



Midwest Bridge Preservation Partnership

Agenda – Monthly Teleconference

Tuesday, February 1, 2022

1:00 – 2:00 PM Central

1. Roll Call

NCPP Representatives			Industry Representatives		
Darlene Lane	NCPP	☒	Tim Woolery	Adv. Chem. Tech.	☐
Ed Welch	NCPP	☐	Lorella Angelini	Angelini Consulting	☒
Nancy Huether	NCPP	☒	Patrick Martens	Br Pres & Insp Svcs	☐
John Hooks	NCPP	☒	Allen Scarborough	CMC	☒
Chris Keegan	NCPP	☒	Barritt Lovelace	Collins Eng.	☐
State Agency Representatives			Drew Garceau	Collins Eng.	☒
Michael Hill	Arkansas DOT	☐	Thomas Collins	Collins Eng.	☒
Sarah Wilson(Secretary)	Illinois DOT	☒	Marc Parker	Collins Eng.	☒
Adam Post	Indiana DOT	☒	Brent Toller	DS Brown	☐
Jennifer Hart	Indiana DOT	☐	Mark Ericson	ECHEM	☐
Jeremy Hunter	Indiana DOT	☐	Ray Breer	ECHEM	☐
Mark Swiderski	Indiana DOT	☒	Andy Castillo	EMSEAL	☒
Joe Stanisz	Iowa DOT	☒	Diana Hellman	FujiFilm	☒
Scott Neubauer	Iowa DOT	☒	Jason Fogg	HDR, Inc.	☐
Dominique Shannon	Kansas DOT	☐	LJ Dickens	HNTB	☐
Don Whisler	Kansas DOT	☒	Ed Liberati	Hughes Group	☐
Jim Leaden (Vice-Chair)	Kansas DOT	☒	Blake Liberati	Hughes Group	☐
John Culbertson	Kansas DOT	☐	Kevin Irving	Int. Zinc Assoc.	☐
Josh Rogers (Director)	Kentucky TC	☐	Greg Heilman	Jet Filter System	☒
Dora Alexander	Kentucky TC	☐	Paul Vinik	GPI	☐
Brandon Boatman	Michigan DOT	☐	Richard Dunne	GPI	☒
Jacob Creisher	Michigan DOT	☐	Paul Jensen	Jensen Eng.	☒
Jason DeRuyver (Director)	Michigan DOT	☒	Dave Juntunen	Kercher Group	☒
Paul Pilarski	Minnesota DOT	☐	Drew Storey (Vice Chair)	Mott MacDonald	☒
Sarah Sondag (Chair)	Minnesota DOT	☒	Bobby Scarpitto	Kwikbond	☐
Mark Spafford	Minnesota DOT	☒	Gregg Freeman	Kwikbond	☐
Jerry Goodman	Missouri DOT	☐	Josh Bunderson	Metal Fatigue Soln.	☐
Todd Miller	Missouri DOT	☐	Adam Hales	Phoscrete	☐
Fouad Jaber	Nebraska DOT	☒	Kyle Bartfay	Phoscrete	☐
Kent Miller	Nebraska DOT	☒	Paul Imbrock	PoreShield	☒
Mark Traynowicz	Nebraska DOT	☐	Tessellen Fennelly	PoreShield	☐
Barry Kinnischtzke	North Dakota DOT	☒	Richard Huza	Salit Steel	☐
Matthew Kurle	North Dakota DOT	☐	Derrick Castle	Sherwin Williams	☐

