

shall be proof-load tested in accordance with the requirements of ASTM F606. Galvanized bolts shall be wedge tested after galvanizing. Galvanized nuts shall be proof-load tested in accordance with the requirements of ASTM F606 only when overlapping, galvanizing, and lubricating operations are completed.

- e. Galvanized bolts, nuts and washers shall be hot dipped galvanized by the hot dipped method in accordance with the requirements of ASTM A153. If the bolts are to be topcoated with paint, mechanically galvanized bolts, nuts and washers in accordance with the requirements of ASTM B695, Class 50 may be used.

When galvanized nuts conforming to ASTM A563 are specified, the amount of over tapping may be less than specified; however, all nuts in each lot shall be over tapped the same amount. Galvanized nuts shall be lubricated in accordance with the requirements of ASTM A563 using a lubricant sufficiently tinted so as to be readily visible.

Galvanized bolts, nuts and washers shall have the galvanization measured for thickness. Measurements for bolts shall be taken on the wrench flats or top of the bolt head. Measurements for nuts shall be taken on the wrench flats.

When galvanized washers are specified, hardness testing shall be performed after galvanizing. The coating shall be removed prior to testing.

- f. All bolts, nuts and washers shall be identified with a marking which identifies the manufacturer of such products. The Contractor shall provide an example of such marking and the certification of each manufacturer for the bolts, nuts and washers supplied. The Contractor shall also provide written documentation of all tests required by ASTM and by specifications herein for bolts, nuts and washers. Documentation shall indicate the results of such tests, the address where the tests were performed and the date of testing. Test results of bolts and nuts shall also indicate the lot number of the product. Bolts, nuts and washers from different rotational-capacity lots shall not be shipped in the same container. In addition, shipping containers shall be marked with the rotational-capacity test lot number of the product supplied.

SECTION 227—STEEL GRID FLOORING

227.01—Description.

These specifications cover plant-fabricated steel for use as a portion of a bridge deck.

227.02—Materials.

- (a) **Steel** shall conform to the requirements of ASTM A709 Grade 36 except that if the material is not galvanized, it shall have a copper content of at least 0.2 percent.
- (b) **Concrete** for filling steel grid floors shall conform to the requirements of Section 217 for Class A3, maximum aggregate size No. 7.

227.03—Detail Requirements.

- (a) **Open flooring** shall be galvanized in accordance with the requirements of ASTM A123.
- (b) **Painting**, when specified or permitted, shall be performed in accordance with the requirements of Section 411, except that dipping will be permitted.

SECTION 228—STEEL PILES**228.01—Description.**

These specifications cover steel fabricated to a shape that will act as a foundation for a structure. One copy of each applicable mill analysis shall accompany steel piles shipped to the project, and four copies shall be submitted to the Engineer.

228.02—Detail Requirements.

- (a) **H-piles:** H-piles shall be structural carbon steel conforming to the requirements of ASTM A709 Grade 36.
- (b) **Shell Piles:** Welded shells shall be fabricated with butt welds only.

End plates and other fittings shall be fabricated from the same material used for the shell or from steel conforming to the requirements of ASTM A709 Grade 36.

1. **Steel for Type A shells** shall be classification SAE 1010 with a yield point of at least 50,000 pounds per square inch. Shells shall be fluted and consist of a cylindrical upper section(s) and a lower section having a diameter diminishing at the rate of at least 1/8 but not more than 1/4 inch per foot. The lower section shall have a welded point with a diameter of at least 8 inches.