Midwest Bridge Preservation Partnership

Agenda – Monthly Teleconference
Tuesday, March 1, 2022
1:00 – 2:00 PM Central

1. **Roll Call** **See chart at end of notes.**

2. **Approval of Minutes from Teleconference 3/1/2022.** **Sarah Sondag displayed the draft minutes, there were a few minor corrections (Nancy Huether's email address, and some added affiliations. Motion to approve as modified – Bill Oliva, 2nd – Drew Storey. All in favor, minutes approved.**

3. **Bridge Painting Panel Session** **See pdf of powerpoint at end of notes, note that the date is carryover from last month's meeting.**
   a.) Participants
      i. Sarah Sondag, Minnesota Department of Transportation
      ii. Tony Serdenes, GPI
      iii. Derrick Castle, Sherwin Williams
   b.) Good Discussion, actually had to cut the discussion short due to time limitations. Some of the questions brought up by the members are noted below:
      i. State's practices for weathering steel – most states paint at least the beam ends, however KY fully paints their weathering steel. Some paint fully for aesthetic reasons (bleeding rust onto substructures.) What surface prep requirements for painting weathering steel – typically SSPC-SP10 Near White Blast – need to consider possibility of high profiles
      ii. Siva V asked about the differences between 2 coat and 3 coat paint systems. Derrick noted at the 2 coat system can be as good as the 3 coat system, but it's an comfort level. Tony S. noted that it comes down to quality, if the quality isn't there, the 3rd coat can be the insurance coat. They noted that many NE states are two coat states.
      iii. MN uses hold points, where the contractor is required to wait for written approval until they can proceed.
      iv. Discussion of In-house vs 3rd Party inspectors.
      v. Tony S. noted that most states are requiring QP1/QP2 qualified contractors.
      vi. Tracking non-conformances, and formal resolutions to each NCR.
      vii. Stripe Coat on Prime – consider allowing Full Coat after blast, and stripe later, to avoid delaying contractor. Questions about using a stripe coat for each coat (prime,intermediate,final), cure time for stripe coat(s), adds to overall time and then costs.
      viii. Difficulties painting over railroads.

ix. Considerations of Metallizing and Galvanizing Coatings.

4. **TSP2 Updates (Nancy Huether)** Nancy H. is new at NCPP, but has been a long time member of MWBPP. Ed Welch and John Hooks will be retiring, and Nancy H and Chris K will be participating in all meetings going forward.
   a.) 2022 Meeting Dates:
      i. NE – June 15-17 Harrisburg PA
      ii. West August 9-11, Boise ID
      iii. SE August 30-Sept 1 Raleigh NC
      iv. MidWest October 25-27 Lexington KY
   b.) For 2023 looking to settle the regional meetings into their normal slots – West & SE in the Spring, and NE & MidWest in the Fall. (Note that South Dakota has indicated they can host the 2023 meeting for MWBPP)
   c.) For 2024 looking at the next National Meeting, considering what time of the year and location…
   d.) Website Updates Planned – looking to clean up the Main Page, and updating the Boards on all Partnerships.
   e.) Regional Working Groups vs National Working Groups. Would like to have participations from all 4 regions on all the National Working Groups. If you are interested in participating on any of the National :Groups, let Nancy know.

5. **MWBPP "Topics of Interest" Survey Results (Drew Storey)** **No time to Discuss.**

6. **National Bridge Deck Preservation Working Group Update (Sarah Sondag)** **No time to discuss.**

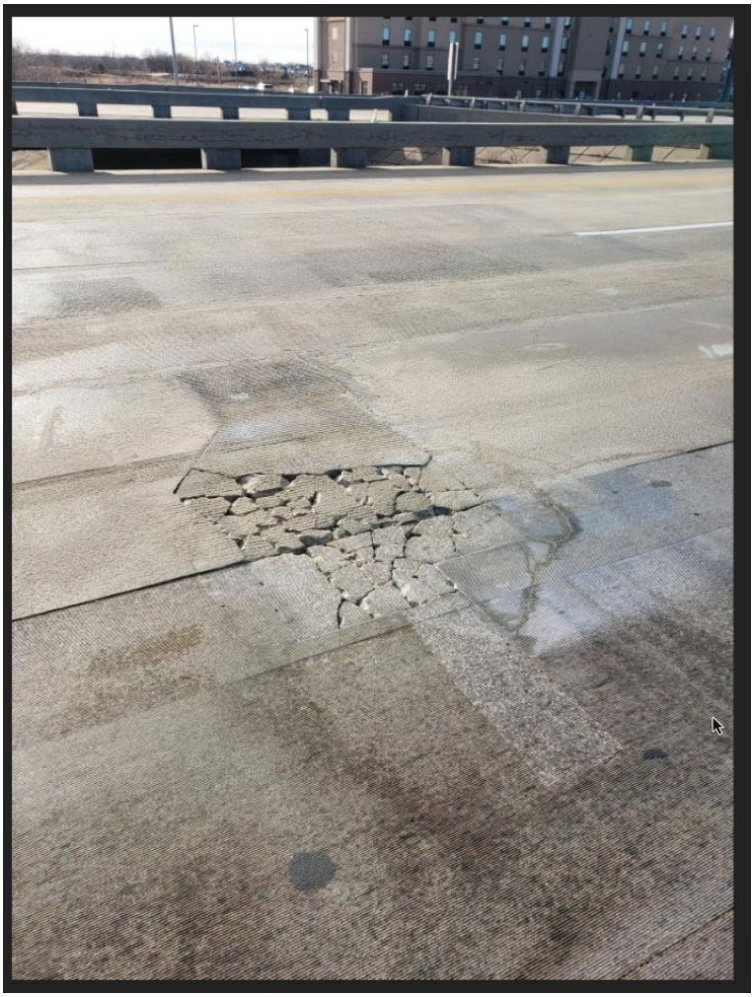
7. **Next Monthly Meeting**
   a.) April 5, 2022
      i. **Data Visualization Tool: Bridge NBI Data and Maintenance Trends** (Dr. Robin Gandhi, University of Nebraska at Omaha, College of Information Science and Technology)
         1. Working with Bridge NBI data to study bridge population-level characteristics. This work has resulted in visualizations regarding bridge maintenance trends and the variables that influence them.
   b.) Potential Future Topics
      i. T1 Steel Memo
      ii. Working Group Updates