Brad Noll	Ohio DOT	☒	Mark Hudson	Sherwin Williams	☐
Jared Backs	Ohio DOT	☒			☐
Mike Brokaw	Ohio DOT	☐	Aamer Syed	Sika	☐
Walt Peters	Oklahoma DOT	☒	Fabio Puzzo	Sika	☐
David Coley	South Dakota DOT	☒	Chris Davis	Structural Tech	☒
Todd Thompson	South Dakota DOT	☒	Tom Donnelly	Transpo	☐
Alex Pence	Wisconsin DOT	☐	Michael Stenko	Transpo	☐
Bill Oliva (Director)	Wisconsin DOT	☒	Lawrence Kirchner	TranSystems	☒
Philip Meinel	Wisconsin DOT	☒	David Brodowski	TrueTech Bridge	☒
Ryan Bowers	Wisconsin DOT	☒	Peter Seibert	UHPC Soln.	☒
Travis McDaniel	Wisconsin DOT	☒	Kevin Stumpf	Uretek USA	☒
David Bohnsack	Wisconsin DOT	☒	Kevin Stalz	Washer Coatings	☐
Anthony Stakston	Wisconsin DOT	☒	Nick Graziani (Director)	Watson Bowman	☒
Local Agency Representatives					☐
Mel Quick-Miller	Harrison Cty IN	☐			
Javier Romero	Cook County, IL	☐	Unknown Affiliation		
			Ashley Grzybowski	Minnesota DOT	☒
Academia Representatives			Babrak Niazi		☒
Basak Bektas	MN State Mankato	☐	David Dixon		☒
Glenn Washer (Director)	U of Missouri	☐	Ida Narbuvoll		☒
Pat Conner (Director)	Indiana LAP	☐	James Luebke	Wisconsin DOT	☒
			Kristin Revello	Wisconsin DOT	☒
FHWA Representatives					☐
Larry O'Donnell	FHWA	☒	Scott Fowler		☒
Raj Ailaney	FHWA	☒	Steve Conley		☒
Scott Stotlemeyer	FHWA	☐	Steve Miller	Minnesota DOT	☒
Tim Anderson (Director)	FHWA	☒	Terry Smith		☒
					☐
			Guest Speakers		
			Tony Serdenes	GPI	☒

Anyone shown with Unknown Affiliation can email the Secretary at Sarah.Wilson@illinois.gov with an update for the roll call.

2. Approval of Minutes from January Teleconference 1/4/2022

Sarah S displayed the minutes, quickly summarized them. Motion to approve – Sarah S. 2nd Drew – All in Favor - minutes approved.

3. Introduction to Bridge Painting (Tony Serdenes, GPI)

This presentation has been given to other Partnership meetings. See attachment for PDF of the Presentation. Very detailed presentation, with a lot of good information

shared, several questions resulted from the presentation, and were addressed by the speaker.

4. **Bridge Painting Panel Session** **Due to time – postponed for a later meeting if there is interest.**

- a.) Sarah Sondag, Minnesota Department of Transportation
- b.) Tony Serdenes, GPI
- c.) Derrick Castle, Sherwin Williams

5. **Bridge Painting Pocket Guides** (Richard Dunne, GPI)

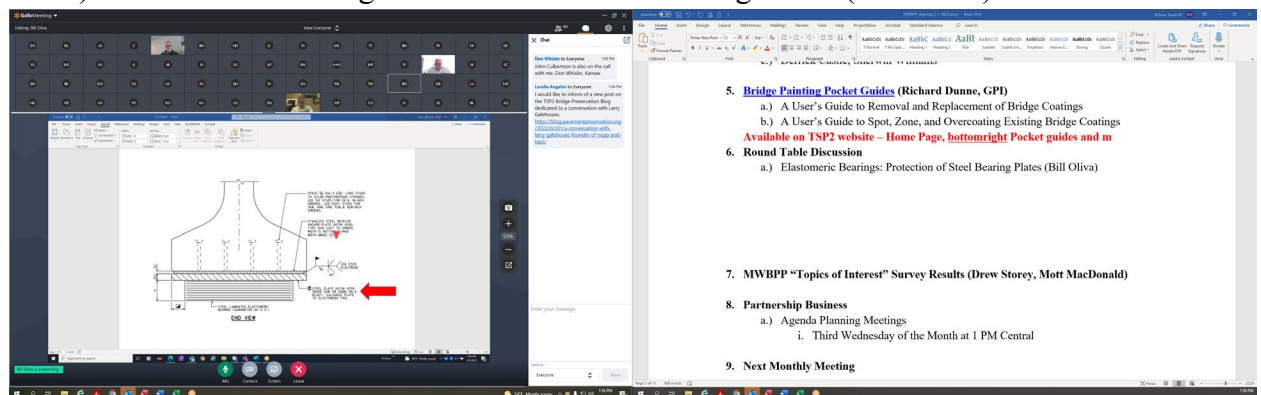
- a.) A User's Guide to Removal and Replacement of Bridge Coatings
- b.) A User's Guide to Spot, Zone, and Overcoating Existing Bridge Coatings

Available on TSP2 website – see this link – for these and many others. Attached at the end of the meeting minutes you'll find the Slides that were discussed.

