

712.05. SEPARATOR FABRIC FOR BASES.

- (a) **General.** This Subsection describes a pervious fabric to be used under base courses for separation. The fabric shall meet the requirements for separation in AASHTO M 288. A non-woven fabric is required.
- (b) **Acceptance.** Furnish a type A certification for the fabric in accordance with Subsection 106.04. Also, furnish a 3 square yard (2.5 square meter) sample of the fabric for testing to the Materials Engineer from each lot or shipment by the Engineer.

712.06. FILTER FABRIC FOR SILT FENCE.

- (a) **General.** This Subsection describes fabric to be used for the removal of soil particles from water flowing through the fence. The fabric shall meet the requirements for temporary silt fence in AASHTO M 288. In addition, use AASHTO M288, Table 6, Unsupported Silt Fence with an elongation less than 50%.
- (b) **Acceptance.** Furnish a type D material certification for the fabric in accordance with Subsection 106.04. Also, furnish a 3 square yard (2.5 square meter) sample of the fabric for testing to the Materials Engineer from each lot or shipment by the Engineer.

SECTION 713**STONE FOR RIPRAP, FILTER BLANKET, AND GABIONS****713.01. MATERIALS COVERED.**

This Section covers stone for plain riprap, laid up riprap or grouted riprap, stone for special plain riprap, and materials for filter blanket and gabions.

713.02. RIPRAP STONE.

Stone for riprap shall be hard, sound, and durable, and shall be approved by the Engineer prior to use. Submit samples of the stone to be used to the Materials Engineer for approval before any stone is used.

Determine tests for mass/unit volume and absorption in accordance with ASTM C 97. The minimum mass/unit volume shall be 140 lbs/ft³ (2,243 kg/m³), and the maximum absorption shall be 6 percent.

Soundness (freeze and thaw test) loss of the stone after 20 cycles shall not exceed 15 percent when tested in accordance with the Corps of Engineers test method CRD-C 144.

The size of stone for the various kinds of riprap shall be as follows:

(a) Stone for Plain Riprap.

Riprap Thickness, <u>inches (mm)</u>	Maximum, <u>pounds (kg)</u>	Average Size, <u>pounds (kg)</u>	Not More than 20% Shall Have a Mass Less <u>Than, lb (kg)</u>
12 (300)	150 (70)	30-50 (13-23)	20 (9)
18 (450)	300 (150)	70-125 (30-60)	30 (14)
24 (600)	1000 (450)	225-400 (100-180)	40 (18)
30 (750)	1000 (450)	225-400 (100-180)	40 (18)
36 (900)	2000 (900)	450-800 (200-360)	80 (36)

When placed on the embankment, the smaller stones shall be well distributed throughout the mass. Neither the breadth or the thickness of any piece of riprap shall be less than 1/3 of its length.

(b) Stone for Laid up or Grouted Riprap.

Riprap Thickness, <u>inches (mm)</u>	Size Range, <u>pounds (kg)</u>	At Least 60% Shall Have a Mass More Than, lb (kg)
12 (300)	50-250 (23-113)	100 (45)
18 (450)	50-250 (23-113)	150 (68)

Slabs or slivers will be rejected. Spalls shall be well graded of a suitable size for the work.

(c) Stone for Special Plain Riprap.

<u>PERCENT</u>	<u>VOLUME</u> <u>Cubic Feet (Cubic Meter)</u>
40 to 60	5 to 12 (0.142 to 0.340)
20 to 30	2 to 5 (0.057 to 0.142)
10 to 20	0.25 to 2 (0.007 to 0.057)
5 to 15	may be less than 0.25 (0.007)

713.03. FILTER BLANKET MATERIAL.

Material for a filter blanket shall consist of sand, gravel, crushed stone, or other approved materials that have been processed, blended, or naturally combined. It shall be reasonably free from lumps or balls of clay, organic matter, objectionable coatings, or other foreign materials, and shall be durable and sound. Blanket material shall not contain flat and/or elongated particles in an amount exceeding 20 percent. A flat or elongated piece is one in which the length is greater than 5 times the minimum dimension. The backing material in place shall be reasonably well graded within the following limits:

