# Class VI Riprap NJSP-18-05B

**DRAFTERS NOTES: CONTACT CENTRAL OFFICE BRIDGE DIVISION AND CENTRAL OFFICE CONSTURCTION AND MATERIALS DIVISION PRIOR TO USE. FOR ESTIMATION PURPOSES, USE 1.89 TONS/CY AS THE UNIT OF WEIGHT FOR CLASS VI RIPRAP.**

**1.0 Description.** This item shall consist of furnishing and placing riprap to the lines, grades, and thickness indicated on the plans.

**2.0 Material Requirements.** Rock used for riprap shall be hard, durable, and angular in shape and consist of clean field rock or rough unhewn quarry rock as nearly uniform in section as practicable. Neither the width nor the thickness of individual rocks shall be less than one third of their length. The rocks shall be dense and free of overburden, spoils, shale, clay, mudstones, claystones and organic material. Rocks with shale and chalk seams shall not be acceptable. Rounded rock (river rock) shall not be acceptable. Rocks used for riprap shall be produced from a ledge combination currently approved by MoDOT for use in accordance with Section 1002 or 1005. Rocks used for riprap should break only with difficulty, have no earthy odor, not have closely spaced discontinuities (joints or bedding planes), and not absorb water easily.

**Rock Quality Requirements**

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| --- | --- | --- | --- | --- |
| **Test** | **Property** | **Allowable Value** | **Frequency** | **Comments** |
| Shape | Length to Thickness Ratio A/C | < 10 %, d50 < 24 in  < 5 %, d50 > 24 in | 1 per 20,000 tons | Determined by visual inspection |
| Gradation | Particle size Distribution Curve | Size limits shown in table below | 1 per 20,000 tons | Determined by visual inspection |

The rock riprap material shall meet the gradation of larger and smaller rock sizes associated with a rock class or median diameter (D50) as specified in the table below. Rock diameter for angular material represents the length of the intermediate axis of an individual rock. The material gradation shall conform to the table below for the class size corresponding to the D50. The D15, D50, D85 and D100 are the rock sizes for which 15%, 50%, 85%, and 100% of the total sample are of equal size or smaller, respectively.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Nominal Riprap Class** | | **D15** | | **D50** | | **D85** | | **D100** |
| Class | Size( in) | Min. (in.) | Max. (in.) | Min. (in.) | Max. (in.) | Min. (in.) | Max. (in.) | Max.(in.) |
| VI | 21 | 13 | 18.5 | 20 | 24 | 27.5 | 32.5 | 42 |

Conformance of rock riprap to the gradation requirements shall be accomplished by visual inspection. The contractor shall provide a representative truckload of the rock riprap material meeting the gradation requirements on-site. Further acceptance onsite will be based upon the visual comparison to the representative truckload.

**3.0 Construction Requirements.** The rock riprap shall be placed in conformance with the required gradation mixture, to the lines, grades and layer thickness shown on the plans. Rock riprap shall be machine placed and distributed such that there will be no accumulations of either larger or smaller sizes.

**4.0 Method of Measurement.** Measurement of Class VI Riprap shall be determined by weighing each truck load on certified scales in accordance with Sec 310, or by other methods approved by the engineer. Measurement will be made to the nearest 0.1 ton for the total tonnage of material accepted.

**5.0 Basis of Payment.** All labor, equipment and material costs required to complete the described work shall be completely covered by:

|  |  |  |
| --- | --- | --- |
| Item No. | Item Description | Units |
| 611-99.10 | Class VI Riprap | Tons |