

## SECTION 31 37 00

### RIPRAP

#### PART 1 – GENERAL

##### 1.1 DESCRIPTION

- A. Scope:
  - 1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals required to furnish and install riprap at locations shown or indicated in the Contract Documents.
- B. Coordination:
  - 1. Review procedures under this and other Sections and coordinate the Work that must be performed with or before riprap.
- C. Related Sections:
  - 1. Section 31 05 19, Geosynthetics for Earthwork.
  - 2. Section 31 11 00, Clearing and Grubbing.
  - 3. Section 31 23 05, Excavation and Fill.
  - 4. Section 31 24 00, Embankments.

##### 1.2 REFERENCES

- A. Standards referenced in this Section are:
  - 1. ASTM C127, Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
  - 2. NSSGA-293, Aggregate Handbook.
  - 3. Georgia Department of Transportation, Standard Specifications, Construction of Transportation Systems.

##### 1.3 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Riprap Supplier:
    - a. Supplier of riprap and other materials furnished under this Section shall be certified by the Georgia Department of Transportation.
- B. Regulatory Requirements:
  - 1. Reference Specifications and Details:
    - a. Comply with applicable requirements of Georgia Department of Transportation Standard Specifications and Standard Details.

##### 1.4 SUBMITTALS

- A. Acton Submittals: Submit the following:
  - 1. Product Data:
    - a. Source or quarry name, gradation, and other information required by ENGINEER. Submit for each source of material proposed.
- B. Informational Submittals: Submit the following:
  - 1. Certificates:
    - a. Where material is specified according to reference specification item number, submit copy of Supplier's valid certification from entity issuing the reference specification, and associated certification of material conformance with the reference specifications.

## PART 2 – PRODUCTS

### 2.1 MATERIAL

- A. Riprap: Material shall comply with GDOT Standard Specifications Section 805 in accordance with the reference specifications indicated in Article 1.3 of this Section.

## PART 3 – EXECUTION

### 3.1 PREPARATION

- A. Clear ground surface of brush, trees, stumps, and other objectionable material, and dress to a smooth surface. Clearing and grubbing, where required, shall comply with Section 33 11 00, Clearing and Grubbing.
- B. Remove all soft or spongy material to depth shown or indicated on the Drawings or as directed by ENGINEER, and replace with acceptable material. Excavation, removal of unsuitable material if any, and backfilling shall comply with Section 31 23 05, Excavation and Fill.
- C. Embankment construction, if any, shall comply with Section 31 24 00, Embankments.
- D. Placing of geosynthetics, where required, shall comply with Section 31 05 19, Geosynthetics for Earthwork.

### 3.2 INSTALLATION

- A. Riprap Placing:
  - 1. Minimum total thickness of riprap shall be as shown on the Drawings.
  - 2. Place riprap stones so that weight of stone is carried by underlying material and not by adjacent stones. Carefully place the stones on geosynthetics, where required, to produce an even distribution of pieces, with minimum of voids and

without damaging the geosynthetic. Place the full-course thickness in one operation while preventing segregation and avoiding displacing of underlying material. Do not place stones in layers, by dumping into chutes, or by other methods that cause segregation or damage to geosynthetic, if any. When necessary, rearrange individual stones for uniform distribution.

3. Riprap may be placed using equipment, and placing shall produce an installation of firm and solid riprap. Level the top surface of riprap to required alignment and slope by hand-placing stones to fill large voids and to make surface even.
4. On slopes, place the largest stones at the bottom. Riprap shall be properly sized to form compact, solid blanket to protect the slope or channel, as applicable. On slopes steeper than one foot vertical to 1.5 feet horizontal, do not use rounded boulders or cobbles without grouting stones in place.
5. Grouting: Where grouting of riprap is required, comply with the following:
  - a. When stones are in place, completely fill spaces between stones with “grout fill” material in accordance with Section 03 60 00, Grouting.
  - b. ENGINEER may direct that occasional spaces be left ungrouted for relief of hydrostatic pressure. Chink ungrouted spaces with spalls of suitable size.
  - c. Do not grout riprap in freezing weather.
  - d. Clean exposed surface of stones to remove accumulation of grout.
  - e. Keep grouted riprap moist for seven days after grouting. Suitable grout curing compound may be employed when approved by ENGINEER.

+ + END OF SECTION + +