

Session 2 Report Out:

Superstructure Preservation Options

MWBPP Conference
Council Bluffs, Iowa
October 16-18 2012

Discussion Highlights (note main discussion items)

- **In urban areas, access and time is an issue.**
- **How bridges are scoped, funding and bridge specific.**
- **Painting is more of a reactive action instead of a prevention item.**
- **Contractor prefers galv. than painting.**

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

- **Ill. Uses some galv. On structures over CTA due to access over running trains.**
- **Some states do not use weathering steel.**
- **Use of galv. For bearings.**
- **3 coat paint system seems to be working good.**
- **Painting jobs with warranty and send out notices before it is out to check to make sure paint is performing.**
- **Have contractor prequalified for painting under SSPC.**
- **Hire consultants for paint inspection. They are more specialized in that type of work.**
-

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

- **Work with fabricators to provide longer galv. Tanks for bridge girders.**
- **National or regional guidelines for protective systems starting at the design level.**
- **Regional meetings with painting certs.**

Group number: 2	Discussion topic:
-----------------	-------------------

<p>Discussion Highlights (note main discussion items)</p> <ul style="list-style-type: none"> • <u>Leading Question No. 1</u> – Larger agencies have more resources and tend to apply their larger pool of resources to a large inventory of bridges. This approach results in one size fits all approach. Larger projects set up as individual projects/contracts and smaller projects tend to be bundled but both sizes of projects are determined from a programmatic approach. Exceptions to this are when a rehab project, emergency project, etc... could include or requires coating a bridge superstructure. In these circumstances the project that would have been a separate preservation project is just included into the rehab or emergency project. Agency size seems to determine the approach. Smaller agencies have fewer resources and tend to either use the state approach as a model for convenience or have to engineer a solution to avoid additional cost for maintenance or another coating project. There is not enough information to available or collected and reported on to determine the effects of only using a one size fits all approach versus an engineered solution for each structure. The lack of information keeps from determining cost effectiveness. • <u>Leading Question No. 2</u> – Multiple agency current uses were given and are summarized below <ul style="list-style-type: none"> ○ One agency has moved away from coating steel structures and using weathering exclusively and galvanizing on miscellaneous structures ○ One Agency does not do a lot of painting or use coatings at all ○ Other Agencies are using painting, weathering steel and galvanizing. The majority of the projects are using just paint. Other options are not being readily used because of lack of information for other options, contractor familiarity with specifications and application techniques and program approach to preservation is setup to budget for painting due to comfort ability and known cost. <p>Expanding the use of these options could happen with specification development and innovative contracting methods to avoid poor materials, inspection and contractors that happen as a result of low bid process. Specifications need to address also defined limitations of the application due to equipment and practical use.</p> • <u>Leading Question No. 3</u> – Yes regional specification or standards would provide a huge benefit but agencies are not staffed to develop new or innovative specifications and standards. Commercial industry is continuously sought after for input to development of specifications or standards by state and local agencies and should be consulted for this effort as well. <p>Notable applications or methods recommended for a regional specification are summarized below;</p> <ul style="list-style-type: none"> ○ One application is the sealing and then painting or just painting of concrete girders and pier caps at joints. • <u>Leading Question No. 4</u> – Most of the agencies use contractors rather than state crews for the application of coatings. Ran out of time to discuss

<p>Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)</p> <ul style="list-style-type: none"> • Develop a guide on the available options with limitations, benefits and other criteria to help provide guidance on which coating could be provided for the structure for the site conditions to move away from a one size fits all approach. • MWBPP should work with states and fhwa to develop a program that fosters innovation and does not penalize states or local agencies. Agencies may want to use a limited number of products or contractors to develop more customized or engineered solutions for structures. Agencies are not necessarily the subject matter experts on the available options and by extension could not develop innovative solutions. • MWBPP should reach out to the commercial industry for specification development. The commercial industry works with multiple states and has more broad experience for the development of regional or national specification. • More important than regional or national specifications for materials and applicvation information on contracting methods to hire contractors should be provided. This would be dependent on the funding and the applicable laws but available methods should be provided. Some states are allowed to use best value rather than low bid and other state are allowed to setup on-demand contracts where work can be issued via a task order between multiple on-demand contracts. The other options could be specified to include inspection, warranties, etc....

