2017 Update for AASHTO TSP2 NBPP Coatings Group Activities

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2017 NBPP Coatings Group Activities

Presentation divided in two parts:

• NCHRP Domestic Scan 15-03

• Other Interests and Pursuits
“Successful Preservation Practices For Steel Bridge Coatings”

Desk Scan Summary Report

Justin Ocel, PhD, PE
Federal Highway Administration
Turner-Fairbank Highway Research Center
How Much Does Corrosion Cost?

• Total direct cost ~$276 Billion in 1998-2001 \(^a\)

• $8.3 billion just for bridges \(^a\)
  • HTF income in 2001 = $29.1 billion \(^b\)


Scope of Domestic Scan

- Funding Levels
- Evaluating In-Situ Coatings
- Surface Preparation
- Coating System Decision
- Warranties
- Coating Inspection Requirements
- Inspector Qualifications
- Contractor Qualifications

Shop coating specifically excluded !!!
Acknowledgements

Panel Member
- Paul Vinik (Florida)
- Charlie Brown (Maryland)
- Ray Bottenberg (Oregon)
- Justin Ocel (FHWA)
- Tom Schwert (Texas)
- Mike Todsen (Iowa)

Participant
- Florida
- Maryland
- Oregon
- Texas
- Washington
- Virginia
- New York
- Golden Gate Bridge District
- Michigan
- Ohio
- California
- Pennsylvania
- NASA Kennedy
All 13 agencies have preventative maintenance programs

6 agencies have dedicated steel bridge preservation programs

Most organized / Effective implementers

**related to inventory size**

Maryland mandate – no more repairs to beam ends!!!
Selecting Coating Candidates

- Triage using NBI or element-level inspection data
- Conduct special coating inspection
- Prioritize
Selecting Coating Candidates

Leverage agency-defined elements!
(AASHTO Element 515 isn’t a panacea)

Oregon
- Condition of entire superstructure coating system

Virginia
- Condition of beam ends
- Beam end coating systems
Blast & Recoad

Overcoat

Caltrans is exception
- Purposely extend service-life of lead-based coatings.

In-house painting crews perform overcoating

Safety Regulations

Environmental Regulations

RISK

Safety Regulations

Environmental Regulations
Surface Preparation

All agencies specified SSPC SP-10 for total removal and replacement.
Surface Preparation

- Varied for spot and overcoating
- All utilized SSPC Guide 6 for containment
Surface Preparation

Oregon
- UHP washing (>20,000 psi) to remove pack rust

Texas
- Water blast (SSPC SP WJ4) before any mechanical surface preparation

New York
- Hot pressure washing (180 °F) at 3,000 psi to remove surface contaminants
Coating Option Decision Making

3-coat, zinc-rich is the workhorse
- Expect 15-30 years for total removal and replacement
- General satisfaction with these systems

Ultra-weatherable coating systems
- Siloxane, Polyurea, Fluoropolymer
- Lack of data to justify cost, none submitted to AASHTO NTPEP

Metalizing
- New York and Ohio have multi-decade experience
- No rusting, though not aesthetic
Warranties

Maryland / Michigan
- 2 yr. / 25% total project value

Oregon
- 3 yr. / 90% of coating line items

Golden Gate
- 5 yr. (contracted labor and materials)

Virginia
- 1 yr.

Ohio
- 3 yr. in the past

Sweet Spot
- Leverage in-service inspection
- Not so long you forget
- If quality bad, it will appear in 2 yrs.
- Defining “failure” is tricky
Coating Inspection Requirements

In-house Personnel QA Inspections
- 1 agency

Consultant Personnel QA Inspections
- 5 agencies

Blended In-house/Consultant QA Inspection
- 6 agencies

Minimum Consultant Certifications
- All at least NACE CIP Level 1 / SSPC BCI Level 1
- Some used NACE CIP Level 3 / SSPC BCI Level 2

Minimum In-House Certification
- Varied
Coating Inspection Requirements

Hold Points

• Maximize

100% QA inspection

• Verification leads to quality

Striping

• Tint the stripe
• Which coat varied by agency and coating

National Cooperative Highway Research Program
Domestic Scan 15-03 “Successful Preservation Practices for Steel Bridge Coatings”
Inspector Qualifications

All agencies required training before assigned a bridge project

Primarily on-the-job training

Industry-based (NACE or SSPC) training

In-house instructor-led training
Contractor Qualifications

- 9 agencies required SSPC QP1 and QP2
- 3 agencies required SSPC QP 3 for shop painting
- 1 agency did not require SSPC QP certification
- 1 agency allowed SSPC QP 7 for new contractors

QP 1 = Prepare and apply coatings in field
QP 2 = Hazardous paint removal in field
QP 3 = Prepare and apply coatings in shop
QP 7 = Introductory program for contractor less than 6 months experience
Other Findings

Don’t detail in water/debris traps

Consider bridge washing

Don’t detail in water/debris traps

Consider bridge washing

WSDOT
Other Findings

- USDA bird relocation
- Encourage raptor nesting

WSDOT
Other Findings

- Eliminate Deck Joints
- Add continuity
- Move joint behind abutment
- Link slabs

VDOT
Other Findings

- One-Coat IOZ
- Agencies preferred IOZ to OZ
https://tsp2bridge.pavementpreservation.org/technical/coatings/
Other NBPP Coatings Group
Interests and Pursuits

Duplex Coating Systems:

- NSBA Metalizing Guide Specification (Jeff Carlson, AISC)
- NSBA Galvanizing Guide Specification (Jeff Carlson, AISC)
- NCHRP Problem 2018-D-15, “Effective Use of Duplex Coating Systems to improve Steel Bridge Structure Durability” (This research was not approved by SCOR at their March 23rd meeting)

(Note: Research was subsequently resubmitted to T-4 in April)
Other NBPP Coatings Group
Interests and Pursuits

Bridge Preservation Expert Task Group (BPETG) Steel Bridge Coatings Pocket Guide:

• Effort for BTETG Steel Bridge Coatings Pocket Guide is just getting started

• A Table of Contents has been developed

• Team: Ted Hopwood and Paul Vinik (FDOT)
Other NBPP Coatings Group Interests and Pursuits

Alternative Contract Methods:

- Warrantee Contracts
- AREMA Coating Performance Solution Specification (Wayne Senick, Termarust & Regis Doucette, Chlor Rid International)
NBPP Coatings Group Team

- Jeff Pouliotte, Florida DOT, Chair
- Wayne Senick, Termarust Technologies, Vice Chair
- Regis Doucette, CHLOR RID, Secretary
- Atiq Alvi, T. Y. Lin
- J. Peter Ault, Elzly Technology Corporation
- Mark Barnes, Washington DOT
- Joe Berish, Society for Protective Coatings (SSPC)
- Charlie Brown, Maryland SHA
- Jeff Carlson, American Institute of Steel Construction
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- J. Winn Darden, AGC Glass Company
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- Don Holle, Abhe & Svoboda Inc
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Questions?

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