SINGLE COURSE BACKING (FILTER BLANKET)	
<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
4 inch (100 mm)	100
2 inch (50 mm)	60-90
1 inch (25.0 mm)	40-70
3/8 inch (9.5 mm)	15-40
No. 4 (4.75 mm)	0-15

TWO COURSE BACKING (FILTER BLANKET)		
	PERCENT PASSING	
<u>SIEVE SIZE</u>	<u>Lower Course of Two Layers</u>	<u>Upper Course of Two Layers</u>
6 inch (150 mm)	—	100
4 inch (100 mm)	—	90-100
2 inch (50 mm)	—	65-85
1 inch (25.0 mm)	—	40-70
3/8 inch (9.5 mm)	100	15-35
No. 4 (4.75 mm)	95-100	0-10
No. 8 (2.36 mm)	80-90	—
No. 16 (1.18 mm)	55-75	—
No. 30 (600 μm)	30-60	—
No. 50 (300 μm)	12-30	—
No. 100 (150 μm)	0-10	—

713.04. GABIONS AND REVETMENT MATTRESSES.

(a) **Materials.**

1. **Wire Baskets.** Gabion baskets shall meet the requirements of Subsection 732.09
2. **Stone Fill for Gabions and Revetment Mattresses.** Stone fill for gabions and revetment mattresses shall consist of hard, dense, sound, durable, rough-fractured stone as nearly cubical as practicable. The stone shall have a minimum specific gravity of 2.5 and meet the following dimensional requirements:

<u>Structure Type</u>	<u>Minimum Dimension</u>	<u>Maximum Dimension</u>
Gabions	4 inch (100 mm)	8 inch (200 mm) ^a
Revetment Mattresses	3 inch (75 mm)	5 inch (125 mm) ^b

- ^a When the gabion height exceeds 18 inches (450 mm), 5% of the stone may have a maximum dimension of 10 inches (250 mm).
- ^b For 12 inch (300 mm) revetment mattresses, the stone may have a maximum dimension of 6 inches (150 mm)

3. Soundness (freeze and thaw test) loss of the stone after 20 cycles shall not exceed 15 percent when tested in accordance with the Corps of Engineers test method CRD-C 144.
- (b) **Filter Fabric.** The filter fabric shall conform to the requirements of Subsection 712.02.
- (c) **Filter Sand.** Filter sand shall meet the requirements of Subsection 703.04.

SECTION 714

MASONRY BRICK

Description. This Specification pertains to masonry brick for various types of construction. The particular type required will be specified on the Plans or in the Proposal. Masonry brick may be made from clay, shale, or a satisfactory mixture of aggregates and cement.

714.01. MASONRY BRICK MADE FROM CLAY OR SHALE.

Brick of this type shall comply with the requirements of the “Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)”, AASHTO Designation M-114—except that the requirements for “Maximum Water Absorption by Five-hour Boiling” and “Maximum Saturation Coefficient” shall not apply.

Masonry Brick shall be Grade MW unless shown otherwise on the plans.

Brick for Sanitary Sewer Manholes shall be select, hard-burned, sewer brick which will not deteriorate under conditions encountered in sewer manholes. They shall comply with the requirements of AASHTO M-91, “Sewer and Manhole Brick (Made from Clay or Shale),” for either Grade MM or MS bricks.

714.02. CONCRETE BUILDING BRICK.

Brick of this type shall comply with the requirements of the “Standard Specifications for Concrete Building Brick,” ASTM Designation C55— except that the requirements for “Water Absorption”, “Moisture Content,” and “Linear Shrinkage” shall not apply. Concrete building brick shall be Type II, Grade N-II, unless shown otherwise on the Plans.

714.03. METHODS OF TEST.

These materials will be tested in accordance with the applicable AASHTO or ASTM methods as indicated in the Specifications for these items.

714.04. BASIS OF ACCEPTANCE.

Acceptance of masonry brick will be based on satisfactory results of tests conducted on samples submitted to the Materials Division.