Other Notes: Due to many of our meetings exceeding the time slot, some discussion of moving the business meeting to another timeslot, or possibly extending this time slot to allow for more discussion. See the agenda for future meetings for revisions.

Fouad Jaber - Nebraska

See photo below, premature failure of 1 inch polyester overlay on deck with shot blast prep. Failure occurred within 2 years, multiple locations.

- Discussion centered around Deck Prep Options – Sandblast vs Mill vs Hydroscarify.
- Possibly debonding of surface overlay due to poor construction practices
- How many repairs were done to deck surface prior to overlay..



Attendance Chart – MWBPP Teleconference
March 1, 2022

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	☐
		☐	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	☒	**Guest / Mixed Affiliation**		
			Ashley Grzybowski	Minnesota DOT	☒
Academia Representatives			Babrak Niazi	Nebraska DOT	☒
Basak Bektas	MN State Mankato	☐	Steve Conley		☒
Glenn Washer (Director)	U of Missouri	☐	Steve Miller	Minnesota DOT	☒
Pat Conner (Director)	Indiana LAP	☐	Siva	Siva Corrosion	☒
			Steve Conley		☒
FHWA Representatives			Steven Schorn	Sixense Group	☒
Larry O'Donnell	FHWA	☒	Dan Patacca	ECHEM	☒
Raj Ailaney	FHWA	☒			☐
Scott Stotlemeyer	FHWA	☐			☐
Tim Anderson (Director)	FHWA	☒			☐
					☐
					☐
					☐
					☐
					☐
			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.

Bridge Painting Panel Session/Discussion

2/1/2022

DEPARTMENT OF TRANSPORTATION

mndot.gov

Panel Session/Discussion Topics

- Panel Members
  - Sarah Sondag – Minnesota Department of Transportation
  - Tony Serdenes – GPI
  - Derrick Castle – Sherwin Williams
- Discussion Topics
  - Quality Control/Quality Assurance
  - Planning and Preparation
  - Surface Preparation and Chloride Mitigation
  - Mixing and Application
  - Maintenance Painting (time permitting)

Panel Session Topic

Quality Control/Quality Assurance

MnDOT Bridge Painting Program (Contract)

- **Purpose**: Isolate the steel from a corrosive environment
- Typically, 'Remove and Replace' by Contract when condition warrants
- Painting projects identified by the District
- Perform painting in conjunction with a preservation or rehabilitation project
- Specify Weathering Steel (for past 40+ years)
  - Painted for aesthetics or in harsh environments
  - Do other agencies paint weathering steel?

Contract Specifications

- Specifications
  - Field painting (organic zinc-rich coatings)
  - Shop/field painting (inorganic zinc-rich coatings)
- Hold Points and Non-conformance Reports
  - Abrasive blast profile and cleanliness
  - Stripe coat
  - Prime coat
  - Intermediate coat
  - Finish coat

Quality Control

- Quality Control Manual meeting spec 2478 and SSPC-PA 13
  - Inspection requirements
  - Testing
  - Weather constraints
  - Surface preparation
  - Paint thickness testing

Quality Control

- Quality Manual - Qualifications
  - SSPC QP1 Certification for field painting
  - SSPC Certified Application Specialist Level 2
  - All personnel involved with the paint application trained on mixing and application

