

SECTION 312 — RIPRAP SLOPE AND CHANNEL PROTECTION

312.01 DESCRIPTION. This work shall consist of protecting slopes and channels with a covering of geotextile and stone and an aggregate filter blanket as specified in the Contract Documents or as directed by the Engineer.

312.02 MATERIALS.

Aggregate Filter Blanket	
Crusher Run Aggregate CR-6	901.01
Stone	901.02
Geotextile, Class as specified	921.09

312.03 CONSTRUCTION.

312.03.01 Excavation. Excavation for riprap and cutoff walls shall conform to the lines and grades specified in the Contract Documents. The subgrade shall be smooth and firm, free from protruding objects that would damage the geotextile and constructed in a manner acceptable to the Engineer. Refer to 402.03.01 for excavated material.

312.03.02 Geotextile. The geotextile shall be placed on the prepared subgrade with the adjacent edges overlapping a minimum of 2 ft. Damaged geotextile shall be replaced or repaired at no additional cost to the Administration in a manner acceptable to the Engineer.

312.03.03 Aggregate Filter Blanket. When an aggregate filter blanket is specified, it shall conform to the lines and grades specified in the Contract Documents and shall be compacted in a manner acceptable to the Engineer.

312.03.04 Riprap Placement. The ground surface upon which the slope and channel protection is placed shall be free of brush, trees, stumps and shall be acceptable to the Engineer.

The first section of riprap placed shall consist of a minimum of 5 tons and will be inspected by the Engineer for conformance to gradation and placement requirements. This section shall be used to evaluate quality control for the remainder of the project if it is approved by the Engineer. If the material is rejected, it shall be removed from the project and additional sections, each consisting of a minimum of 5 tons, shall be placed.

The placement of the riprap shall begin with the bottom cutoff walls or toe sections. The larger stones shall be placed in the cutoff walls and along the outside edges of the limits of slope and channel protection. The riprap shall be placed with equipment which produces a uniformly graded mass of stones. Placing the stones by methods that cause segregation is prohibited.

The surface elevation of completed riprap installations shall be flush with adjacent channel bed or bank slope elevations, and shall not create an obstacle to the flow. The outer riprap surfaces shall be even and present a generally neat appearance. The plus or minus tolerance of the surface of the finished riprap installation shall be 3 in. for Class I Riprap and 6 in. for Class II and III Riprap from the lines and grades shown on the Contract Documents when measured perpendicular to the exterior surface of the stonework.

Placed material not conforming to the specified limits shall be removed and replaced as directed by the Engineer at no additional cost to the Administration.

The stone shall be placed and distributed so the resulting layer will contain a minimum of voids and there will be no pockets of same size material. The stone shall be placed to its full course thickness in one operation in a manner that the underlying material will not be displaced or worked into the course of riprap being placed. When an aggregate filter blanket is used, placement of the riprap shall proceed in a controlled manner to avoid disruption or damage to the layer of bedding material.

312.03.05 Backfill. Any excavation voids existing along the edges of the completed slope and channel protection shall be backfilled and compacted in a manner acceptable to the Engineer.

312.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for all excavation, geotextile, stone, backfill, compaction, disposal of excess material, prewashing when required, preparation of quality control section, and for all material, labor, equipment, tools and incidentals necessary to complete the work.

312.04.01 Riprap Slope and Channel Protection will be measured and paid for at the Contract unit price per square yard. Area measurements will be actual surface measurements.

312.04.02 Cutoff Walls will be measured and paid for at the Contract unit price per linear foot.

312.04.03 Riprap for scour protection will be measured and paid for at the Contract unit price per ton for the item Class II Riprap For Scour Protection.

312.04.04 Aggregate Filter Blanket will be measured and paid for at the Contract unit price per square yard for the depth specified in the Contract Documents.

SECTION 313 — GABIONS

313.01 DESCRIPTION. This work shall consist of protecting slopes and channels with stone filled wire baskets as specified in the Contract Documents or as directed by the Engineer.

313.02 MATERIALS.

Stone	901.05
Wire for Gabions	906.01
Geotextile, Class as specified	921.09

313.03 CONSTRUCTION.

313.03.01 Excavation. Excavation, including excavation for cutoff walls, shall conform to the lines and grades specified in the Contract Documents. The subgrade shall be smooth, firm, and free from protruding objects or voids that would affect the proper placement of the wire baskets or damage the geotextile. Refer to 402.03.01 for excavated material.

313.03.02 Geotextile. Geotextile shall be required for all gabions and shall be placed on the prepared subgrade. Adjacent strips shall be overlapped a minimum of 2 ft. Care shall be exercised in placing and anchoring the empty basket units to ensure proper alignment and to avoid damaging the geotextile. Damaged geotextile shall be replaced or repaired as directed by the Engineer at no additional cost to the Administration.

313.03.03 Wire Baskets. Placement of the units shall begin with the cutoff walls. The empty units shall be set on the geotextile and the vertical ends bound together with wire ties or interlocking fasteners spaced to permit stretching of the units to remove kinks. Stretching methods will be optional with the Contractor. Stakes, pins or other approved methods shall be used to ensure a proper alignment.

313.03.04 Stone. The empty basket units shall be filled carefully with stone placed by hand or machine to ensure good alignment with a