

CONSTRUCTION SPECIFICATION

VA-761. LOOSE ROCK RIPRAP

1. SCOPE

The work shall consist of the construction of loose rock riprap revetments and blankets, including filter layers or bedding where specified.

2. MATERIALS

Rock for loose rock riprap, filter layers or bedding shall come from sources approved by an NRCS representative and meet the size and gradation requirements shown on the design drawings. The rock shall be excavated, selected and handled as necessary to meet the quality and grading requirements of this specification and the construction drawings. Individual rock fragments shall be dense, sound and free from cracks, seams and other defects conducive to accelerated weathering. The rock fragments shall be angular to subrounded in shape. The least dimension of an individual rock fragment shall be not less than 1/3 the greatest dimension of the fragment unless otherwise specified on the construction drawings.

Except as provided below, the rock shall have the following properties:

- a. Bulk specific gravity (saturated surface-dry basis) not less than 2.5.
- b. Absorption not more than 2 percent
- c. Soundness: Weight loss in five cycles not more than 10 percent when sodium sulfate is used or 15 percent when magnesium is used.

Bulk specific gravity and absorption shall be determined according to ASTM C 127. The test for soundness shall be performed according to ASTM C 88.

Rock that fails to meet the requirements stated in a, b, and c above may be accepted only if similar rock from the same source has been demonstrated to be sound after 5 years or more of service under conditions of weather, wetting and drying, and erosive forces similar to those anticipated for the rock to be installed under this specification.

The rock shall conform to the grading limits, specified on the drawings, after it has been placed as the riprap.

3. SUBGRADE PREPARATION

The subgrade surfaces on which the riprap or bedding course is to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. When fill to subgrade lines is required, it shall consist of approved materials and shall be compacted to a density equal to the adjacent existing soil material.

Rock materials shall not be placed until the foundation preparation is completed and the subgrade surfaces have been inspected and approved by the NRCS representative.

4. EQUIPMENT-PLACED ROCK RIPRAP

The rock shall be placed by equipment on the surfaces and to the depths specified. The riprap shall be constructed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying materials. The rock shall be delivered

and placed in a manner that will insure that the riprap in place shall be reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact, one to another with the smaller rocks and spalls filling the voids between the larger rocks.

Riprap shall not extend above grade on side slopes so that water is ponded outside the riprap.

Riprap shall be placed in a manner to prevent damage to structures. Hand placing will be required to the extent necessary to prevent damage to the permanent works.

5. HAND-PLACED RIPRAP

The rock shall be placed by hand on the surfaces and to the depths specified. It shall be securely bedded with the larger rocks firmly in contact, one to another. Spaces between the larger rocks shall be filled with smaller rocks and spalls. Smaller rocks shall not be grouped as a substitute for larger rock. Flat slab rock shall be laid on edge unless otherwise specified.

6. FILTER LAYERS OR BEDDING

When the drawings specify filter layers or bedding beneath riprap, the filter or bedding material shall be spread uniformly on the prepared subgrade surfaces to the depth specified. Compaction of filter layers or bedding will not be required, but the surface of such layers shall be finished reasonably free of mounds, dips or windrows.

Filter fabric may be used in lieu of filter gravel if approved by the NRCS representative. The fabric shall be manufactured to provide the necessary life and filtering action. The fabric and riprap shall be placed in accordance with the manufacturer's recommendations.

7. TESTING

The contractor will furnish such test data as are required to verify that the riprap, filter, and bedding materials and the completed work meet the requirements of the specifications.