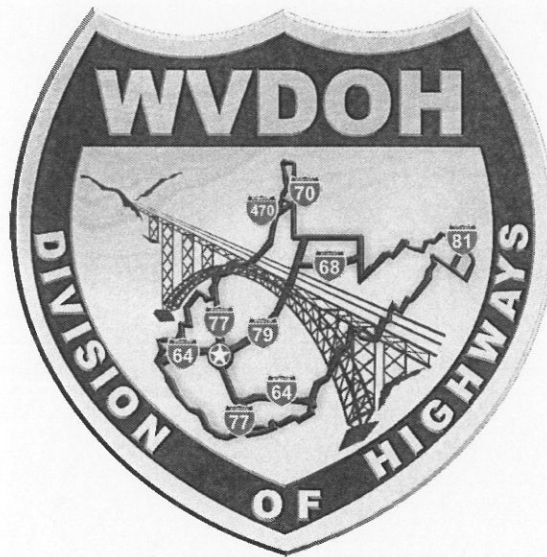


**WEST VIRGINIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**



2017 Edition

**STANDARD SPECIFICATIONS
ROADS AND BRIDGES**

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SECTION 602 REINFORCING STEEL

602.1-DESCRIPTION:

This work shall consist of furnishing and placing epoxy coated or uncoated reinforcing steel or corrosion resistant reinforcement in accordance with these Specifications and in reasonably close conformity with the Plans.

602.2-MATERIALS:

Reinforcing steel bars and fabric reinforcement shall meet the requirements of 709.1 and 709.4 respectively, except rail-steel shall not be used in bridge decks or parapets.

Epoxy coated reinforcing steel bars shall meet the requirements of 709.1.2, except rail-steel shall not be used in bridge decks and parapets.

Corrosion resistant reinforcing steel bars shall meet the requirements of AASHTO MP18 with minimum yield level of 100,000 psi. The degree of corrosion resistance for reinforcement shall be specified in the plans.

CONSTRUCTION METHODS

602.3-ORDER LISTS:

All order lists and bending diagrams shall be furnished by the Contractor. If requested by the Engineer, order lists and bending diagrams shall be submitted for approval. Approval of order lists and bending diagrams by the Engineer shall in no way relieve the Contractor of responsibility for the correctness of such lists and diagrams.

602.4-PROTECTION OF MATERIALS:

Steel reinforcement shall be stored above the well-drained surface of the ground upon platforms, skids, or other supports and shall be protected from mechanical injury. Reinforcement shall be free from injurious defects such as cracks and laminations. Any loose scale, loose rust, dirt, paint, grease, oil or other foreign materials present on the reinforcement shall be removed by wire brushing, sand blasting or other approved methods before the placement of concrete.

Reinforcing steel which will be exposed over the winter shall be protected, within one week after the placing of the initial concrete, with a brush coat of neat cement, mixed with water to a consistency of thick paint. This coating shall be removed by lightly tapping with a hammer or other tool not more than one week before the placing of the adjacent pour.

602.5-BENDING OF REINFORCING BARS:

Unless otherwise permitted, all reinforcing bars shall be cold bent in the shop. Bars partially embedded in concrete shall not be field bent except when shown on the Plans or permitted by the Engineer. Only competent men shall be employed for cutting and bending, and proper appliances shall be provided for the work.

Bending shall be in accordance with the Manual of Standard Practice for Detailing, Reinforced Concrete Structures, ACI 315, latest revision. Rail-steel bars shall not be field bent or straightened.

Unless otherwise specified in the plans, bending of all corrosion-resistant reinforcing bars shall be per requirements of with the latest edition of the AASHTO LRFD Bridge Design Specifications.

602.6-PLACING AND FASTENING:

602.6.1-General: All reinforcing steel shall be accurately placed and, during the placing of concrete, firmly held by supports in the position shown on the Plans. Reinforcing bars shall be securely fastened together. Bars shall be tied at all intersections except where spacing is less than 1 foot (300 mm) in each direction, in which case alternate intersections shall be tied. Distance from the forms shall be maintained by means of stays, blocks, ties, hangers, chairs, or other approved supports. Blocks for holding reinforcement from contact with forms shall be precast mortar blocks of approved shape and dimension; the use of pebbles, broken stone, metal pipe or wooden blocks will not be permitted. Reinforcement in any member will be inspected and approved before any concrete is placed.

The clear distance between the reinforcing steel and the face of the concrete unless otherwise shown in the plans shall be:

Top of deck slab:	2.5"
Bottom of deck slab:	1.0"
Bottom of footings:	3.0"
All other locations:	2.0"

602.6.2-Epoxy Coated Bars: Epoxy coated bars shall be placed on plastic coated wire supports. Supports shall be installed in a manner to prevent planes of weakness in the hardened concrete. The reinforcing steel shall be held in place by use of plastic or plastic coated tie wires especially fabricated for this purpose.

Any visible damage to the epoxy coating of the reinforcing steel that occurs during shipment, storage and installation of the steel shall be repaired. The patching Supplier shall furnish patching material to the project with the first shipment of epoxy coated steel. The patching material shall be prequalified as required for the coating material and shall be either identified on the container as meeting the requirements of AASHTO M284, Annex A or shall be accompanied by a Certificate of compliance. Patching of damaged areas shall be performed in accordance with the patching material manufacturer's recommendations.

In the event it is anticipated that the epoxy bars will be stored on the project site, and/or placed in final position without the concrete cover for a period of 90 days or more, then the bars shall be stored in a temporary shed or covered with plastic to prevent damage to the epoxy coating due to ultra-violet rays or other atmospheric conditions. Any temporary storage means used, shall provide adequate ventilation to the bars to prevent the build-up of moisture on the bar surface.

602.7-BAR SPLICES:

602.7.1-Lapping: All reinforcement shall be furnished in full lengths as indicated on the Plans. No splicing of bars, except where shown on the Plans, will be permitted without the written approval of the Engineer. Lapped splices shall be well distributed or located at points of low tensile stress. The bars shall be rigidly clamped or wired at all splices in a manner approved by the Engineer. Minimum lengths of lap splices unless otherwise noted shall be: