

**STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
SUPPLEMENTAL SPECIFICATION 838**

**GABIONS**

**May 6, 1997**

- 838.01 Description**
- 838.02 Material**
- 838.03 Construction**
- 838.04 Method of Measurement**
- 838.05 Basis of Payment**

**838.01 DESCRIPTION.** This item shall consist of furnishing and installing gabions and fill material, excavation and other work necessary to install the gabions (baskets) as shown in the plans or as directed by the Engineer.

**838.02 MATERIAL.**

A. Basket

1. Dimension. Wire mesh baskets shall be supplied as specified on the plans. Gabions shall be supplied pre-assembled by the manufacturer in collapsed form with all appurtenances attached to the main gabion body. The horizontal width of the basket shall not be less than 0.90 m (36 inches). The horizontal length of the basket shall not be less than 1.8 m (72 inches). The gabion lengths shall be multiples (2, 3 or 4) of the horizontal width. Dimensions are subject to a tolerance limit of  $\pm 5$  percent.

2. Wire Mesh. The wire shall be steel welded wire or twisted wire mesh, fabricated in such a manner that the sides, ends, lids and diaphragms can be assembled at the construction site into rectangular units.

The wire for twisted wire mesh shall have a minimum nominal diameter of U.S. Steel Wire Gage No. 11 for galvanized and U.S. Steel Wire gage No. 12 for galvanized with PVC or epoxy coating. The wire shall have a minimum tensile strength of 413 MPa (60,000 psi). The mesh openings shall be 115 mm (4½ inches) maximum and the area of any mesh opening shall not exceed 6500 mm<sup>2</sup> (10 sq. inches).

The twisted wire mesh shall be formed in a uniform hexagonal pattern with nonraveling double twists. The perimeter edges of the mesh for each panel shall be tied to a selvage wire having a minimum nominal diameter of U.S. Steel Wire Gage No. 9 for galvanized and U.S. Steel Gage No. 10 for galvanized with PVC or epoxy coating so that the selvage to mesh connector is at least the same strength as the body of the mesh.

The welded wire mesh shall be formed in a nominal 75 mm by 75 mm (3 inch by 3 inch) square pattern with a resistance weld at each connection. The wire for welded wire mesh shall have a minimum nominal diameter of U.S. Steel Gage

Wire No. 11 for galvanized and U.S. Steel Wire Gage No. 12 for galvanized with PVC or epoxy coating. The wire shall have a minimum strength of 413 MPa (60,000 PSI). The weld shear strength shall be 1.78 kN (400 pounds) for U.S. Steel Gage No. 11 wire and 1.33 kN (300 pounds) for U.S. Steel Gage No. 12 wire. The spiral binders for joining welded wire mesh panels shall be formed from coated wire having a minimum nominal diameter of U.S. Steel Wire Gage No. 12 and a minimum tensile strength of 413 MPa (60,000 PSI). The ends shall terminate with two tight complete revolutions with a half hitch or in such a manner to maintain strength during pull-apart forces. They shall have a maximum pitch of 75 mm (3 inches).

3. Joining Wire. The joints shall be tied in such a manner that strength and flexibility at the point of connection is at least equal to the mesh. The connecting wire is to meet or exceed the same specifications as the wire used in the mesh.

Lacing wire for assembling baskets and interconnecting adjacent baskets and internal connecting wire for reinforcing side panels shall be coated steel wire having a minimum nominal diameter of U.S. Steel Wire Gage No. 13.5. Spiral binders for welded wire mesh shall pass through the openings and be tied at both ends.

Alternate methods and fasteners for assembling baskets and interconnecting adjacent baskets in lieu of lacing wire and spiral bindings must be approved by the Engineer. Alternate fasteners must remain closed when subjected to a 2.67 kN (600 pound) tensile force while confining the maximum number of wires to be confined by the fastener gabion structure. The submitted fastener must produce a joint strength of 20.4 kN per meter (1400 pounds per lineal foot). Installation procedures, fastener test results, and gabion manufacturer's acceptance shall be submitted for approval to the Engineer of alternate methods and fasteners.

4. Coatings. The wire shall be galvanized with a zinc coating in conformance with ASTM A 641 class 3 finish 5. When additional coating is required by the plans the galvanized wire shall be coated with fusion bonded or extruded PVC or a fusion bonded epoxy.

5. Certification. Each shipment of units to a job site shall be accompanied by a certification which states that the material conforms to the requirements of this specification. A shipment shall consist of all material arriving at the job site at substantially the same time. The certification shall be on company letterhead and shall be signed by an officer of the company having legal authority to bind the company.

6. Tests

a. Elongation - Twisted Mesh. The wire mesh shall have sufficient elasticity to permit elongation of the mesh equivalent to a minimum of 10 percent of the length of the section of the mesh under test without reducing the gage or tensile strength of the individual wire. Elongation testing shall occur prior to coating and fabrication of the mesh.