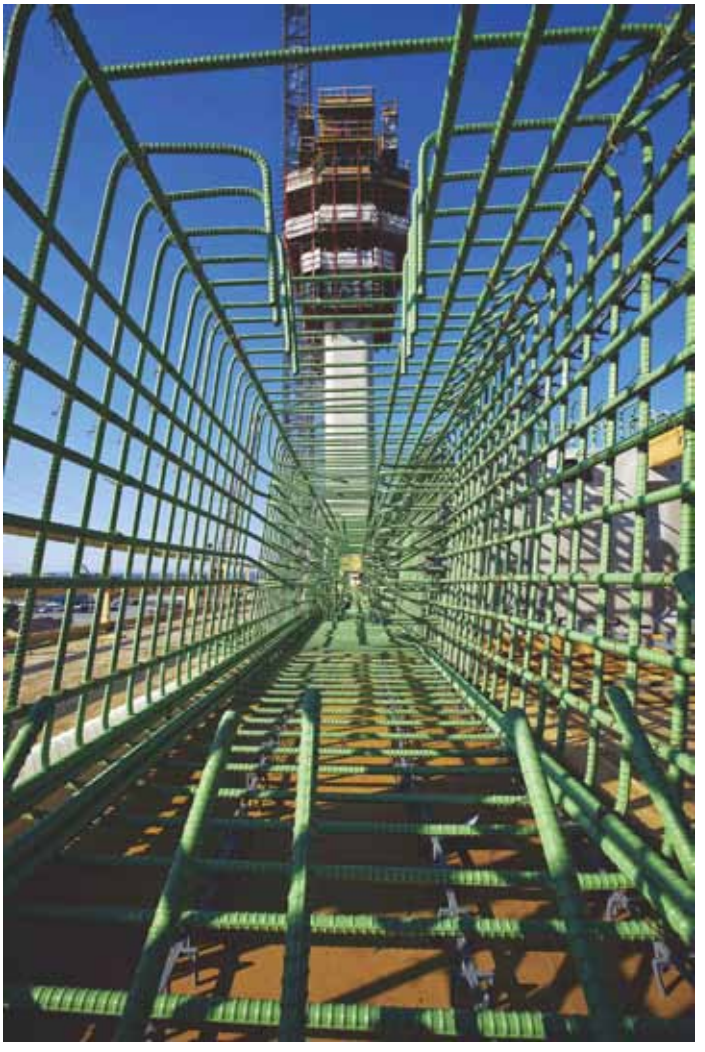
Guidelines for Inspection and Acceptance of Epoxy-Coated Reinforcing Steel

by David McDonald, Epoxy Interest Group

Epoxy-coated reinforcing bars have been used to protect against chloride induced corrosion since 1973. The most commonly used bars are green and meet AASHTO M 284[1] (ASTM A775); however, certain agencies use purple or gray colored products that meet ASTM A934[2]. Epoxy-coated reinforcing bars continue to be the most commonly specified and researched corrosion-resistant products.

Jobsite inspection of epoxy-coated reinforcing steel prior to concrete placement is critical to ensure that optimum corrosion protection is provided. The following provides an outline of procedures to minimize damage:

- Coated bars should be lifted using a spreader bar or at multiple pickup points to minimize sag and should never be dragged. Bare chains or cables should not be used for lifting and coated bars should be stored on timber cribbing.
- Forms should be oiled prior to placement of the reinforcing bars and bars should not be placed directly on the oiled forms, but rather, placed on epoxy-coated or nylon supports.
- Bars should be tied using coated tie wire.
- Bars must not be flame cut and may only be bent at the jobsite with the permission of the engineer. Only reinforcing bars meeting AASHTO M284 (ASTM A775) may be bent after coating.
- If mechanical splices are used, they should be epoxy-coated and welding should only occur with the permission of the engineer.
- Prior to concrete placement, bar spacing, clear cover, bar size, and bar type should be evaluated along with lap lengths. Bends should be inspected and not exhibit any unrepaired cracking or fractures and all damage should be repaired. If the bars exhibit greater than 2% damage in any 1 ft section, they may be rejected. Note that this limit does not include sheared or cut ends. Welds should also be cleaned and patched with repair materials.
- Avoid placing concrete hoses directly on the coated steel, as couplers may damage the coating as they are moved. A runway should also be considered. Concrete pump lines should be fitted with an "S" bend to prevent free fall of concrete directly onto the coated bars and plastic headed concrete vibrators should be used to consolidate the concrete.
- Bars that are partially cast in concrete, and then exposed for extended periods, should be protected against exposure to UV, salts, and condensation. If stored bars are exposed for more than 30 days, they should be covered with an opaque material that minimizes condensation.



Epoxy-coated reinforcement shown in the Indian River Inlet Bridge. Photo: AECOM.

Further information on the use and handling of epoxy-coated reinforcing steel is available in a document titled *"Guidelines for Inspection and Acceptance of Epoxy-Coated Reinforcing Steel at the Jobsite"* available at www.epoxyinterestgroup.org. This eight-page document provides procedures for inspection of epoxy-coated reinforcing steel during construction and prior to concrete placement, and is valuable to anyone involved in the placing and inspection of concrete containing epoxy-coated bars.

Standards

1. AASHTO M 284, Standard Specification for Epoxy-Coated Reinforcing Bars: Materials and Coating Requirements
2. ASTM A934, Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars

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