



P.O. Box 52025
Phoenix, AZ 85072-2025
(602) 236-5900

Case 11-17

DATE: July 11, 2011
TO: MAG Specifications and Details Committee Members
FROM: Peter Kandarlis, SRP Representative
RE: **Section 520: Steel and Aluminum Handrails**

Purpose: The existing section allows aluminum handrails, but provides no requirements for use of aluminum (steel only). Also, Detail 145, "Safety Rail" requires the use of steel railing. The welding standard is nearly 25 years out of date.

Revisions:

- a) Provide material requirements for aluminum handrails. Add material requirements to 520.2.
- b) Change the title on Detail 145 to "Steel Safety Rail" to be consistent with the specification.
- c) Update the welding reference to current standards (AASHTO/AWS Standard D1.5, Bridge Welding Code).

SECTION 520

STEEL AND ALUMINUM HANDRAILS

520.1 DESCRIPTION:

Metal handrail shall consist of furnishing all materials and constructing handrail of steel or aluminum, including railing, posts, fittings and anchorages. Metal handrail shall be fabricated, installed and painted, when required, in accordance with the details shown on the plans and these specifications.

520.2 FABRICATION:

Prior to beginning any work on the fabrication of the railing, the Contractor shall submit shop drawings for approval, showing complete railing details.

Materials furnished for metal handrail shall conform to the requirements specified on the plans.

The Engineer shall be furnished complete, copies in triplicate of all mill reports on steel and aluminum materials furnished.

Railings shall be fabricated from welded or seamless members of the size and thickness shown on the plans. Steel members shall conform to the requirements of ASTM A-53. Grade B structural steel conforming to ASTM A-36, or tubular sections of hot rolled mild steel, as shown. [Aluminum handrails shall conform to the requirements of either ASTM B-429 for round extruded tube or ASTM B-221 for semi-hollow extruded tube with rounded corners.](#)

Welding shall be performed by the electric arc process and shall be done in conformance with [AASHTO/AWS D1.5, Bridge Welding Code Specifications for Welded Highway and Railway Bridges of the AWS](#). All butt welds on exposed surfaces shall be ground flush with adjacent surfaces.

Railing panels shall be straight and true to dimensions.

For structures on curves, either horizontal or vertical, the railing shall conform closely to the curvature of the structure.

The completed steel railing units shall be galvanized in accordance with the requirements of Section 771 unless otherwise specified.

[Provide Series 300 stainless steel fasteners for aluminum alloy handrails.](#)

520.3 ERECTION:

The railing shall be carefully erected, true to line and grade. Posts and balusters shall be vertical and parallel with the deviation from the vertical for the full height of the panel not exceeding 5/8 inch. After erecting the railing, any abrasions or exposed steel shall be repaired in accordance with Section 771 or Section 530.

520.4 MEASUREMENT:

The various types of railing will be measured by the linear foot from end to end along the face of the railing including terminal sections.

520.5 PAYMENT:

The price paid per linear foot for handrailing shall include full compensation for furnishing all labor, materials, tools, and equipment and doing all work involved in constructing the railing complete in place as shown on the plans and specified herein.