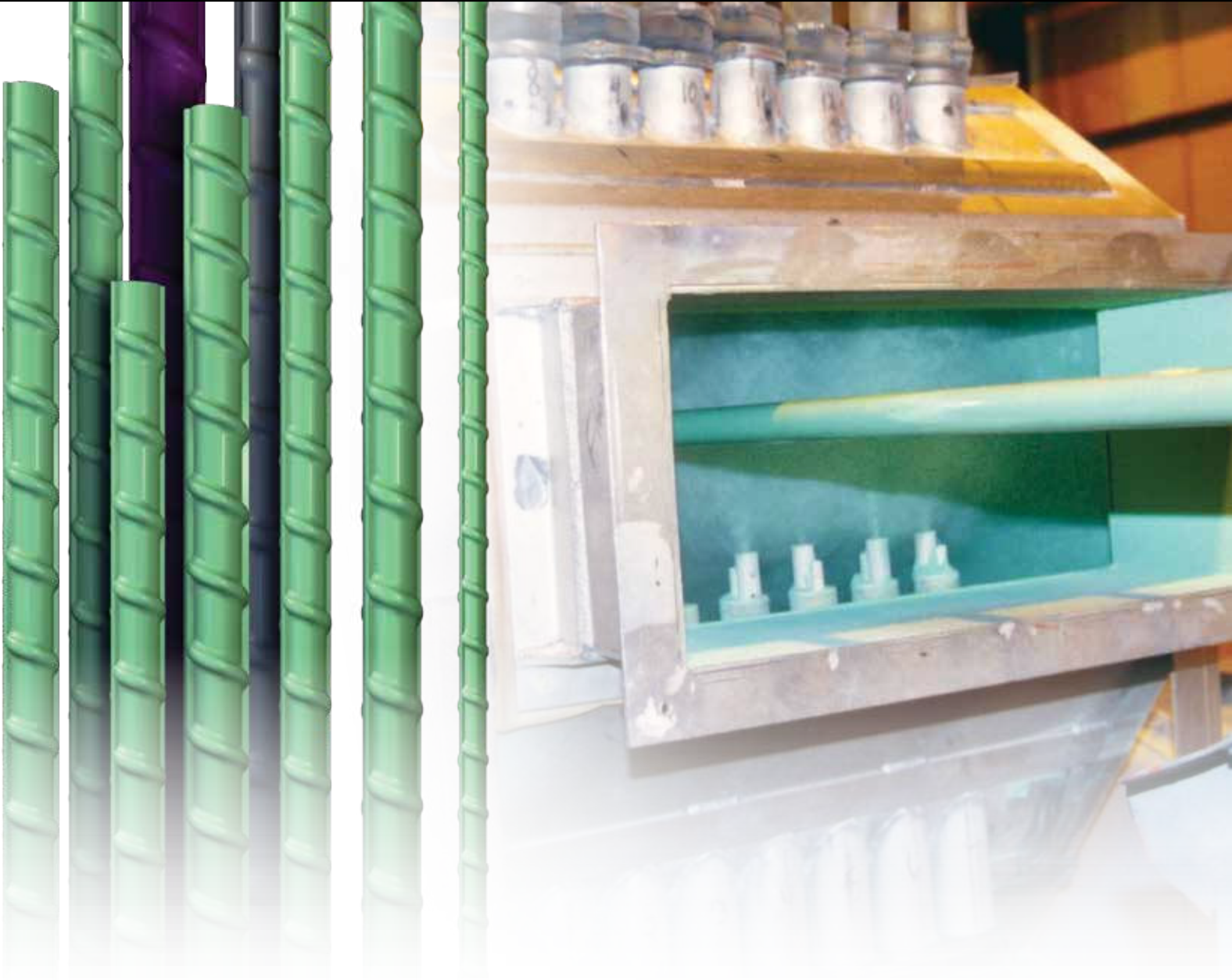


# Epoxy Coating Plant Certification Program



*Ensuring Quality and Performance in  
Manufacturing and Coating Technologies*

**CRSI**

**Concrete Reinforcing  
Steel Institute**

# CRSI'S VOLUNTARY CERTIFICATION PROGRAM FOR FUSION-BONDED EPOXY COATING APPLICATOR PLANTS

*Since 1991, the Concrete Reinforcing Steel Institute has provided a plant certification program for epoxy-coated reinforcing bars. This certification program has been implemented in over 35 plants throughout North America and is required in over 20 Department of Transportation Specifications. The program continues to develop as new information is obtained on methods to improve the performance of epoxy-coated reinforcing steel.*

*In 2013, CRSI initiated certification of plants outside of North America.*



## Introduction

The CRSI Voluntary Certification Program for Fusion-Bonded Epoxy Coating Applicator Plants, developed in 1991, is a voluntary industry-sponsored program. It has been extremely effective at improving the quality of epoxy-coated reinforcing steel bar. Developed to provide an independent certification, the program outlines the basic requirements for a quality control program to ensure that a plant and its employees are trained, equipped and capable of producing fusion bonded epoxy-coated reinforcing steel bars in conformance with the latest industry standards and recommendations. The program is a process certification, not a product quality guarantee. It is intended to supplement not replace acceptance testing of materials.



