

# WISCONSIN CONSTRUCTION SPECIFICATION

## 18. Sack or Tubular Gabion

### 1. SCOPE

The work shall consist of furnishing, assembling, and installing rock-filled wire mesh sack or tubular gabions.

### 2. TYPES

Sack or tubular-shaped gabions shall consist of a single panel of non-raveling double twisted hexagonal wire mesh. A lacing wire is used to close both ends of the gabion. The diameter and length of each gabion shall be as specified.

### 3. MATERIALS

The wire mesh size for making the gabion shall be approximately 3 ¼ inches x 4 ½ inches. The mesh wires shall be a minimum of 0.118 inch diameter galvanized wire. Lacing wire diameter is to be 0.086 inches or larger. Wire for fabrication and assembly shall be hot dipped galvanized. The galvanized wire shall have a minimum tensile strength of 60,000 psi. Galvanized steel wire shall conform to ASTM A 641, Class 3, Soft Temper.

When Epoxy or Polyvinyl Chloride (PVC) coated wire is used, the galvanized wire shall be coated by fusion bonded epoxy; or fusion bonded, extruded, or extruded and bonded PVC material. The wire coating shall be colored black, gray, green, or silvery; and the initial properties of the PVC coating shall meet the following requirements:

- Specific Gravity. In the range of 1.25 to 1.35, ASTM D 792.
- Abrasion Resistance. The percentage of weight loss shall be less than 12%, when tested according to ASTM D 1242, Method B at 200 cycles, CSI-A Abrader Tape, 80 Grit.
- Brittleness Temperature. Not higher than 15 °F, ASTM D 746.
- Tensile Strength. Extruded Coating (not less than 2,980 psi., ASTM D 412). Fusion Bonded Coating (not less than 2,275 psi., ASTM D 638).
- Modulus of Elasticity. Extruded Coating (not less than 2,700 psi. at 100 percent strain, ASTM D 412). Fusion Bonded Coating (not less than 2050 psi. at 100 percent strain, ASTM D 638).
- Ultraviolet Light Exposure. A test period of not less than 3000 hours, using apparatus Type E at 63 °C, ASTM G 23.
- Salt Spray Test. A test period of not less than 3000 hours, ASTM B 117.

Rock shall conform to the quality requirements in Wisconsin Construction Specification 9, Loose Rock Riprap, unless otherwise specified in the construction plan. At least 85 percent of the rock particles, by weight, shall be within the predominant rock size range of 4 to 6 inches. The maximum rock size shall be 8 inches and the minimum rock size 3 inches.

Prior to delivery to the site, the Contractor shall inform the Technician of the source from which the rock will be obtained, and provide the test data by which the material was determined by the Contractor to meet the specification.

Bedding or filter material, when specified, shall meet the gradation shown on the plans or as specified in Wisconsin Construction Specification 8, Drainfill.

Geotextile, when specified, shall conform to the requirements specified in Wisconsin Construction Specification 13, Geotextiles.

#### 4. FOUNDATION PREPARATION

The foundation on which the gabions are to be placed shall be cut or filled and graded to the lines shown on the drawings. Surface irregularities, vegetation, and foreign matter shall be removed from foundations as shown on the drawings or as directed by the Technician.

Gabions shall not be placed until the foundation preparation has been inspected and approved by the Technician.

#### 5. ASSEMBLY AND PLACEMENT

Lacing wire or ring fasteners shall be used to fasten interconnecting gabions, fasten gabion sides together, and to close gabions. Ring fasteners shall be installed at a maximum spacing of six (6) inches.

Any damage to the gabion wire or coatings during assembly, placement, and filling shall be repaired in accordance with the manufacturer's recommendations or replaced with undamaged gabions.

The assembly and placement of sack or tubular gabions shall be in accordance with the procedures recommended by the manufacturer and the following:

- a) Bend the wire mesh panel so that the two sides meet to form a cylinder. Fasten the sides together the full length according to the manufacturer's recommendations.
- b) Close one end of the sack/tubular gabion by using lacing wire or ring fasteners to gather tightly together the ends of the meshes.
- c) Upend the sack into a vertical position and press the bottom against the ground to flatten it. Form the sack into a cylindrical shape.
- d) Fill the sack/tube with rock.
- e) Close the top end of the gabion as described in b) above.

Alternate Assembly - Side Opening. Form the sack/tubular gabion with the opening on the side. Close both ends of the gabion and the sides 15 to 30 inches from each end, leaving the central portion open. Fill the sack/tube with rock and close the remaining central opening.