

SECTION 700 RIPRAP

700.1 DESCRIPTION

This work consists of furnishing and placing approved material for the protection of piers, abutments, walls, embankments, and other designated locations.

700.2 MATERIALS

- A. Riprap shall conform to Section 830.
- B. Drainage Fabric shall conform to Section 831.

700.3 CONSTRUCTION REQUIREMENTS

Slopes to be protected by riprap shall be free of brush, trees, stumps, and other objectionable material and shall be dressed to a smooth surface. Soft or spongy material shall be removed to the specified depth and replaced with approved material. Filled areas shall be thoroughly compacted. A trench shall be provided along the toe of the slope to receive the first course of riprap. The trench shall be constructed as detailed in the plans. All excavation required to get the slope to the configuration detailed in the plans shall be incidental to the payment for riprap.

Class A and B riprap may be either quarried ledge rock or field stone. Class C, D, E & F riprap shall be quarried ledgerock.

When drainage fabric is specified on the plans, the surface to be covered shall be smooth, free of obstructions, and shall conform to plan shown dimensions prior to placement of the drainage fabric.

The drainage fabric shall be placed under and along all sides of the riprap that are in contact with earth, unless otherwise shown on the plans. Lapped joints in the drainage fabric shall be placed transverse to the direction of flow with the overlap in the direction of flow. All lapped joints shall be lapped a minimum of one foot (300 mm). Vehicles and equipment shall not be operated directly on the drainage fabric.

Protection for structure foundations shall be provided as early as the foundation construction permits. The area to be protected shall be cleaned of waste materials.

Riprap shall be placed in a manner which will produce a reasonably well graded mass of stone with the minimum practicable percentage of voids. Riprap shall be placed to its full course thickness in one operation without displacing the underlying material. Bridge berms, channel slopes/bottoms and other surfaces that will be covered with riprap shall be finished to an elevation that will permit the placement of the required depth of riprap and match plan elevations or existing channels. Placing of riprap in layers, or by dumping into chutes, or similar methods likely to cause segregation will not be permitted. The larger stones shall be well distributed and the entire mass of stone shall conform to the gradation specified.

RIPRAP

In order to produce a compact riprap protection in which all sizes of material are placed in their proper proportions, hand placing or rearranging of individual stones by mechanical equipment may be required.

The riprap protection shall be placed in conjunction with the construction of the embankment. To prevent mixture of embankment and riprap, sufficient lag in construction of the riprap may be necessary. The Contractor shall maintain the riprap protection until accepted. Material displaced by any cause shall be replaced.

700.4 METHOD OF MEASUREMENT

- A. Riprap:** Riprap will be measured to the nearest 0.1 ton (0.1 metric ton).
- B. Drainage Fabric:** Drainage fabric will be measured to the nearest square yard (square meter). The lap at joints will not be included in the measurement.

700.5 BASIS OF PAYMENT

- A. Riprap:** Riprap will be paid for at the contract unit price per ton (metric ton) of material furnished. Payment will be full compensation for furnishing, loading, hauling, placing, and spreading the stone, and for labor, and equipment required for shaping, excavating, and performing subaqueous operations necessary.
- B. Drainage Fabric:** Drainage fabric will be paid for at the contract unit price per square yard (square meter). Payment will be full compensation for furnishing and installing the drainage fabric as specified. Payment will be for plans quantity unless changes are ordered in writing.