<https://tsp2bridge.pavementpreservation.org/technical/fhwa/documents/>

6. **Round Table Discussion**

- a.) **Elastomeric Bearings: Protection of Steel Bearing Plates** (Bill Oliva)



Top plates, what is done in other states with the plate which is vulcanized to the elastomeric pad at the red arrow,

- Nebraska Fouad J. – uses weathering steel mainly (galvanizing option.)
- Do a lot of people galvanize them? No answers.
- Mn – Sarah S – they galvanize mostly
- OK - Walt P – using stainless steel on the plates.
- WI – for steel / fixed – mostly – use galvanizing, but want to clear this up.

7. **MWBPP “Topics of Interest” Survey Results** (Drew Storey, Mott MacDonald)

To be discussed at the agenda planning meeting. If you haven't submitted anything yet, there is still time...

8. Partnership Business

a.) Agenda Planning Meetings

- i. Third Wednesday of the Month at 1 PM Central Let Sarah S know if you want to join.

9. Next Monthly Meeting

a.) March 1, 2022

- i. National Bridge Deck Preservation Working Group Update
- ii. May also consider panel discussion of painting if there is interest? Let Sarah Sondag know.

b.) Potential Future Topics

- i. T1 Steel Memo
- ii. Website Organization
- iii. Working Group Updates

General Interest Notes:

Lorella Angelini – I would like to inform everyone of a new post on the TSP2 Bridge Preservation Blog dedicated to a conversation with Larry Galehouse. See <https://blog.pavementpreservation.org/2022/02/01/a-conversation-with-larry-galehouse-founder-of-ncpp-and-tsp2/>

Sarah Sondag – noted that **Nancy Huether** has a new position as a Bridge Preservation Engineer for TSP2. Nancy's new email is huethern@msu.edu.



Presented by: Tony Serdenes, PCS Vice President/Corrosion Protection Pursuits Leader & AMPP Technical Committee "Transportation" Chair
Date: February 1, 2022

Bridge Coatings Program



Topics of Discussion

- Evaluation
- Design (Specification)
- Inspection
- Maintenance
- AMPP (Association for Material Protection & Performance)

Bridge Coatings Program

History

- Per the National Association of Corrosion Engineers (NACE) in 2013
 - The annual direct cost of corrosion for highway bridges is estimated to be \$13.6 billion.
 - As of 2013 there are 607,380 bridges in the US.
 - Of this 200,000 are steel, 343,000 are concrete.
 - The primary factor in reducing corrosion is protective coatings.
 - The Federal Highway Administration estimates it will cost \$20.5 billion annually for the next 16 years to properly update existing bridges (Which includes coatings), more than 60% of what is currently being spent.

Bridge Coatings Program

History – Cont'd

- FHWA in Conjunction with AASHTO is seeking to provide bridges with a service life of up to 100 years
- The current life expectancy for protective coatings on new steel bridges is 30 years
- The expected service life maintenance coatings is 17 -20 years
- Removal and replacement for maintenance painting ranges from \$12 - \$15 per square foot for typical bridges

Bridge Coatings Program

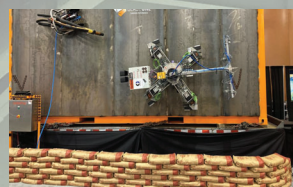
History – Cont'd

- National Cooperative Highway Research Program (NCHRP) study in 2016 identified several factors contributing to premature failure of steel bridge coating systems. These factors include:
 - Inadequate surface preparation or coating application
 - Residual surface contamination
 - Incorrect coating thickness
 - Improper environmental conditions for application
 - Incorrect mixing or agitation
 - Inadequate/incorrect coatings/materials
 - Extreme exposure conditions
 - Inadequate inspections
 - Inadequate qualified contractors
 - Inadequate specifications

Bridge Coatings Program

New Technology

- Surface Preparation and application



Bridge Coatings Program

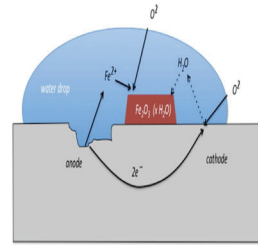
Definition of Corrosion

Steel corrosion is the irreversible deterioration and destruction of the steel material and its vital properties due to the electrochemical or chemical reaction of its surface to environmental factors such as acids, moisture and oxygen. Steel corrosion involves an electrolysis in which the metallic surface releases electrons into an electrolyte, such as a layer of moisture in the presence of oxygen. This electrochemical reaction occurs due to the tendency for metals to return to their natural state. Iron in the steel in the environment of moist air will tend to go back to its original state of iron oxide as rust. Steel can be corroded by the chemical reaction of certain chemicals like sulfuric acid.