Group number: 3

Discussion topic:

Discussion Highlights (note main discussion items)

- Environmental concerns with paints
- Identifying bridges for Over-Coating
-

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

- Complete removal of initial coating for repaint
- Use of Zinc Primer

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

- Data base for sharing of experience and information
-

Discussion Highlights (note main discussion items)

- **Scoping of paint projects:**
 - 1. Indiana – Program New painted steel bridges for total re-coating at 25 years**
 - 2. Indiana - \$7 M paint budget, dictates bridge candidates**
 - 3. Nebraska – Painting Concrete bridges at time of construction**
 - 4. Michigan – New bridges are painted, moratorium on weathering steel (poor historical performance due to environment).**

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

- **Michigan – Inspectors take extensive photos of susceptible paint zones to aid scoping**
- **Minnesota – District provides maintenance spot painting with standard specifications to work with their resource agencies to obtain permits**
- **Only allow bids from qualified bidder list**
- **Michigan – Performance Warranty imposed on contractor**

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

- **Painting Decision Matrix (IN –KTA Tater consultant to assist in candidate selection and coating selection, and provide inspector training).**
- **Provide Training for field inspectors for preparation and coatings**

Group number: 5

Discussion topic: paint preservation

Discussion Highlights (note main discussion items)

- **Condition based scoping -**
- **Limiting factors – location, future plans**
- **There is a vast amount of different products. Need a data base on different systems and manufactures.**
- **Two coat system for new bridges (2 states) and one for existing**
- **Three coat system for existing (3 states) and one state all painting**

Spot painting – 5 year duration

Zone painting – looking for a 12 to 15 year

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

- **Extensive use of weathering surface**
Painted beam ends of weathering steel.
Limit the location of weathering steel.

There appears to be a lack of dedicated staff to address paint related issues.
Need specifications for the what in the what, where, and when.

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

-

Discussion Highlights (note main discussion items)

- Preparation issues have caused premature failures.
- Overcoating has basically been discontinued since the 1990's.
- Iowa has had issues with spot painting and has discontinued spot painting. The feathered edge of the spot painted area is difficult to prepare properly.
- Inspection has been an issue so most have gone to consultant inspection.
- Painting frequency is condition based.
- Most states no longer have paint crews and use contractors for painting.
- Some states will do spot painting with their own crews.
- A national specification may be too difficult because of differences in state environmental regulations and disposal requirements.
- Weathering steel is being used more often in Iowa. The weathering steel is washed on an annual basis and steel in areas that get snow mixed with salt sprayed on the exterior girder will be painted.
- All states think they would allow metalizing, galvanizing, or weathering steel.
- Iowa has a fund that is dedicated to painting each year.
- Projects are normally developed based on condition.

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

- Oklahoma will be including a paint element in there inspection practices in the near future.
- Weathering steel should be washed on a regular/annual basis to limit chloride contamination.

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

-

Group number: 7

Discussion topic:

Discussion Highlights (note main discussion items)

-

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

- Missouri scopes action on a case by case including overcoating, total removal
- Moving towards more localized painting vs total removals
- Galvanizing at time of construction (limited)
- Everyone is using a programmatic standard product list rather than engineered solutions
- Low tech coatings (high ratio calcium sulfate) that requires minimal surface prep and environmental friendly with low costs but is needs to be done prior to chloride contamination
- Recoat at 3-5% percent failure
- Generally not required for weathering steel-maybe under joints
- The key to reactive maintenance is surface prep. and removal of chlorides
- Painting of concrete exposed to chlorides is highly recommended-high quality sealers are also acceptable
- National specifications would be difficult as regional environmental demands are highly variant
- Most states are using weathering steel
- Flame spraying, metalizing, galvanizing is very limited
- Most all painting is contracted out. Inspection is accomplished by state forces on small jobs and contracted for larger ones.
- Specifications for surface prep would be helpful-feasible on a national level
- Most painting activities are condition based

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

- Iowa is looking at needs for washing weathering steel in area of chloirede contamination

Discussion Highlights (note main discussion items)

Question 5:

- **Local bridges – little or no coating preservation or replacement**
- **KDOT – bonding issues between top coat and original coat on a few bridges**

Question 4:

- **NDOR, KDOT, and IDOT – condition based scheduling/programming currently**
- **NDOR, KDOT, and IDOT – use contract forces for work and primarily in-house inspectors for QC (occasional use of consultants for QC)**

Question 3:

- **Regional specifications with climate and environmental variables**

Question 2:

- **KDOT, NDOR and IDOT – weathering steel predominantly – beam ends painted**
- **Some issues with weathering steel where overtopping is possible or drainage features poorly detailed**

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

-

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

- **Need better education of bridge inspectors – how to properly evaluate various coating systems and make appropriate recommendations**
- **Construction inspectors – need more education on surface preparation and coating evaluation**
- **Need more industry collaboration in technical specifications**
- **Consider a new AASHTO sub-committee for Bridge Coatings**