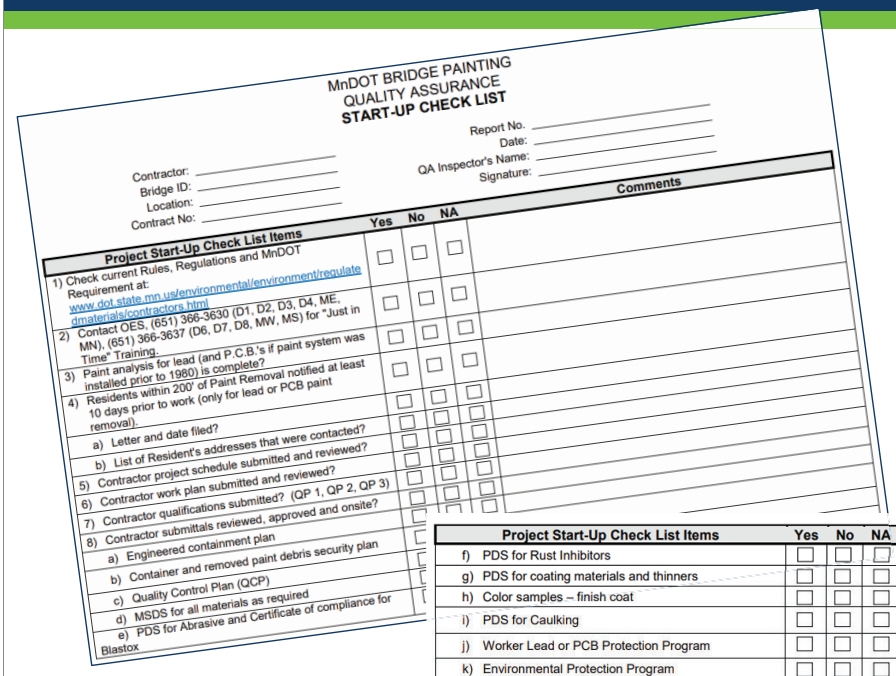
Quality Control

- Quality Manual – Field Painting
  - Non-conformance report form
  - Custom proposal of how SSPC PA 2 will be documented
  - A preapproved “Request for Deviation”
  - An initial color draw down sample on a Leneta chart per 2478.F.5
  - Names and title of employees on the job
  - Identification of hold points

Quality Assurance

- Quality Assurance
  - MnDOT appoints a Quality Assurance Inspector (QAI) as a Department representative to accept work meeting Contract requirements
  - Monitor Contractor's performance to above requirements
  - Verify Contractor's inspections are completed as required
  - Monitor safety conditions
  - Keeps records on materials, blasting residue, and project documents

