by the cubic metre (CMPM). Material required for the backfill will be approved prior to supply and placement. The volume of material will be determined in place from measurements taken prior to and at completion of the work. Include the cost of all plant, equipment, and materials required to complete the work as specified.
- .3 Rock Fill (Breakwater Core Stone) (80-95%) (100 mm - 300 mm): Supply and placement of rock fill will be measured by the cubic metre (m³). The volume of material will be determined in place from measurements taken prior to and at completion of the work. Include the cost of all plant, labour, equipment, and materials required to complete the work as specified.
- .4 Rock Fill (85-95%) (100 mm - 300 mm): Supply and placement (below elev. 0.350) of rock fill will be measured by the cubic metre (m³). The volume of material will be determined in place from measurements taken prior to and at completion of the work. Include the cost of all plant, labour, equipment, and materials required to complete the work as specified.
- .5 Rock Fill (100 - 300 mm): Supply and placement of rock fill (filter stone) will be measured by the cubic metre (m³). The volume of material will be determine in place from measurements taken prior to and at completion of the work. Include the cost of all plant, labour, equipment, and materials required to complete the work as specified.

PART 2 - PRODUCTS

- 2.1 ROCK FILL
- .1 Rock fill (100 mm minus) material to following requirements:
- .1 Crushed quarry stone consisting of hard durable particles free from clay lumps, frozen material and other deleterious materials, and free from splits, seams or defects likely to impair its soundness during handling or under action of water.
- .2 Relative density: to ASTM C127, not less than 2.65.
- .3 Rock size to be 80% - 95% 50 mm - 100 mm and with rock no greater than 150 mm dia.

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| <u>2.1 ROCK FILL
(Cont'd)</u> | <p>.2 Rock fill (100 - 300 mm) material to following requirements:</p> <p>.1 Crushed quarry stone consisting of hard durable particles free from clay lumps, frozen material and other deleterious materials, and free from splits, seams or defects likely to impair its soundness during handling or under action of water.</p> <p>.2 Relative density: to ASTM C127, not less than 2.65.</p> <p>.3 Rock size to be 85% - 95% 100 mm - 300 mm and with rock no greater than 400 mm dia.</p> |
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PART 3 - EXECUTION

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| <u>3.1 EXAMINATION</u> | <p>.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or are acceptable for rough grading installation.</p> <p>.1 Visually inspect substrate in presence of Departmental Representative.</p> <p>.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.</p> <p>.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of approval to proceed from Departmental Representative.</p> |
| <u>3.2 PLACING ROCK FILL</u> | <p>.1 Only rock fill material approved by Departmental Representative will be placed. Material will be placed uniformly across full cross-section in layers not exceeding 300 mm loose depth.</p> <p>.2 Use suitable earth moving and surface grading equipment to place and spread rock fill in continuous and uniform horizontal layers.</p> <p>.3 Compact rock fill after each 300 mm lift.</p> <p>.4 Place rock fill to 300 mm below bottom of finished grade.</p> <p>.5 All side slopes to be one (1) vertical to one and one half (1.5) horizontal.</p> |

3.3 GRADING

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.
- .2 Rough grade to following depths below finish grades:
 - .1 50 mm for finished grader of Type 1 material.
- .3 Slope rough grade as indicated on drawings.
- .4 Grade ditches to depth required for maximum run-off as directed.
- .5 Prior to placing fill over existing ground, scarify surface to depth of 150 mm minimum before placing fill over existing ground. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .6 Compact filled and disturbed areas to corrected maximum dry density to ASTM D 698, as follows:
 - .1 95% under roadway and parking areas.

3.4 TESTING

- .1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by ULC. Costs of tests will be paid by Owner Departmental Representative in accordance with Sections 01 29 83 - Payment Procedures for Testing Laboratory Services.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

- .1 Protect bench marks, buildings, surface or underground utility lines which are to remain as directed by Departmental Representative. If damaged, restore to original or better condition unless directed otherwise.
- .2 Maintain access roads to prevent accumulation of construction related debris on roads.