## Purpose

- To ensure that coating applicator plants have the capabilities and quality control procedures in place to assure a high level of excellence in material produced and delivered to the job site.
- To assist plant management in achieving a high level of excellence in the plant and its operations.
- To provide recognition to plants which demonstrate a high degree of excellence.

## Scope

CRSI's epoxy coating plant certification program extends to epoxy-coating application procedures and materials within the inspected coating plant. It is expressly intended to cover procedures and events related to the application of the coating, and the fabrication of bars, either before or after coating.

## Inspections

Certification of a plant is based on inspection by an independent inspection agency contracted by CRSI. Each plant is inspected on an unannounced basis a minimum of one time a year. Ten to twenty percent of the plants, selected at random, receive a second unannounced inspection each year. In addition, a particular plant may be inspected more frequently if CRSI receives information from specifiers that the plant is experiencing problems with quality.

## Recordkeeping

To retain their certification, plants are required to maintain detailed quality control records for each production shift. These records are open for review by the independent inspection agency and form an important part of the plant's evaluation during an inspection.





## Quality Standards

The certification program's quality control procedures and associated technical criteria are based on ASTM standard specifications for epoxy-coated reinforcing steel. However, in many cases, the certification standards are more stringent than standard specifications.

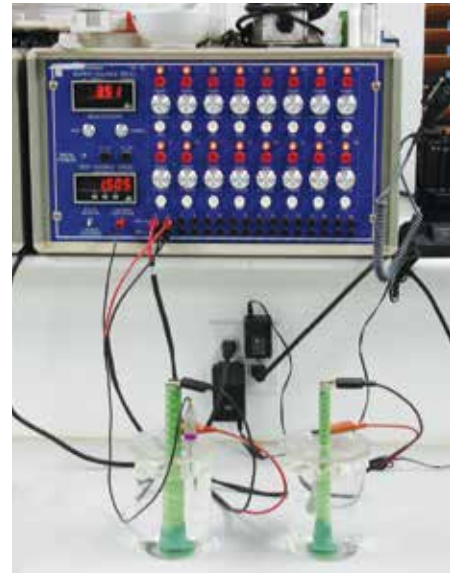
Areas evaluated in the reinforcing bar coating process include:

- Quality control policies and procedures
- Handling and storage practices
- Surface preparation
- Curing
- Holiday testing
- Thickness measurement
- Adhesion testing

Areas evaluated in the coated bar fabrication include:

- Quality control policies and procedures
- Training
- Repair materials and coating repair
- Handling and storage before and after fabrication
- Bending and shear
- Identification, segregation and rejection

Several tests not currently required by most standard specifications have been introduced as quality control procedures in the CRSI epoxy coating plant certification program. Examples of required tests include: the backside contamination test, the chloride detection test, the copper sulfate test and the cathodic disbondment test. Requirements of the certification program are continually being improved to reflect current research and quality improvements in the industry.





## Benefits of Quality Control and Certification

Good quality control does make a difference. Adoption of the stringent quality control procedures set forth in the CRSI epoxy coating plant certification program has resulted in significant and continuing quality improvements. Federal Highway Administration process reviews have noted "significant differences in quality" between certified and non-certified plants.

## Highlights of the Certification Program

- Certified plants are now averaging less than 0.20 holidays per foot of bar. ASTM currently requires not more than an average of 1 holiday per foot; in 1991 the ASTM limit was 2 per foot.
- Average Backside Contamination (i.e. dust and other contaminants between the coating and the steel) is now 14% for certified plants. Prior to 1991 the industry averaged 40% to 50% by best estimates.
- Most of the certified plants now use actual fabrication pin diameters (i.e. 4d) in bend testing for routine quality control.

## Program Status

As of March 2013, 38 plants in the U.S. and Canada have been certified or are pending certification.

Many specifying government agencies and private specifiers have required CRSI certification as a means of assuring quality for epoxy-coated reinforcing steel bar into the 21st century. As of March 2013, 22 State Departments of Transportation and three Canadian Ministries of Transportation require CRSI certification.

## Future

CRSI's ongoing goal is to improve the certification program to more fully satisfy specifier's needs and to provide the highest quality epoxy-coated reinforcing steel bar possible.

CRSI is actively working with specifiers to help them assure that high quality epoxy-coated reinforcing steel bar is supplied. We strongly encourage specifiers to require epoxy coating reinforcing steel bar suppliers to meet stringent quality control procedures such as those in the CRSI epoxy coating plant certification program.

## For more information

For more information on the CRSI Voluntary Certification Program for Fusion Bonded Epoxy-Coated Applicator Plants, please contact:



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