Quality Assurance: Start-Up Check List

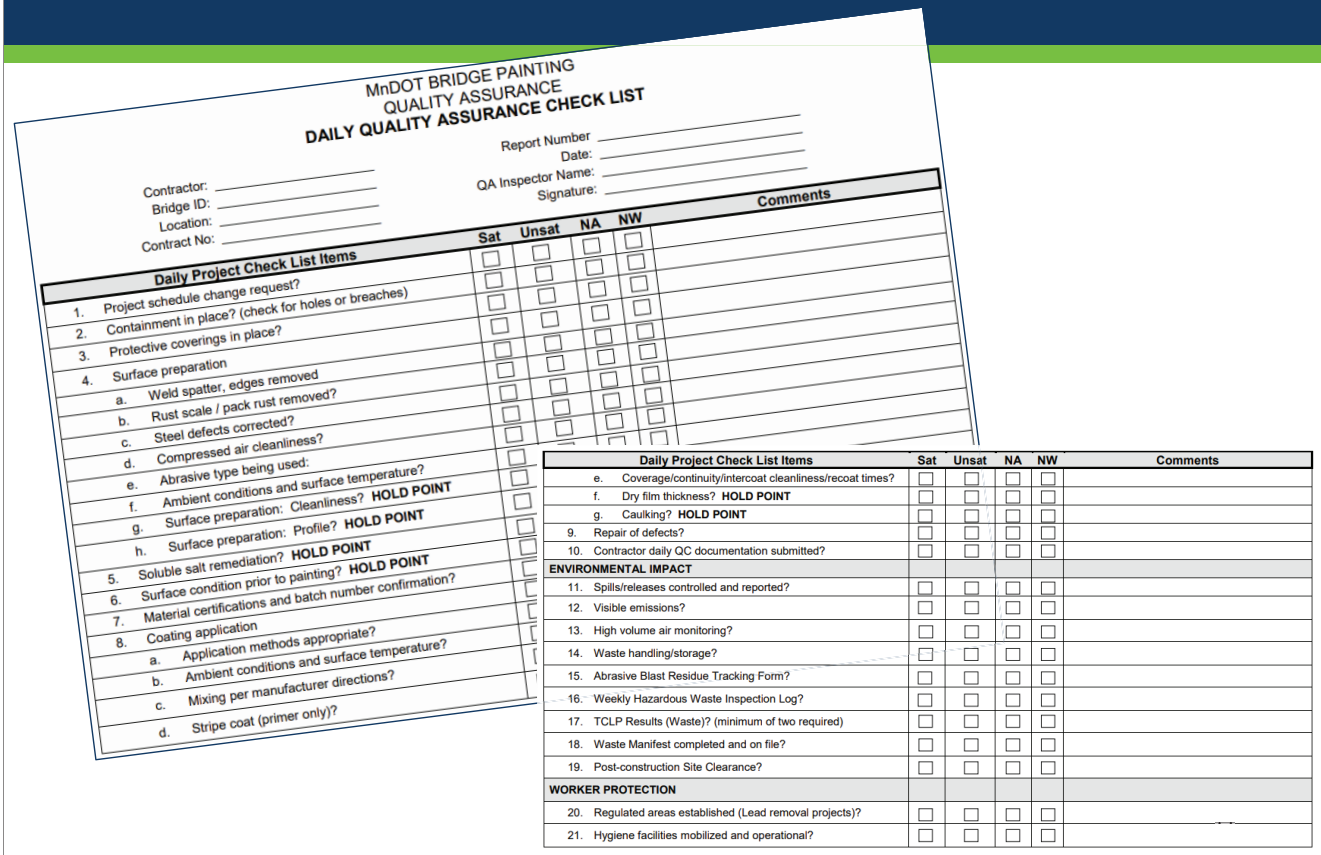


MnDOT BRIDGE PAINTING
QUALITY ASSURANCE
START-UP CHECK LIST

Contractor: _____ Report No. _____
Bridge ID: _____ Date: _____
Location: _____ QA Inspector's Name: _____
Contract No: _____ Signature: _____

Project Start-Up Check List Items	Yes	No	NA	Comments
1) Check current Rules, Regulations and MnDOT Requirement at: www.dot.state.mn.us/environmental/environment/regulate.html	☐	☐	☐	
2) Contact OES, (651) 366-3630 (D1, D2, D3, D4, ME, MN), (651) 366-3637 (D6, D7, D8, MW, MS) for "Just in Time" Training.	☐	☐	☐	
3) Paint analysis for lead (and P.C.B.'s if paint system was installed prior to 1980) is complete?	☐	☐	☐	
4) Residents within 200' of Paint Removal notified at least 10 days prior to work (only for lead or PCB paint removal).	☐	☐	☐	
a) Letter and date filed?	☐	☐	☐	
b) List of Resident's addresses that were contacted?	☐	☐	☐	
5) Contractor project schedule submitted and reviewed?	☐	☐	☐	
6) Contractor work plan submitted and reviewed?	☐	☐	☐	
7) Contractor qualifications submitted? (QP 1, QP 2, QP 3)	☐	☐	☐	
8) Contractor submittals reviewed, approved and onsite?	☐	☐	☐	
a) Engineered containment plan	☐	☐	☐	
b) Container and removed paint debris security plan	☐	☐	☐	
c) Quality Control Plan (QCP)	☐	☐	☐	
d) MSDS for all materials as required	☐	☐	☐	
e) PDS for Abrasive and Certificate of compliance for Blastox	☐	☐	☐	
f) PDS for Rust Inhibitors	☐	☐	☐	
g) PDS for coating materials and thinners	☐	☐	☐	
h) Color samples – finish coat	☐	☐	☐	
i) PDS for Caulking	☐	☐	☐	
j) Worker Lead or PCB Protection Program	☐	☐	☐	
k) Environmental Protection Program	☐	☐	☐	
l) Waste Management Program	☐	☐	☐	
9) Contractor supplied hygiene facilities?	☐	☐	☐	
10) Contractor reference standards onsite?	☐	☐	☐	
11) Contractor inspection equipment calibrated and onsite?	☐	☐	☐	
12) Specified coating materials and thinners onsite?	☐	☐	☐	
13) Test sections prepared and accepted?	☐	☐	☐	

Quality Assurance: Daily Check List



MnDOT BRIDGE PAINTING
QUALITY ASSURANCE
DAILY QUALITY ASSURANCE CHECK LIST

Contractor: _____ Report Number _____
Bridge ID: _____ Date: _____
Location: _____ QA Inspector Name: _____
Contract No: _____ Signature: _____

