



6005 - SPECIFICATION FOR SAND BAG RIP - RAP

6005 - 1 DESCRIPTION

- 1.01 The work shall consist of a protective covering of sand bag rip-rap constructed on an earth bed, at the locations and in conformity with the lines, grades and dimensions shown on the plans or as designated by the Engineer.
- 1.02 Sand Bag Rip-Rap will consist of jute bags filled with a dry mixture of granular material and Portland Cement.

6005 - 2 MATERIALS

- 2.01 The Department will supply the Portland Cement and jute bags. The bags will be made of at least two hundred and eighty gram (280 g) jute. The dimensions of the bags will be thirty centimetres (30 cm) by sixty centimetres (60 cm). The top of each bag will be hemmed. A tie string will be attached ten centimetres (10 cm) below the top of the bag.
- 2.02 The granular material may be pit run, screened or crushed. The granular material shall consist of fragments of durable rock, free from undesirable quantities of soft or flaky particles, shale, loam, or other deleterious materials.
- 2.03 Granular material which will not pass a seventy-five millimetre (75 mm) square opening shall be excluded. The portion of the material passing the four and three-fourths millimetre (4.75 mm) U.S. Standard Sieve shall not be greater than fifty (50) percent of the material by weight. The shale content of the material shall not exceed five (5) percent of the material by weight.

6005 - 3 CONSTRUCTION

- 3.01 The materials for sand bag rip-rap shall be hauled in accordance with the requirements for Haul (Specification 2405).
- 3.02 EXCAVATING - Aprons and slopes to be rip-rapped shall be excavated to provide adequate foundation upon which the rip-rap shall rest as shown on the plans or specified by the Engineer. The whole area to be rip rapped shall be trimmed to a uniform and even surface.
- 3.03 MIXING - Seven (7) parts of granular material and one (1) part of Portland Cement by weight shall be mixed dry in a batch mixer until the granular material is uniformly coated with cement.
- 3.04 FILLING BAGS - The bags shall be filled two-thirds (2/3) full with the dry mixture. Each bag shall be securely tied with the string attached ten centimetres (10 cm) below the top of the bag.

3.05 PLACING

(a) Slopes

- (i) The bags shall be placed by hand to the required length, width and thickness. The rip-rap shall be commenced in a trench below the toe of the slope. The bags shall be placed in horizontal rows. Each bag shall be firmly bedded into the slope and securely butted against the adjacent bags. The tied end of the bag shall rest on and against the face of the slope.
- (ii) Each row of bags shall overlap the preceding row of bags by at least twenty-five centimetres (25 cm). The joints in adjacent rows shall be staggered.
- (iii) The rip-rap shall have a minimum thickness of fifteen centimetres (15 cm) measured perpendicular to the slope, and its surface shall not vary from the theoretical surface by more than eight centimetres (8 cm) at any point.

(b) Aprons

- (i) Two (2) layers of bags shall be placed by hand to cover the whole area to the specified length, width and thickness. The rip-rap shall be commenced at the lower or downstream end of the apron. The bags shall be placed in rows perpendicular to the flow.
- (ii) Each row of bags shall overlap the preceding row of bags by at least twenty-five centimetres (25 cm). The joints in adjacent rows shall be staggered. Each bag shall be firmly placed into the apron bed and securely butted against the adjacent bags. The tied end of each bag shall be placed upstream or toward the culvert.
- (iii) The first layer of rip-rap shall be completed before the second layer is commenced.
- (iv) The rip-rap shall have a minimum thickness of thirty centimetres (30 cm) measured perpendicular to the apron and its surface shall not vary from the theoretical surface by more than eight centimetres (8 cm) at any point.

3.06 Sand bag rip-rap shall not be placed when the atmospheric temperature is less than five degrees Celsius (5°C).

3.07 Watering

- (a) Each layer of rip-rap shall be thoroughly wetted with water.
- (b) The water shall be sprayed onto the surface of each layer. Excess water shall not be applied.

6005 - 4 MEASUREMENT

4.01 The volume of Sand Bag Rip-Rap will be measured, in place, in cubic metres. The surface area and thickness of the rip-rap will be measured to compute the volume.

6005 - 5 PAYMENT

5.01 Payment for SAND BAG RIP-RAP will be made at the unit price per cubic metre. The unit price will be full compensation for excavating and preparing the bed, loading, storing, handling, hauling materials from delivery points, mixing the Portland Cement and granular material, filling and placing the bags, supplying the water and watering the rip-rap.