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**MATERIAL SPECIFICATION  
MS-OR-581 METAL**

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**581.1 SCOPE**

This specification covers the quality of steel and aluminum alloys.

**581.2 STRUCTURAL STEEL**

- a) Structural steel shall conform to the requirements of ASTM A 36.
- b) High-strength low-alloy structural steel shall conform to ASTM A 242 or A 588.
- c) Carbon steel plates of structural quality to be bent, formed, or shaped cold shall conform the ASTM A 283, Grade C.
- d) Carbon steel sheets of structural quality shall conform to ASTM Standard A 1011, Grade 40, or A 1008, Grade 40.
- e) Carbon steel strip of structural quality shall conform to ASTM Standard A 1011, Grade 36.

**581.3 COMMERCIAL OR MERCHANT QUALITY STEEL**

Commercial or merchant quality steel shall conform to the requirements of the applicable ASTM listed below:

<b>TABLE 581-1</b>	
<b>Product</b>	<b>ASTM Standards</b>
Carbon steel bars	A 575, Grade M 1015 to Grade M 1031
Carbon steel sheets	A 1011
Carbon steel strips	A 1011
Zinc-coated carbon steel sheets	A 653 or A 924

**581.4 ALUMINUM ALLOY**

Aluminum alloy products shall conform to the requirements of the applicable ASTM standard listed below. Unless otherwise specified, alloy 6061-T6 shall be used.

<b>TABLE 581-2</b>	
<b>Product</b>	<b>ASTM Standard</b>
Standard structural shape	B 308
Extruded structural pipe and tube	B 429
Extruded bars, rods, shapes, and tubes	B 221
Drawn seamless tubes	B 210
Rolled or cold-finished bars, rods, and wire	B 211
Sheet and plate	B 209

#### 581.5 BOLTS

Steel bolts shall conform to the requirements of ASTM Standard A 307. If high-strength bolts are specified, they shall conform to the requirements of ASTM A 325.

When galvanized or zinc-coated bolts are specified, the zinc coating shall conform to the requirements of ASTM Standard A 153 except that bolts 0.5 inch or less in diameter may be coated with electro-deposited zinc or cadmium coating conforming to the requirements of ASTM Standard B 633, Service Condition SC 3, or ASTM B 766, unless otherwise specified.

#### 581.6 RIVETS

Unless otherwise specified, steel rivets shall conform to the requirements of ASTM Specification A 31, Grade B. Unless otherwise specified, aluminum alloy rivets shall be Alloy 6061 conforming to the requirements of ASTM Standard B 316.

#### 581.7 WELDING ELECTRODES

Steel welding electrodes shall conform to the requirements of American Welding Society Specification AWS A5.1, "Specification for Mild Steel Covered Arc-Welding Electrodes," except that they shall be uniformly and heavily coated (not washed) and shall be of such a nature that the coating does not chip or peel while being used with the maximum amperage specified by the manufacturer.

Aluminum welding electrodes shall conform to the requirements of American Welding Society Specification AWS A5.10, "Specification for Aluminum and Aluminum-Alloy Welding Rods and Bare Electrodes."