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## PART 03000 - MATERIALS

### Section 03010 - Fencing Materials

#### Description

**03010.00 Scope** - This Section includes the requirements for barbed wire, woven wire and chain link fabric, metal posts, braces, hardware, and gates.

#### Materials

**03010.10 Barbed Wire** - The barbed wire shall be two-strand and either 12 1/2 gauge or 15 1/2 gauge with four-point barbs spaced at 5 inch intervals conforming to the requirements of AASHTO M 280 (ASTM A 121). Galvanizing shall be Class 3.

All barbed wire installed on the Project shall be new or like new, and the same diameter unless otherwise approved.

**03010.20 Woven Wire Fabric** - The woven wire fabric shall be 12 1/2 gauge galvanized steel wire conforming to the requirements of AASHTO M 279 (ASTM A 116), Class 3 coating or 11 gauge or 12 1/2 gauge aluminum coated steel wire conforming to the applicable requirements of ASTM A 116. The 12 1/2 gauge aluminum coated steel wire shall have the same coating thickness required for 11 gauge steel wire in Table 2 of ASTM A 116.

**03010.30 Chain Link Fabric, Ties, and Tension Wire** - Chain link fabric, ties, and tension wire shall conform to the requirements of AASHTO M 181 supplemented and modified as follows:

- Fabric may be zinc-coated steel meeting Type I, Class D coating requirement, aluminum-coated steel, or aluminum alloy. Use only one type on the Project.
- Wire fabric ties, wire ties, and hog rings may be zinc-coated steel wire, aluminum-coated steel, or aluminum alloy as elected, regardless of the type of wire fabric used.
- Use ductile, zinc-coated steel meeting the coating requirements of ASTM A 641, Class 1 for wire fabric ties, wire ties, and hog rings. Aluminum-coated steel wire fabric ties, wire ties and hog rings shall be coated with at least 0.30 ounce per square foot.
- Tension wire shall have a Class 2 coating.
- Fabric for the fence to be installed with pickets shall be 9 gauge wire woven in 3 1/2 inch by 5 1/2 inch diamond mesh. Top and bottom selvage shall be knuckled finish.

**03010.31 Pickets** - Pickets shall be either standard Grade A redwood or cedar pickets, 3/8 inch x 2 1/2 inch x 6 feet, or industry standard metal, or plastic pickets as shown or approved.

**03010.40 Vinyl Clad Fabric** - Vinyl clad chain link fabric shall conform to AASHTO M 181, Type IV. The color of the PVC coating shall be either medium or dark green.

**03010.50 Metal Fence Posts, Braces, and Appurtenances** - Metal fence posts, braces and appurtenances shall conform to the requirements indicated on the plans and the following:

**(a) Painted Metal Posts** - All painted metal posts shall be of the same kind and color.

**(b) Posts, Braces, and Appurtenances for Chain Link Fence** - Posts, braces, and appurtenances for chain link fence shall conform to the requirements of AASHTO M 181.

Posts for bridge protective fence shall be galvanized and conform to the requirements of ASTM A 53, Grade B. Braces and appurtenances for bridge protective fence shall conform to the requirements of AASHTO M 181.

**(c) Posts, Braces, and Appurtenances for Barbed Wire and Woven Wire Fence:**

**(1) Tubular Steel Posts** - Tubular steel posts, braces and appurtenances shall conform to the requirements of AASHTO M 181. Tubular posts shall be fitted with a snug-fitting, galvanized metal cap.

**(2) Other Shapes** - Metal posts and braces, other than tubular shape, for barbed wire and woven wire fences, shall conform to AASHTO M 281 (ASTM A 702), except that galvanizing may conform to the requirements of AASHTO M 111 (ASTM A 123). The posts and braces may be either galvanized or painted, as elected. Wire fasteners shall meet the coating requirements of ASTM A 641, Class 1.

**(3) Fence Stays, Brace Guys, and Wire Loops** - Metal fence stays, brace guy wires, wire loops for gateways and other miscellaneous wire used in barbed and woven wire fences shall be furnished with Class 1 coating as required by ASTM A 641. Either 9 1/2 gauge or 10 gauge wire is acceptable for fence stays.

**(d) Concrete In Footings** - Concrete for footings shall conform to Section 00440.

**(e) Grounding Rod** - 5/8 inch by 8 feet, nonrusting, copper covered steel rod with a bronze grounding wire clamp.

**(f) Grounding Wire** - AWG 4/0 Solid Copper or No. 6 bare aluminum wire with clamps.

**03010.60 Fence Gates:**

**(a) General** - Tubular steel gate frames shall conform to AASHTO M 181. Fabric in gates used with chain link fence shall be chain link of the same gauge and conforming to applicable requirements of 03010.30. Fabric in gates used with woven wire fence shall be woven wire fabric conforming to 03010.20 or chain link fabric conforming to the applicable requirements of 03010.30, except that the zinc coating may be either Class C or Class D.

**(b) Hardware** - All fence and gate hardware shall conform to the requirements of AASHTO M 181, except that the thickness of galvanizing shall be according to AASHTO M 232 (ASTM A 153).

**03010.75 Protective Fence Materials, On and Off Structures** - Provide certification according to the requirements of 00165.35 that the anchor system selected conforms to requirements shown on the plans.

- **Resin Bonded Anchor System** - The resin bonded anchor system used to install the fence post anchor rods in the concrete bridge rail shall be from the QPL and be installed according to the manufacturer's recommendations.
- **Posts** - Modify posts to attach to the structure as shown.
- **Steel Plates, Angles, and Bolts** - Steel plates, angles, and bolts shall meet the applicable requirements of Section 02530 and galvanized according to 02530.70.
- **Chain Link Fabric, Ties, and Tension Wire** - Chain link fabric, ties, and tension wire shall conform to the requirements of 03010.30.
- **Pickets** - Pickets shall meet the requirements of 03010.31.

**03010.80 Acceptance** - Acceptance of fencing materials will be according to 00165.35 and this Section.