

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.

Aluminum alloy extrusions, extruded tubes, drawn tubes, or pipes that are to be bent on a radius of less than 3 feet may be made from alloy having a temper condition of 0.

- (d) **Drawn tubes** shall conform to the requirements of ASTM B210, alloy 6061-T6.
- (e) **Pipe** shall conform to the requirements of ASTM B429 or B241, alloy 6061-T6 or 6063-T6.
- (f) **Bolts, studs, nuts, set screws, washers, and rivets** shall be furnished as commercial items suitable for the application.
- (g) **Permanent-mold castings** for items other than rail posts shall conform to the requirements of ASTM B108, alloy 356.0-T6. Cast aluminum alloy rail post shall conform to the requirements of ASTM B108, alloy A444.0.
- (h) **Sand castings** shall conform to the requirements of ASTM B26 alloys 319-F, 319.0-T6, 356.0-F, 356.0-T6 or 535.0-F.
- (i) **Shims** shall be made from a sheet or plate conforming to the requirements of ASTM B209, alloy 1100-O.
- (j) **Aluminum filler metal for welding** shall conform to the requirements of AWS 1.2.
- (k) **Rolled or extruded structural shapes** shall conform to the requirements of ASTM B308, alloy 6061-T6.
- (l) **Breakaway support couplings for light poles and sign posts** shall conform to the requirements of ASTM B209 or B221, alloy 6061-T6.
- (m) **Frangible bases for light and signal poles** shall conform to the requirements of ASTM B26 or B108, alloy 319 or 356.0-T6.
- (n) **Aluminum alloy for controller, control center, and flasher cabinets** shall conform to the requirements of ASTM B209, alloy 5052-H32.
- (o) **Aluminum alloy for lighting and pedestal poles** shall conform to the requirements of ASTM B221 or B241 or B429, alloy 6063-T6.

## SECTION 230—BRONZE AND COPPER ALLOY

### 230.01—Description.

These specifications cover the fabrication of specific bronze or copper alloys, usually in the construction of a bridge structure or for electrical purposes.