

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION**

GROUTED ROCK RIPRAP STRUCTURE

1. SCOPE

The work shall consist of the construction of grouted rock riprap revetments and blankets, including bedding where specified.

2. MATERIALS

Rock for grouted rock riprap and bedding shall come from sources approved by the NRCS engineer or designated representative. 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.

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 engineer or designated 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 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. BEDDING

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

7. CONCRETE GROUT

Use standard ready mix concrete. Concrete shall have a minimum compressive strength at 28 days equal to 3000 psi (6 bag mix). The concrete shall have a minimum slump of 6 inches and a maximum of 8 inches.

8. PLACING CONCRETE GROUT

The concrete should be worked into the riprap using rakes, scrapers, and a stiff bristled broom. The riprap should be visible on the surface and the voids between rocks should be completely filled with concrete.

9. ADDITIONAL ITEMS WHICH APPLY TO THIS JOB

Apply lime, fertilizer, seed and mulch to all disturbed areas including the earthfill according to the specification for SEEDING.