## Standard Practice for

# Overcoating Field Test Program for Evaluating Protective Coatings on Existing Bridges or Salvaged Beams

## AASHTO Designation: PP 55-06 (2012)[1]

## 1. SCOPE

1.1. This field testing program has been established to provide the end user with test results that can be used to make performance judgments on one-, two-, or three-coat systems for maintenance overcoating previously painted steel structures.

1.2. This field testing program is intended to apply to maintenance overcoating, herein defined as the practice of cleaning and painting over an existing coating that is largely intact but has areas of corrosion or peeling paint in need of repair. This practice usually includes the spot preparation of rusted or degraded areas, feathering edges of existing paint, power washing the entire structure, priming bare or repaired areas, applying an intermediate coat over the repaired areas or entire structure, and the optional step of applying a full topcoat over the entire structure, or a similar variation of these procedures.

1.3. This field testing program evaluates the performance of protective coatings applied to existing painted steel surfaces with various degrees of surface preparation and condition, including surfaces hand tool cleaned (SSPC SP 2), surfaces cleaned by conventional power tools (SSPC SP 3), surfaces power tool cleaned to bare metal (SSPC SP 15), and industrial blast (SSPC SP 14).

1.4. The coating materials in the field testing program are applied to previously painted steel surfaces of existing bridges or salvaged bridge beams after proper surface preparations, as described herein, and thereafter evaluated annually, unless otherwise agreed, for a period of 3 years.

1.5. All of the elements of this field testing program shall be performed in accordance with applicable local, state, and national regulations governing environmental and worker protection. Specific references to material, environmental, and worker protection requirements are not necessarily made in this document since these regulations are widely known and compliance with these regulations is standard practice in the bridge painting industry.

1.6. *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user of this procedure to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. REFERENCED DOCUMENTS

2.1. *AASHTO Standards*:

- T 337, Non-Instrumental Determination of Metallic Zinc in Zinc-Rich Primers
- *Guide for Painting Steel Structures*, 1997

2.2. *ASTM Standards*:

- D 562, Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer
- D 610, Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces
- D 660, Standard Test Method for Evaluating Degree of Checking of Exterior Paints
- D 714, Standard Test Method for Evaluating Degree of Blistering of Paints
- D 1475, Standard Test Method For Density of Liquid Coatings, Inks, and Related Products
- D 2196, Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer
- D 2369, Standard Test Method for Volatile Content of Coatings
- D 2371, Standard Test Method for Pigment Content of Solvent-Reducible Paints
- D 2697, Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings
- D 2698, Standard Test Method for Determination of the Pigment Content of Solvent-Reducible Paints by High-Speed Centrifuging
- D 3335, Standard Test Method for Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy
- D 3359, Standard Test Methods for Measuring Adhesion by Tape Test
- D 3718, Standard Test Method for Low Concentrations of Chromium in Paint by Atomic Absorption Spectroscopy
- D 3960, Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
- D 4138, Standard Practices for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive, Cross-Sectioning Means
- D 4214, Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
- D 4400, Standard Test Method for Sag Resistance of Paints Using a Multinotch Applicator
- D 4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- D 5043, Standard Practice for Field Identification of Coatings
- D 5064, Standard Practice for Conducting a Patch Test to Assess Coating Compatibility
- D 5895, Standard Test Methods for Evaluating Drying or Curing During Film Formation of Organic Coatings Using Mechanical Recorders
- D 6580, Standard Test Method for The Determination of Metallic Zinc Content in Both Zinc Dust Pigment and in Cured Films of Zinc-Rich Coatings
- D 7091, Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals
- E 11, Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves

2.3. *FHWA*:

- RD-91-011, Effect of Surface Contaminants on Coating Life

2.4. *The Society of Protective Coatings (SSPC)*:

- PA 1, Shop, Field, and Maintenance Painting of Steel
- PA 2, Measurement of Dry Coating Thickness with Magnetic Gages
- SP 1, Solvent Cleaning
- SP 2, Hand Tool Cleaning
- SP 3, Power Tool Cleaning
- SP 14, Industrial Blast Cleaning
- SP 15, Commercial Grade Power Tool Cleaning
- SP COM, Surface Preparation Commentary for Steel and Concrete Substrates
- Vis-1, Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning
- Vis-3, Guide and Reference Photographs for Steel Surfaces Prepared by Hand and Power Tool Cleaning
- PA Guide 5, Guide to Maintenance Coating of Steel Structures in Atmospheric Service
- Guide 6, Guide for Containing Debris Generated During Paint Removal Operations
- Guide 7, Guide for the Disposal of Lead-Contaminated Surface Preparation Debris
- TU 3, Technology Update No. 3, Overcoating, 2004

2.5. *Federal Standards*:

- Fed. Std. No. 40, CFR 51.100(s), Volatile Organic Compound Definition
- Fed. Std. No. 40, CFR 59.406(a), Volatile Organic Compound Compliance Provisions
- Fed. Std. No. 40, CFR Part 59, Subpart D, Section 59.400 through 59.413 National Volatile Organic Compound Emission Standards for Architectural Coatings
- Fed. Std. No. 40, CFR 261.24, Table 1—Maximum Concentration of Contaminants for the Toxicity Characteristic
- Fed. Std. No. 595, Colors Used in Government Procurement
- EPA SW-846, Method 1311, Toxicity Characteristic Leaching Procedure (TCLP)
- OSHA 1926.62, Lead Exposure in Construction; Interim Final Rule

## 3. DISCUSSION

3.1. The purpose of this program is to provide a basis for comparing the performance of coating systems applied with existing painted structures under similar conditions of weathering exposures. There are a number of variables, issues, and risks involved with overcoating an existing painted structure. The intent of this test is not to address all of these issues, but rather to create test conditions under which coating systems can be applied and evaluated to provide a basis for evaluating coating performance.

3.2. To provide comparability of field testing and results, all test sites shall use the same testing methods described herein and all field testing and evaluation shall be administered by a qualified representative of the specifying agency selected by and reporting to the agency.

3.3. Recommended reference for additional guidance can be found in ASTM D 5064, Standard Practice for Conducting a Patch Test to Assess Coating Compatibility; the SSPC TU 3, Technology Update on Overcoating; and the AASHTO *Guide for Painting Steel Structures*.