

1.0 GENERAL

1.1 QUALITY CONTROL

- .1 Perform quality control tests of gravel armour as specified in Section 02330 – Earthwork Materials.
- .2 Transport only suitable materials meeting the specifications to the Site.

1.2 QUALITY ASSURANCE

- .1 The Minister will perform any testing to assure conformance to the specified requirements after the materials have been placed.
- .2 The Minister may reject gravel armour at the source, in the transport vehicle, in the stockpile, or in place.
- .3 The Minister may take samples of gravel armour for quality assurance testing. Co-operate with Minister during sampling and testing. Load and dispose of sampled materials when no longer required by the Minister.
- .4 The Minister may perform 1 gradation test for every [1,000] m³ of placed material. The frequency of gradation testing may be increased as deemed necessary by the Minister until the Contractor consistently meets the specified requirements.

2.0 PRODUCTS

2.1 MATERIALS

- .1 Provide materials in accordance with the following.
- .2 Gravel Armour Zone 5C: Refer to Section 02330 – Earthwork Materials for material specifications.

3.0 EXECUTION

3.1 STOCKPILES

- .1 Obtain prior authorization from the Minister for temporary stockpile locations on Site. Do not stockpile gravel armour in areas where contamination with the underlying soils can occur.
- .2 Use stockpiling methods that do not cause loss of materials, segregation or particle damage.

3.2 PLACEMENT

- .1 Place gravel armour at the locations, and to the lines, grades, slopes, and elevations specified in the Contract Documents.
- .2 Surfaces to receive gravel armour may be frozen, but remove water, snow, ice, frozen lumps, or deleterious materials from receiving surfaces.
- .3 Do not place gravel armour until the receiving surfaces have been inspected by the Minister. Rectify defects, including any identified by the Minister, until the receiving surfaces meet the requirements of the Contract Documents.
- .4 Place gravel armour to its full thickness in one operation to provide a uniform thickness without any large unfilled voids.
- .5 Place gravel armour on PVC membrane liner using overhead equipment such as conveyors, clamshells, draglines, backhoes, gradealls, or other means that do not result in direct or indirect equipment loading on the liner. Do not drop gravel armour more than 1000 mm vertically onto the liner.
- .6 Obtain the specified distribution of the various sizes of particles throughout the mass by using selective loading at the source or stockpiles, by controlled dumping of successive loads during placing, or by other methods of placement.
- .7 During placement, regularly check the thickness of the placed material to enable prompt adjustments to be made to the placement methodology. If measurements indicate that the specified thickness are not being attained, temporarily terminate placement and implement corrective measures, as authorized by the Minister, to provide the specified thickness.
- .8 Do not cause segregation, particle damage, breakdown, or displacement of adjacent previously placed gravel armour. Replace or repair damaged or displaced material.
- .9 Commence placement from the toe of the slope and proceed up the slope. Dozing or pushing of gravel armour downslope from the top of the slope is not permitted.
- .10 Compaction of gravel armour is not required.
- .11 Provide a completed gravel armour surface that is smooth, regular, and uniform.

3.3 PLACEMENT TOLERANCES

- .1 Place gravel armour on the soil subgrade to a minimum thickness of 190 mm and a maximum thickness of 230 mm at any location, and to an average thickness of between 200 mm and 210 mm over any 1 km length of canal.
- .2 Place gravel armour on PVC membrane liner to a minimum thickness of 290 mm and a maximum thickness of 330 mm at any location and to an average thickness of between 300 mm and 315 mm over any 1 km length of canal.

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- .3 Place gravel armour within a tolerance of +100 mm of the specified top of armour elevation. Limit the maximum rate of change in deviation from the specified top of armour elevation to a ratio 1V:50H. [Where the specified top of armour elevation corresponds to the specified top of canal bank elevation, place gravel armour level with, and to the same elevation as, the top of canal bank.]

END OF SECTION