

SECTION 626—GABIONS

626.1 DESCRIPTION—This work is the furnishing, assembling, and filling of open mesh wire baskets with aggregate, forming gabions of the type indicated.

626.2 MATERIAL—

(a) Aggregate.

1. Physical Requirements. Use acceptable quality aggregate, sound, free from structural defects and foreign substances. Submit samples to the MTD for petrographic examination for durability before use, unless the aggregate comes from material providing an approved Type A aggregate.

2. Size. Use aggregate in the following sizes, measured in the greatest dimension:

Gabion Height	Minimum Aggregate Size	Maximum Aggregate Size
Less than 300 mm or over 300 mm	75 mm 100 mm	130 mm 200 mm
Gabion Height	Minimum Aggregate Size	Maximum Aggregate Size
Less than 1 foot 1 foot or over	3 inches 4 inches	5 inches 8 inches

(b) Geotextiles, Class 2, Type B. [Section 735](#)

(c) Gabion Baskets. As shown on the [Standard Drawings](#) and as follows:

1. Types A and B.

1.a Wire Mesh.

- Galvanized steel wire, minimum 3.07 mm thick (No. 11 gage) for heights 300 mm (12 inches) and over; 2.36 mm thick (No. 13 gage) for the 230 mm (9-inch) height.
- Tensile strength from 410 MPa to 586 MPa (60,000 pounds per square inch to 85,000 pounds per square inch), determined according to [ASTM A 392](#).
- Zinc coated with a minimum coating mass of 250 g/m² (0.80 ounces per square foot), determined according to [ASTM A 90](#).
- Maximum linear dimension of the mesh opening not exceeding 114 mm (4 1/2 inches) and mesh opening area not exceeding 5100 mm² (8 square inches) for baskets 300 mm (12 inches) in height and over; maximum linear dimension not exceeding 83 mm (3 1/4 inches) and mesh opening area not exceeding 3900 mm² (6 square inches) for baskets 230 mm (9 inches) in height. Dimensions may vary, subject to a tolerance limit of 3% of the manufacturer's stated sizes.

1.b Fabrication.

- Fabricate so the sides, ends, lid, and diaphragms can be assembled at the construction site into the required rectangular basket.

- Use baskets of single-unit construction.
- Weave base, lid ends, and sides either into a single unit, or with one edge of those members connected to the base section of the basket, so the strength and flexibility at the point of connection is at least equal to the mesh.
- Assemble with the necessary diaphragms secured in position on the base so no additional tying is necessary now.
- Join the mesh perimeter forming the basket so the joints formed have at least the same strength as the mesh body.
- Provide four internal connecting wires in each cell (two across the width and two across the length) at a level of one-third the cell height and at a level of two-thirds the cell height.
- Use the same type connecting wire as the wire in the mesh, except do not exceed the wire mesh diameter by more than 20%.
- Fabricate the wire mesh to be nonraveling, which is the ability to resist pulling apart at the twists or connections forming the mesh if a single wire in a mesh section is cut, and the mesh section is then subjected to the load test, as specified in [Section 626.2\(c\)1.c.2](#).

1.c Wire Mesh Tests.

1.c.1 Elongation. The diameter or tensile strength of individual wires is not reduced to values less than those of wire 10% smaller when elongated equivalent to 10% of the section length.

1.c.2 Strength. Wire does not rupture, or mesh fasteners open when a load of 27 kN (6,000 pounds) is applied as follows:

Step 1. Clamp a section 1.8 m (6 feet) long, not less than 0.9 m (3 feet) wide including selvage bindings, for 0.9 m (3 feet) along the width, or in the middle of widths greater than 0.9 m (3 feet), with the excess falling free on each side.

Step 2. Apply tension to elongate the section 10%.

Step 3. Apply the force (load) to 0.09 m² (1 square foot) located approximately in the center of the sample between clamps and in a direction perpendicular to the tension force direction using a circular ram head with edges beveled or rounded to prevent cutting the wires.

2. Corrosion Resistant-Types A and B. [Section 626.2\(c\)1](#) and as follows:

2.a Wire Mesh. Polyvinyl chloride coated, galvanized steel wire; minimum 2.71 mm (No. 12 gage) wire core for heights 300 mm (12 inches) and over; 2.05 mm (No. 14 gage) for 230 mm (9-inch) height; coated with polyvinyl chloride 0.549 mm (0.0216 inch) thick, minimum.

2.b Coated Mesh Test. [Section 626.2\(c\)1.c](#) and as follows to determine the resistance of the coating to corrosive effects of air and water.

2.b.1 Immerse for 20 hours in hydrochloric acid (solution composed of 50% water and 50% hydrochloric acid concentration 21 Baume-Test temperature 15 °C (59F)); or immerse for 60 hours in a saturated solution of salt water at 15 °C (59F). Unprotected ends not immersed and mesh showing noticeable loss of mass (weight) due to sheathing material corrosion or wire's diameter reduction will not be acceptable.

2.b.2 Immerse for 50 hours in a 3.5% solution of potassium permanganate at ambient temperature; the maximum allowable penetration between the coating and the core wire from a square cut end is 11.99 mm (0.472 inch).

2.b.3 Subject wire to temperatures ranging between 70 °C and -40 °C (158F and -40F); mesh is acceptable if the coating is not altered or deformed.

3. Certification. [Section 106.03\(b\)3](#). Certify each shipment delivered to the job site. A shipment consists of material arriving at the job site at approximately the same time.

626.3 CONSTRUCTION—As shown on the [Standard Drawings](#) and as follows:

(a) Excavation. Excavate as required to place the baskets. Remove unsuitable material below the bottom of baskets and replace with acceptable material. Thoroughly compact the entire foundation and finish to a firm, even surface, one free of vegetation, large stones, and other debris, with depressions filled. Dispose of unsuitable or excess material.

(b) Geotextiles, Class 2, Type B. Place as specified in [Section 212.3\(c\)](#).

(c) Gabions. Assemble each basket by binding vertical edges together with a continuous piece of connecting wire, looped twice around the vertical edges with a coil, approximately every 100 mm (4 inches); on 230 mm (9-inch) high baskets, loop the coils every 80 mm (3 inches). Set empty baskets to line and grade, as indicated. Join the units together with connecting wire, in the same manner as described above. Space uniformly, then securely fasten the internal tie wires in each outside cell of the structure, or as directed. If gabions are placed as slope protection or channel lining, the internal tie wires may be deleted, if directed.

Fill Type A gabions by hand placement of the aggregate, at least along the exposed faces, for a uniform appearance. Fill Type B gabions with small power equipment or by hand.

When filling baskets, use a standard fence stretcher, chain fall, or iron rod to stretch the baskets and to maintain alignment. Carefully place aggregates in corrosion-resistant baskets, making sure the sheathing is not broken or damaged. After filling a basket, bend the lid over until it meets the sides and edges. Secure the lid to the sides, ends, and diaphragms, using connecting wire in the manner specified for assembling.

626.4 MEASUREMENT AND PAYMENT—Cubic Meter (Cubic Yard)