Daily Project Check List Items	Sat	Unsat	NA	NW	Comments
1. Project schedule change request?	☐	☐	☐	☐	
2. Containment in place? (check for holes or breaches)	☐	☐	☐	☐	
3. Protective coverings in place?	☐	☐	☐	☐	
4. Surface preparation	☐	☐	☐	☐	
a. Weld spatter, edges removed	☐	☐	☐	☐	
b. Rust scale / pack rust removed?	☐	☐	☐	☐	
c. Steel defects corrected?	☐	☐	☐	☐	
d. Compressed air cleanliness?	☐	☐	☐	☐	
e. Abrasive type being used:	☐	☐	☐	☐	
f. Ambient conditions and surface temperature?	☐	☐	☐	☐	
g. Surface preparation: Cleanliness? **HOLD POINT**	☐	☐	☐	☐	
h. Surface preparation: Profile? **HOLD POINT**	☐	☐	☐	☐	
5. Soluble salt remediation? **HOLD POINT**	☐	☐	☐	☐	
6. Surface condition prior to painting? **HOLD POINT**	☐	☐	☐	☐	
7. Material certifications and batch number confirmation?	☐	☐	☐	☐	
8. Coating application	☐	☐	☐	☐	
a. Application methods appropriate?	☐	☐	☐	☐	
b. Ambient conditions and surface temperature?	☐	☐	☐	☐	
c. Mixing per manufacturer directions?	☐	☐	☐	☐	
d. Stripe coat (primer only)?	☐	☐	☐	☐	
e. Coverage/continuity/intercoat cleanliness/recoat times?	☐	☐	☐	☐	
f. Dry film thickness? **HOLD POINT**	☐	☐	☐	☐	
g. Caulking? **HOLD POINT**	☐	☐	☐	☐	
9. Repair of defects?	☐	☐	☐	☐	
10. Contractor daily QC documentation submitted?	☐	☐	☐	☐	
ENVIRONMENTAL IMPACT					
11. Spills/releases controlled and reported?	☐	☐	☐	☐	
12. Visible emissions?	☐	☐	☐	☐	
13. High volume air monitoring?	☐	☐	☐	☐	
14. Waste handling/storage?	☐	☐	☐	☐	
15. Abrasive Blast Residue Tracking Form?	☐	☐	☐	☐	
16. Weekly Hazardous Waste Inspection Log?	☐	☐	☐	☐	
17. TCLP Results (Waste)? (minimum of two required)	☐	☐	☐	☐	
18. Waste Manifest completed and on file?	☐	☐	☐	☐	
19. Post-construction Site Clearance?	☐	☐	☐	☐	
WORKER PROTECTION					
20. Regulated areas established (Lead removal projects)?	☐	☐	☐	☐	
21. Hygiene facilities mobilized and operational?	☐	☐	☐	☐	

Discussion

- Quality Control/Quality Assurance
  - Do other states require…
    - Contractors to be SSPC-QP1 certified?
    - Hold points?
    - Contractors to adhere to SSPC-PA2? Do other states have a system that works well?
  - Any challenges with designating qualified inspectors?
  - How do other states track non-conformance (e.g., profile, cleanliness, high/low DFT, QC submittals)?

Panel Session Topic

Planning and Preparation

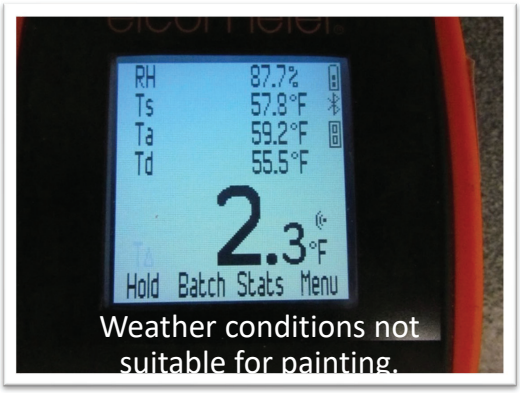
Planning and Preparation

- Office of Environmental Stewardship “Just in Time Training”
- MnDOT’s Steel Structure Paint Removal Program
  - Lead Content Determination
  - PCB Content Determination
  - Use of Recyclable Abrasive
  - Containment
  - Waste Management

http://www.dot.state.mn.us/environment/regulatedmaterials/contractors.html

Planning and Preparation

- Applicators trained by Manufacturer's representative
- Manufacturer's representative available to assist
- Weather considerations



Weather conditions not suitable for painting.

Discussion

- Tips or guidance related to planning and preparation?

Panel Session Topic

Surface Preparation

Chloride Mitigation

Construction Requirements

- Materials
  https://www.dot.state.mn.us/products/paint/bridgestructuralsteelcoating.html

- Surface Preparation – Hold Point
  - Containment, Waste Management
  - Solvent Cleaning
  - Abrasive Blast to SSPC-SP10/NACE No. 2 using recyclable grit
  - Profile range: 2.0 – 4.0 mils (2478)
  - Test for Soluble Salt

Pack Rust Mitigation

- MnDOT Special Provision

Discussion

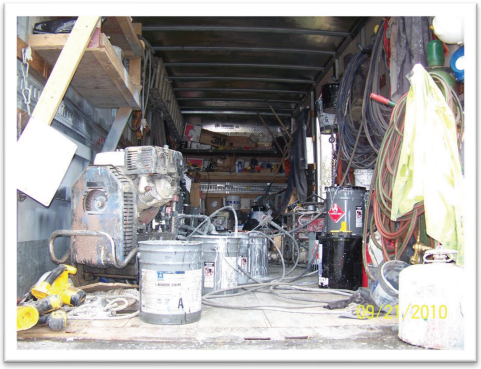
- How do agencies mitigate chloride content?
  - MnDOT is not allowed to use Chlorid wash
  - MnDOT reblasts and retests
- Dry vs. wet surface preparation methods?
- Pack rust mitigation?

