834.04 PERMANENT METAL CONCRETE FORMS.

Permanent metal forms for concrete floor slabs shall be of zinc-coated (galvanized) steel sheets meeting ASTM A 446 (Grades A through E) with coating class of G165 according to ASTM A 525.

SECTION 836
REINFORCING STEEL

836.01 HEAT NUMBERS.

All reinforcement delivered to a Project shall be tagged with a metal or plastic tag showing the manufacturer's heat number. Numbers shall be embossed, engraved, or printed in waterproof ink.

836.02 BARS.

A. **Deformed and Plain Billet Bars for Concrete Reinforcement.** . . . . . AASHTO M-31, Grade 40 or 60

B. **Epoxy Coated Reinforcing Bars.** . . . . . AASHTO M-284

C. **Fabricated Steel Bar or Rod Mats for Concrete Reinforcement.** . . . . . AASHTO M-54, Grade 40 or 60

836.03 WIRES.

A. **Welded Deformed Steel Wire Fabric.** . . . . . AASHTO M-221

B. **Deformed Steel Wire for Concrete Reinforcement.** . . . . AASHTO M-225

C. **Welded Steel Wire Fabric.** . . . . . AASHTO M-55

D. **Cold Drawn Steel Wire for Concrete Reinforcement.** . . . AASHTO M-32

E. **High Tensile Wire Strand and Bars.**

1. **Post-tensioning Steel.** For the post-tensioning method of construction, the prestressing steel shall be high-tensile wire, high-tensile wire strand or rope, or high-tensile alloy bars, uncoated and stress relieved.

   High-tensile wire shall meet AASHTO M-204 and high-tensile wire strand or rope shall meet AASHTO M-203. High-tensile alloy bars shall meet AASHTO M-275.

2. **Pre-Tensioning Steel.** . . . . . AASHTO M-203

836.04 DOWEL BARS AND TIE BARS FOR PAVEMENT JOINTS.

Dowel bar for transverse expansion or contraction joints in Portland Cement Concrete pavement shall be plain, round bars fabricated from steel meeting AASHTO M-31, M-42, or M-53.

Dowels shall be saw cut to the required length and cleaned to remove all cutting burrs, loose mill scale, rust, grease, and oil. The bars may be sheared providing the deformation of the bars from true round shape does not exceed 0.04 inch in diameter or thickness, and shall not extend more than 0.04 inch from the sheared end.

The free end of dowels for expansion joints shall be fitted with a metal sleeve of an approved design covering 2 inches ± one inch of the dowel. The sleeve shall have a closed end and a stop to hold the closed end at least one inch from the end of the dowel bar. The sleeve shall not collapse or distort in shape in handling and placing of the dowels and concrete.

All dowels shall be Epoxy coated in accordance with AASHTO M 284/M 284M-95. Freshly exposed steel as a result of shearing, saw-cutting, or cutting by other means during the fabrication process is acceptable on the ends of tie or dowel bars used in pavement joints.

Tie bars for the centerline joint in Portland Cement Concrete pavement shall be epoxy coated, meeting the requirements in 836.02 B. Other tie bars not used for the centerline joint shall meet AASHTO M-31, Grade 40 deformed.

SECTION 840
PILING

840.01 STEEL PILING.

A. **Steel H-Piling and Special Sections.** Materials for steel piling and special sections shall meet AASHTO 270 Grade 36.

B. **Shells for Steel Encased Concrete Piling.** Shells for steel encased concrete piling may be either cylindrical pipe or tapered fluted.

Cylindrical pipe shells shall be electric welded steel pipe or seamless steel pipe and shall meet ASTM A-252, Grade 2. End closure plates shall be 3/4-inch flat steel plate welded directly to the pipe and shall not project beyond the perimeter of the pile.

840.02 TIMBER PILING.

A. **Requirements.** All Timber Piling shall be clean-peeled and meet ASTM D-25.