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Bridge Coatings Program



Four Conditions Necessary for Corrosion to Occur

- **Anode** - The electrode where galvanic reaction(s) generate electrons - negative ions are discharged and positive ions are formed. **Corrosion occurs at the anode.**
- **Cathode** - The electrode that receives electrons - positive ions are discharged, negative ions are formed. **The cathode is protected from corrosion.**
- **Electrolyte** - The conductor through which current is carried. **Electrolytes include aqueous solutions or other liquids.**
- **Return Current Path** - The metallic pathway connecting the anode to the cathode. It is often the underlying metal substrate.

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Bridge Coatings Program



Design

- Assessment of inventory for single or multiple structures
 - Identify areas that could cause issues for proper surface preparation and application (i.e., tight spaces, back-to-back angles, utilities, vegetation, etc.)
 - Access to the structure.
 - Potential layout yard for the contractor for equipment and storage.
 - Will structural repairs be required prior to cleaning and painting.
 - Containment levels due to location.
 - Railroads, etc.

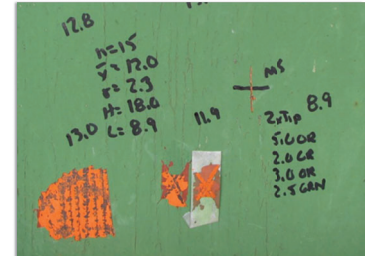
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Bridge Coatings Program

Design Cont'd

- Testing Protocol during Field evaluation
 - Corrosion – Isolated or scattered
 - Adhesion – Failure between coats or substrate
 - Chalking
 - Brittleness of coating
 - Film thickness (Destructive & Non-Destructive)
 - Coating's identification (Alkyd, Epoxy, Vinyl, etc.) for potential overcoat projects
 - Heavy Metals (Lead, Cadmium, Chromium)
 - Surrounding environment
 - Matching the right system to the environment - humidity, etc. (OZE/U, Moisture cured systems)



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Bridge Coatings Program

Design Cont'd

- Development of Needs
 - Based on assessment develop a list of structures that need work within 0 - 3 years, 3 - 5 years, 5 years and beyond
 - Develop a budget to address those various needs
 - Specification Development for specific bridges (Signature structures) or groups of bridges



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Bridge Coatings Program

Design Cont'd

- Recommendations – Based on Field Evaluation
 - Total removal and replacement
 - Overcoat
 - Zone Painting (Defined areas, Beam ends and bearing, facias)
 - Do Nothing



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Bridge Coatings Program



Design Cont'd

- Considerations
 - Budgets – Optimizing your most important needs vs budget established
 - Life expectancy of bridges considered for painting. Will they be replaced within 10 years or so. Will the bridge have major rehabilitation needs, etc.
 - Vehicular traffic disruptions – Full access to structure or limited access due to lane closure restraints (This will significantly affect the cost)
 - Development of an engineers estimate

Bridge Coatings Program

Design Cont'd

- Specification Development
 - Surface preparation
 - Coatings application
 - *Stripe Coating (Primer & Intermediate coats)*
 - Environmental requirements
 - Special provision/Plan Notes – Document unique situations, hard to reach/inaccessible/limited access areas, utilities, Railroads – How will the contract address these areas?
 - Defined Quality Control/Quality Assurance
 - Warranties – 1yr., 2yr., etc.



Bridge Coatings Program

Sample language from a DOT who has included Limited Access in their specifications

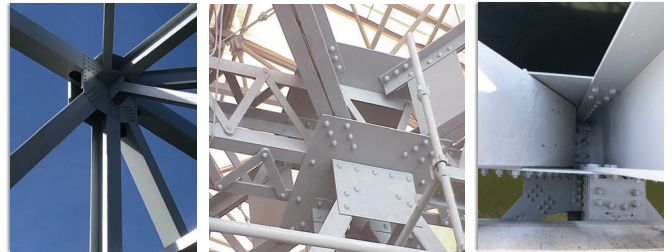
Limited Access Areas – Submit proposed methods of coating application together with the coating manufacturer's recommendations, for achieving complete coverage in limited access areas (e.g., modified brushes, paint mitts, daubers, etc. as appropriate for the coating system).