Panel Session Topic

Mixing and Application

Construction Requirements

- Mixing
  - Mix in accordance with Manufacturer's instructions
  - Do not thin paint unless necessary for proper application
  - Do not thin paint more than stated in the manufacturer's written instructions
  - Do not think until all parts of the paint kit are thoroughly mixed



Construction Requirements

- Application
  - In accordance with Manufacturer's printed instructions except as stated in the specifications
  - Protect non-painted surfaces
  - Stripe coat
  - Spray apply prime coat to specified dry film thickness (DFT)
  - Spray apply intermediate coat to specified DFT once the prime coat has reached the minimum recoating time
  - Caulk crevices and cavities along the edge of faying surfaces separated by 1/16" or more (except the bottom edge)
  - Spray apply finish coat to specified DFT

Discussion

- Stripe coating processes
- Other tips/guidance for mixing and application?
- Any comments or questions on mixing/application from the group?

Panel Session Topic

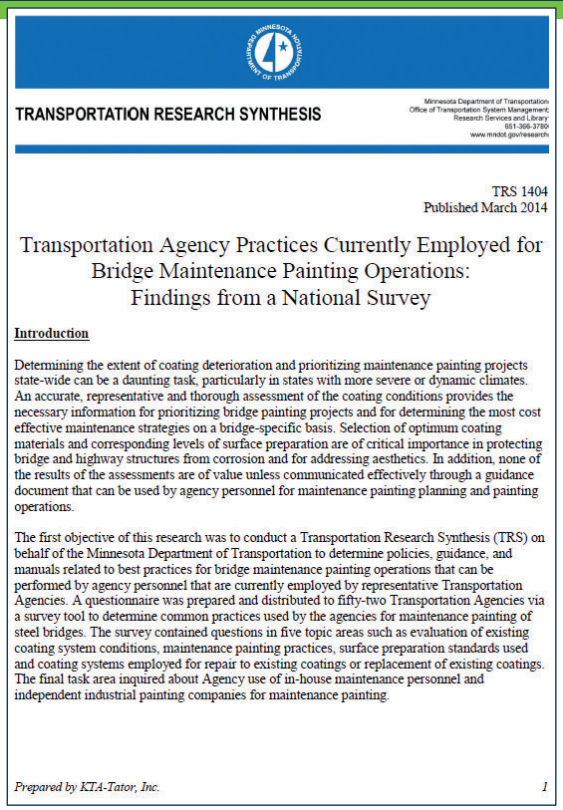
Maintenance Painting

Maintenance Painting

1. Conduct a Transportation Research Synthesis (TRS)
2. Develop a Coating Condition Assessment Guide
3. Identify Best Maintenance Painting Practices
4. Prepare a MnDOT Bridge Maintenance Painting Manual
5. Evaluate Maintenance Coatings at a Test Site
6. Develop a Maintenance Coating Approved Products List

Transportation Research Synthesis

- National Survey of Current Maintenance Painting Practices
  - Coating Condition Assessments
  - Maintenance Painting Strategies
  - Surface Preparation Methods
  - Coating System
  - Use of In-House Painting vs. Contract
  - 42 Agency Respondents
  - www.dot.state.mn.us/research/TRS/2014/TRS1404.pdf



TRANSPORTATION RESEARCH SYNTHESIS

Minnesota Department of Transportation
Office of Transportation System Management
Research Services and Library
651-366-3780
www.mndot.gov/research

TRS 1404
Published March 2014

Transportation Agency Practices Currently Employed for Bridge Maintenance Painting Operations: Findings from a National Survey

Introduction

Determining the extent of coating deterioration and prioritizing maintenance painting projects state-wide can be a daunting task, particularly in states with more severe or dynamic climates. An accurate, representative and thorough assessment of the coating conditions provides the necessary information for prioritizing bridge painting projects and for determining the most cost effective maintenance strategies on a bridge-specific basis. Selection of optimum coating materials and corresponding levels of surface preparation are of critical importance in protecting bridge and highway structures from corrosion and for addressing aesthetics. In addition, none of the results of the assessments are of value unless communicated effectively through a guidance document that can be used by agency personnel for maintenance painting planning and painting operations.

The first objective of this research was to conduct a Transportation Research Synthesis (TRS) on behalf of the Minnesota Department of Transportation to determine policies, guidance, and manuals related to best practices for bridge maintenance painting operations that can be performed by agency personnel that are currently employed by representative Transportation Agencies. A questionnaire was prepared and distributed to fifty-two Transportation Agencies via a survey tool to determine common practices used by the agencies for maintenance painting of steel bridges. The survey contained questions in five topic areas such as evaluation of existing coating system conditions, maintenance painting practices, surface preparation standards used and coating systems employed for repair to existing coatings or replacement of existing coatings. The final task area inquired about Agency use of in-house maintenance personnel and independent industrial painting companies for maintenance painting.

