

**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.

2. **Steel for Type B shells** shall conform to the requirements of ASTM A252, Grade 1, 2, or 3. Shells shall be straight pipe having bottoms closed with end plates at least 3/4 inch in thickness and a diameter not more than 1/2 inch greater than the outside diameter of the shell.
  3. **Steel for Type C shells** shall conform to the requirements of ASTM A569 or A366. Shells shall be helically corrugated and cylindrical in the section and shall diminish in diameter toward the point by stepping at regular intervals at the rate of approximately 1 inch per step or at an average 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.
  4. **Steel for Type D shells** shall be classification SAE 1010 with a yield point of at least 50,000 pounds per square inch. Shells shall be helically corrugated and of a constant cylindrical section or shall diminish uniformly in diameter at the rate of at least 1/8 but not more than 1/4 inch per foot. Bottoms shall have ends closed with plates at least 3/4 inch in thickness and not more than 1/2 inch greater in diameter than the outside diameter of the shell. Shells diminishing in diameter shall have welded points with a diameter of at least 8 inches.
- (c) **Steel Sheet Piles:** Steel sheet piles shall conform to the requirements of ASTM A328.

## SECTION 229—ALUMINUM ALLOY

### 229.01—Description.

These specifications cover aluminum alloy products designed in shape and composition to serve a specific purpose, such as a sign panel, post, or conduit, including necessary fasteners.

### 229.02—Detail Requirements.

- (a) **Sheets and plates** shall conform to the requirements of ASTM B209, alloy 6061-T6, 6061-T651, 5052-H32, 5052-H34, 3003-H14, or 5086-H116/H32. Aluminum sign panels shall be alloy 5052-H32, 5052-H34, 5052-H38, or 6061-T6.
- (b) **Bars, rods, and wire** shall conform to the requirements of ASTM B211, alloy 6061-T6 or 6061-T651.
- (c) **Extruded bars, rods, shapes, and tubes** shall conform to the requirements of ASTM-B221, alloy 6061-T6 or 6063-T6.