Limited Access is defined as a location where the physical characteristics or configuration of the structure restricts the use of a surface preparation or paint application tool at that location.

A location is not considered Limited Access if additional time will allow for the proper cleaning or painting of the area, or if commercially available tools are available to clean or paint the area (e.g., angle nozzles, or short nozzles in place of traditional long nozzles for blast cleaning).

Bridge Coatings Program

Examples of Hard To Reach/Inaccessible Areas



Bridge Coatings Program



Design Cont'd

- Specification Development – Cont'd
 - Submittals
 - Containment Plans – Stamped by a P.E.
 - Environmental Plans – Monitoring of site
 - Worker Protection Plans – Monitoring of personnel
 - Waste Disposal/recycled materials plans
 - Material Submittals – Paint, solvents, abrasive, etc.

Bridge Coatings Program

Design Cont'd

- Specification Development – Cont'd
 - Contractor prequalification
 - Mandatory Pre-Bid Meeting/Site Visit

Note: SSPC and NACE have merged as of 1/1/21. The new organization is the Association for Materials Protection and Performance (AMPP)



Bridge Coatings Program

Inspection

- AMPP (NACE/SSPC) Certified coatings inspectors w/experience
- Defined hold points
 - Containment
 - Surface Preparation
 - Coating application
 - Waste Storage and disposal
- Authority for the QA inspector
- SSPC QP -5 Certified Consultants



Bridge Coatings Program

Documentation To Include

- Material Storage sites (Per the manufactures/Owners' requirements)
- Proper mixing of materials
- Proper Induction/Sweat-In time
- Proper Abrasives and cleanliness of abrasive
- Ambient conditions
- Contractor work force
- Location of work



Bridge Coatings Program

It's the little things that can cause big issues

- Thinning
 - Mist coating: Thin up to 32 oz/gal (263 g/l) with Thinner 2 or 33 in VOC restricted (2.8 lb/gal) areas. May thin up to 48 oz/gal where VOC restricted levels are at 3.5 lb/gal (0.42 kg/l) for mist coat only. If necessary, use Thinner 230 only in hot (above 100°F/38°C) and windy conditions, to slow down the evaporation rate
- Constant Agitation
 - Thoroughly mix each component using mechanical agitation making sure pigment does not remain on the bottom of can. Pour the Part A into the Part B (mixing ratio by volume: 1 part B: A to 4 parts Part B) and mix well. After mixing, pour through a 30-60 mesh screen. If thinner is required, thin only after mixing Part A with Part B. Allow 15 minutes minimum induction time at 75°F. Do not mix more than can be applied during the product's useful pot life. Continue to agitate the mixture during application of the product to keep the zinc pigment from settling out and the product uniform

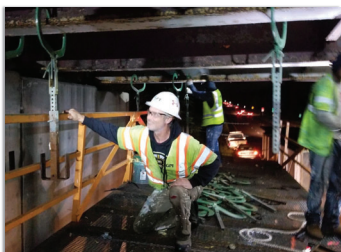


Bridge Coatings Program

GPI		DAILY COATING INSPECTION REPORT	
Project Name: _____		Date: _____	
Inspector Name: _____		Inspector Title: _____	
Location: _____		Weather: _____	
Time: _____		Temperature: _____	
Wind Speed: _____		Humidity: _____	
Surface Condition: _____		Coating Condition: _____	
Application Method: _____		Application Rate: _____	
Mixing Ratio: _____		Induction Time: _____	
Storage Conditions: _____		Disposal Method: _____	
Safety Precautions: _____		Remarks: _____	
Signature: _____		Date: _____	

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Bridge Coatings Program

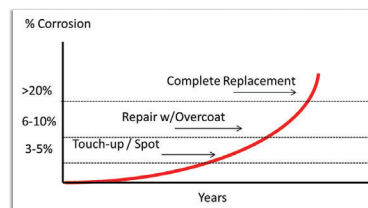


Maintenance/Preservation

- Bridge washing
- Drainage system clear
- Joints and decks are in good conditions
- Spot repair or zone painting (Joints, Facia, etc.)