Prepared by KTA-Tator, Inc. 1

Coating Condition Assessments

Rating System	Condition States (CS)			
	1	2	3	4
	GOOD	FAIR	POOR	SEVERE
Steel Protective Coatings • General Paint System Deterioration • General Galvanizing System Deterioration • Galvanized and Painted (Duplex) Deterioration • Unpainted Weathering Steel Patina Condition				
Steel Superstructure Elements Corrosion, Distortion, Cracking, Alignment, Connection				
Section Loss				

MnDOT Coating Condition Assessment Field Guide

Condition States: This guide contains photos of various steel elements in the condition states described below. Use these reference photos to assist with consistently rating the condition of the protective coating (Element 515). A directory of the reference photos is shown on the following page (ix).

Painted Surfaces		Duplex (Galvanized and Painted) Surfaces		Unpainted Weathering Steel Patina	
(1) GOOD: No or very minor deterioration (<0.01% to 0.3% corrosion or defects)	**(2) FAIR** (Touch-up): Minor paint deterioration; Chalking and fading of finish coat. >0.3% to 3% corrosion or defects	**(1) GOOD:** No or very minor deterioration (<0.01% to 0.3% corrosion or defects)	**(2) FAIR** (Touch-up): Minor paint deterioration; Chalking and fading of finish coat. >0.3% to 3% corrosion or defects	**(1) GOOD:** Protective oxide coating is uniform and tightly adhered. Steel is yellow, orange or chocolate- brown	**(2) FAIR** Protective oxide coating has minor deterioration. Steel is chocolate-brown to purple in color; surface may be dusty or granular
(3) POOR (overcoat): Moderate paint deterioration; Finish coat failure (cracking, bubbling, or peeling) - prime coat remains mostly intact. >3% to 16% corrosion or defects	**(4) SEVERE** (remove & replace): Paint system failure Prime coat cracked, bubbling or peeling (steel exposed); >16% corrosion or defects	**(3) POOR** (overcoat): Finish coat failure (cracking, bubbling, or peeling) – underlying galvanizing remains mostly intact. > 3% to 16% corrosion or defects	**(4) SEVERE** (remove & replace): Duplex system failure (steel exposed); >16% corrosion or defects	**(3) POOR** (re-blast or paint): Protective oxide coating has moderate deterioration (small flakes, less than ½"). Steel is black in color	**(4) SEVERE** (re-blast or paint): Protective oxide coating has failed. Large areas of the surface layer may be flaking off

MnDOT Coating Condition Assessment Field Guide

Element: Fascia Beams (View A)
Condition State: 3 (Poor) *>3 – 16% corrosion/defects*

Element: Fascia Beams (View B)
Condition State: 3 (Poor) *>3 – 16% corrosion/defects*

Element: Fascia Beams (View A)
Condition State: 4 (Severe) *>16% corrosion/defects*

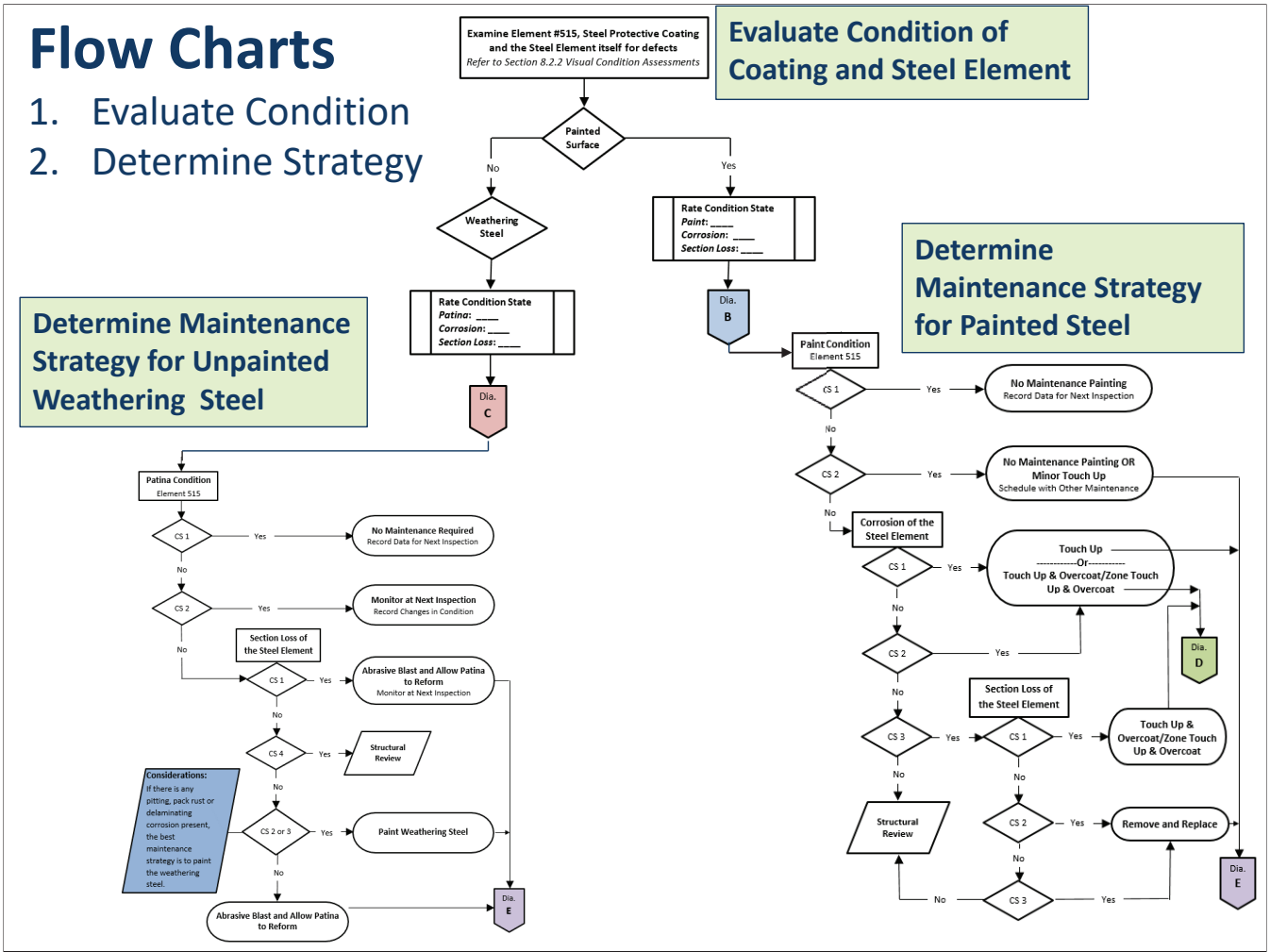
Element: Fascia Beams (View B)
Condition State: 4 (Severe) *>16% corrosion/defects*

