

**NEW JERSEY
DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS
FOR ROAD AND BRIDGE CONSTRUCTION
2007**

Division 500 – Bridges and Structures

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504.03.01 Reinforcement Steel

- A. **Handling.** Store reinforcement steel above ground level. When unloading coated reinforcement steel, minimize scraping of the bundles, bar-to-bar abrasion, and sags in the bundles. For coated reinforcement steel, do not skid the bundles from the truck bed to the ground. Ensure that equipment used for handling the bars is equipped with nylon slings. Do not use wire rope slings or chains. Lift bundles of bars to ensure that sagging does not occur. Ensure that coated bars or bundles of coated bars are not dropped or dragged during handling.
- B. **Storing.** Coordinate deliveries of coated reinforcement bars to the work site with the placing of the bars in the structure. Store reinforcement steel as close as possible to the area where it will be placed to minimize handling. Store the bars above the ground on timbers or other suitable protective cribbing and space the dunnage to prevent sags in the bundles. When storing a large quantity of bars in a small area, stack bundles of straight bars with adequate blocking placed between the layers of bundles to provide stability and prevent sagging.

Do not store reinforcement bars at the work site for more than 60 days unless approved by the RE. If long term storage is approved, protect non-metallic tags on the bundles or attach additional galvanized metal tags on all bundles of bars to maintain identification. If long term storage is approved, cover the bars with white polyethylene sheeting or other suitable protective material. For stacked bundles, drape the white polyethylene sheeting over the sides of the bundles around the perimeter of the stack. Secure the covering and provide air circulation around the bars to prevent condensation under the polyethylene sheeting.

- C. **Field Cutting.** Obtain RE approval before field cutting reinforcement steel. Do not flame cut epoxy-coated reinforcement steel. If coated reinforcement bars are cut in the field, coat the cut ends and repair damage to the coating as specified in [504.03.01.G](#).
- D. **Field Bending.** Obtain RE approval before field bending reinforcement steel. Use the cold method to make minor adjustments to reinforcement steel bars in the field. Do not bend galvanized reinforcement steel more than 10 degrees. With the approval of the RE, the Contractor may use the heat method to perform minor adjustments to uncoated bars. Preheat the bar to between 1000 and 1200 °F, and then gently bend in a gradual arc. For bars partially embedded in concrete, ensure that the concrete is not damaged by heating the bars.
- E. **Placing and Fastening.** When placing, ensure that reinforcement steel is free of dirt, detrimental scale, paint, oil, or other foreign substances. Tie bars at all intersections except where spacing is less than 12 inches in each direction, in which

case tie alternate intersections. Use stays, blocks, ties, hangers or chairs, to maintain the specified concrete cover. If using blocks, ensure that the blocks are precast concrete. Ensure that blocks are not used where they are exposed in a finished surface.

When using galvanized reinforcement steel, ensure that all miscellaneous hardware that comes in contact with or is used to support, position, or fasten the reinforcement steel are also galvanized according to AASHTO M 232. **When using epoxy-coated reinforcement steel, use only plastic-coated or epoxy-coated tie wires and ensure that all miscellaneous hardware used to support, position, or fasten the reinforcement are dielectric, plastic-coated, or epoxy-coated.**

If using welded wire reinforcement, overlap sheets at least 1 grid in width. Fasten overlaps securely at the ends and edges.

Repair damage to epoxy-coating or galvanized coating as specified in [504.03.01.G](#). Do not place concrete before inspection and approval of the reinforcement steel.

- F. **Splices.** When splicing is not specified, submit a plan for splicing to the RE for approval. Include size, location, and splicing method.

The Contractor may use mechanical coupling devices listed on the QPL. When using galvanized reinforcement steel, ensure that mechanical coupling devices are galvanized according to AASHTO M 232. When using epoxy-coated reinforcement steel, ensure that mechanical coupling devices are epoxy coated according to AASHTO M 284.

When using mechanical connections, remove the coating from the ends of the reinforcement steel over the length of the sleeve and at least 2 inches from the ends of the sleeves, or more if recommended by the Supplier.

Repair damage to epoxy-coating or galvanized coating as specified in [504.03.01.G](#).

- G. **Field Repairing of Coatings.** The RE will allow field repair when there are less than 6 damaged areas in any 10-foot length of bar. The RE will reject material with more than 6 damaged areas within a 10-foot span and any material with a damaged area more than 4 square inches in size. Repairable damage is any bare or loose spots, or breaks in the coating that affect an area smaller than 4 square inches. Ensure that grease, dirt, mortar, concrete, mill scale, injurious rust, or any other foreign substance is removed before repairing.

1. **Epoxy-Coating.** Repair damage to epoxy-coating according to AASHTO M 317.
2. **Galvanized-Coating.** Repair damage to the galvanized coating according to ASTM A 780.

- H. **Protecting Exposed Reinforcement Steel.** When non-coated embedded reinforcement steel is partially exposed at construction joints for more than 30 days, protect the exposed portion of the bar with a coat of neat cement mixed with water within 5 days of the initial concrete placement. Remove loose coating by lightly tapping within 5 days of the subsequent concrete placement.