Bridge Coatings Program

Maintenance/Preservation Cont'd



Bridge Coatings Program

The Association for Materials Protection and Performance  **AMPP**
(Formerly SSPC and NACE)
Provides the coating industry with the following:

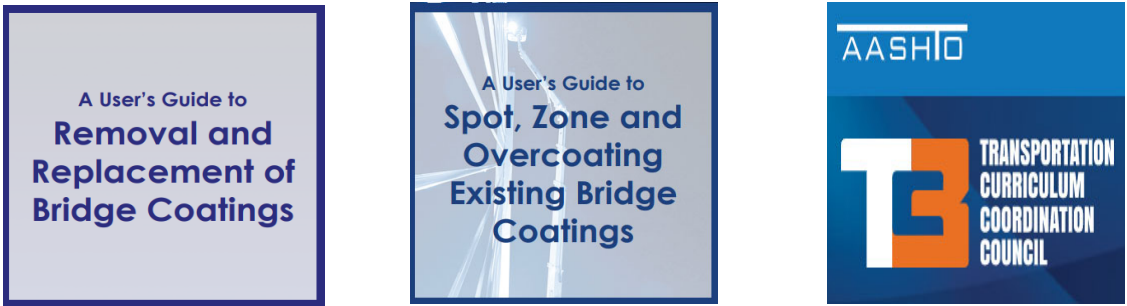
- Industrial coatings industry standards (Surface Preparation, Paint Thickness measurement, etc.)
- Technical publications (Guides for containment, lighting, etc.)
- Training and certification courses (Coatings inspectors, lead training, etc.)
- Painting contractor certification programs (Contractor, shop, consultant firms)



Questions?



tserdenes@gpinet.com
410-371-7056



Steel Bridge Coating Resources for the Bridge Preservation Practitioner

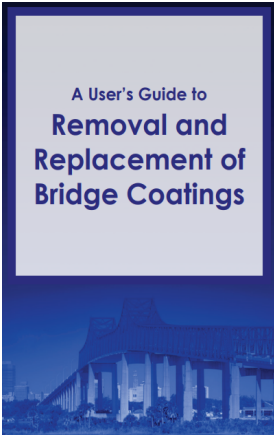
Presented to: AASHTO-TSP2 MidWest Bridge Preservation Partnership
Presented by: Richard Dunne, National Director Bridge Preservation

February 1, 2022

GPI Engineering | Design | Planning | Construction Management

1

A User's Guide to Removal and Replacement of Bridge Coatings [A User's Guide to Removal and Replacement of Bridge Coatings.pdf \(pavementpreservation.org\)](#)

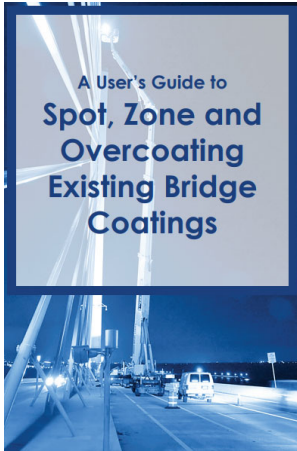


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A User's Guide to Spot, Zone and Overcoating Existing Bridge Coatings [Spot Zone Pocket Guide_01_23_20.pdf](#) (pavementpreservation.org)



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Both Pocket Guides are available to get on your Phone!

- **A User's Guide to Removal and Replacement of Bridge Coatings**

[^ Google Play Store \(Android App\)](#)

[^ Apple App Store \(iOS App\)](#)


- **A User's Guide to Spot, Zone and Overcoating Existing Bridge Coatings**

[^ Google Play Store \(Android App\)](#)

[^ Apple App Store \(iOS App\)](#)


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4

In addition the AASHTO Transportation Curriculum Coordination Council (TC3) has Two Courses Dedicated to Bridge Coatings

These courses are available at a nominal fee (\$25 - \$75) for ASSHTO Members and non-Members

1. Removal and Replacement of Bridge Coatings ([TC3MN039-19-T1](#)) – 1 PDH

This Training encourages a better understanding of the process to completely remove and replace bridge coatings for the structural steel elements of bridges in service, emphasizing containment, surface preparation and paint/coating applications.

2. Spot, Zone, and Overcoating Existing Bridge Coatings ([TC3MN043-20-T1](#)) – 1.5 PDH

This training is designed for bridge preservation practitioners undertaking spot, zone and overcoat painting projects, which can extend the life of the original coating.