Identifying Best Practices

- Bridge Maintenance Manual Field Guide – Painting
- Derived from the Results of the Transportation Research Synthesis

Flow Charts

1. Evaluate Condition
2. Determine Strategy



Bridge Maintenance Painting Test Site

1. **Applied** various combinations of surface preparation methods and coating systems
2. **Evaluated** over a three-year period
3. **Identified** best practices

Bridge Maintenance Painting Test Site

Condition	Action	Surface Preparation	Existing Finish Coat	Compatible Coating
Good	Monitor and re-evaluate at next inspection	SP1 – Solvent Clean	Solvent-based	Solvent or water-based
			Water-based	Water-based
Fair* (localized)	Complete maintenance painting within 24 months	SP1 – Solvent Clean SP2 – Hand Tool Clean	Solvent-based	Solvent or water-based
			Water-based	Water-based
Poor* (localized)	Complete maintenance painting within 12 months	SP1 – Solvent Clean SP3 – Power Tool Clean	Solvent-based	Solvent or water-based
			Water-based	Water-based
Severe	Schedule coating removal and replacement	SP1 – Solvent Clean SP 10 – Abrasive Blast	N/A	MnDOT APL

*If pitting with rusting or anti-graffiti coatings are present, do not perform maintenance painting

Discussion

- Do other agencies utilize in-house forces to perform maintenance painting?
  - At what condition level?
  - Do other agencies have a separate APL for maintenance coatings?

DEPARTMENT OF TRANSPORTATION

Thank you!

MN Paint Spec Requirements for Pack Rust.

B. Construction Requirements

1. Remove pack rust as practical from identified crevices using manually operated or power operated descaling tools;
2. Remove rust scale from plane surfaces (hold point);
3. Notify Engineer when pack rust mitigation is considered completed and ask for approval by the Engineer to proceed to step 4, additional removal may be necessary after review;
4. Clean/prepare the surface per 2478.3D, "Surface Preparation" (hold point);
5. Apply the zinc-rich primer stripe coat and full coat per 2478.3E, "Application of Paint", and 2478.3F, "Paint Coats";
6. Allow primer to cure to a point when the compatible penetrating sealant can be applied per the manufacturer (hold point);
7. Engineer will identify areas to receive the penetrating sealant;
8. Use an appropriate brush to flood apply an approved compatible penetrating sealant per the manufacturer's directions so the product flows and wicks into the crevice, more than one application may be required per the Engineer;
9. Remove/wipe excess product from the surface after flood application (hold point);
10. Apply the intermediate coat per 2478.3E, "Application of Paint", and 2478.3F, "Paint Coats" (hold point);
11. Apply the finish coat per 2478.3E, "Application of Paint", and 2478.3F, "Paint Coats" (hold point);
12. Apply an approved caulk to all faying surfaces previously identified by the Engineer preventing moisture intrusion per 2478.3F.5, "Finish Coats."

Provide the manufacturer's literature for the approved penetrating sealer and caulk in advance of the work being done.

C. Basis of Payment

Payment for materials and labor required to mitigate pack rust and apply penetrating sealer will not be measured but included with Item No. 2478.518, "Organic Zinc-Rich Paint System (Old) for which no direct compensation will be made.