Discussion Highlights (note main discussion items)

- Local system does not currently have much need for painting – the need will probably arise in the future.
- Nebraska uses weathering steel almost exclusively on their steel structures.
- South Dakota uses weathering steel in some locations
- Minimal use of galvanizing in IA, NE, and SD – mainly used on secondary members or ancillary structures.
- Painting is by almost exclusively by contract. SD noted much better outcome when utilizing third party inspection.
- IA and NE have specialized paint employees within their bridge offices and develop specifications based on their expertise.
- IA has a regular bridge washing program and separate painting program. NE and SD did not mention such a system in place.
- Environmental aspects are an increasing obstacle to complete projects.
- Varying specifications for different locations on the structure or different locations of bridges. Seems that there is no chance to reuse a previously used spec.
- Stainless reinforcing used in a few projects throughout states, but not in structural members.

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

- Weathering steel seems to be a good choice thus far.
- Third party inspection can improve the end product.
- Specialized paint employee within the DOT seems to work well.

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

- Sharing specifications between states would be helpful.
- Becoming more aware of the emerging technologies and how they may be beneficial to current practices.
- Encouraging contractors to try new systems and application methods.
- Further knowledge on metalizing was requested.

Discussion Highlights (note main discussion items)

- **Topic 5: KY had failure of due to calcium sulfinate manufacturing error. SD had some incompatible overcoating that caused undercoat to peel. NE paints at redeck/rehab with both zone and complete removal and repaint so this question is not applicable. NE does not currently do Element Level Inspection and hopes the move to Element level will suffice for identification of cost effective candidates. NE does not have data records of paint on existing bridges. SD and KY think Element Level may provide sufficient info to identify painting candidates but have not done a lot of scoping based on element level data and both have paint inventory.**
- **Topic 4: NE uses contractors to apply and state to inspect. KY and SD uses contractor to apply and 50% state 50% contractors to inspect. Adherence to specs unknown by all. Training of inspectors should be considered as part of a program.**
- **Topic 3: Regional specifications would be desirable if they could encompass the diversity of steel types, paint systems, and environmental demands. This could be beneficial to industry in that it would provide a market with known standards and could promote cost effective innovation.**
- **Topic 2: NE, KY, SD are using weathering steel and it is performing well. KY paints some weathering steel. NE representative does not know of much recent preservation of steel superstructure, but future zone and complete painting is planned by contract forces. NE, KY, SD all galvanize some small components. SD galvanizes cross-frames.**
- **Topic 1: KY has a paint programmer who has a prioritizes candidates. KY does group lettings of multiple bridges in close proximity. SD does corridor projects of about 6 to 10 bridges. NE is heading toward most cost effective; first selecting large bridges with small amount of deterioration that can be arrested with early intervention. KY uses a 3 coat system for all bridges, but projects include other work that is site specific. NE does site specific due to variety of existing systems. SD is has two paint systems and uses each in its place. If one system fits all situations it would seem financially advantageous and KY thinks it has cost effective for them.**

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

-

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

- **Would like to hear debate about the cost effectiveness of galvanizing versus painting versus weathering steel for bridge components including piling**

Group number:12

Discussion topic: Session Two

Discussion Highlights (note main discussion items)

- **Discussion on Galvanize Steel and painting of Concrete**
- **Some discussion of Preservation Agreements**
- **Some owners are staying away from bridge painting because of environmental regulations and ever-changing rules and uncertainties.**
- **Some Lead Abatement requirements from potentially OSHA and other worker related protections make repaint coordination a more difficult process.**
- **Local owners tend to use State DOT Specs for painting.**
- **Some discussion on relatively new paint systems (re-paint) that have had issues.**
- **Weathering Steel was discussed. The right environment is critical for use. FHWA guidelines are helpful for determine appropriate application of weathering steel bridges.**
- **Some discussion on the current availability and status of qualified workers. One concern is that the experienced workforce of the past is not as available or consistent**

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

•

Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

•

Group number: 13

Discussion topic: Painting, Galvanizing, Weathering steel

Discussion Highlights (note main discussion items)

- **Painting- Ne does very little, proposing to do more. MI does do painting, typically zone. IA has a painting program and presently is zone or repaint as appropriate. Local entities typically do not paint.**
- **Weathering steel- NE-uses. MI-has a moratorium on use. IA-uses a lot of it.**

Notable Practices (Note practices, strategies, policies, products, etc that are working well)

- **Use of weathering steel.**

-Action Items (Note recommendations for research, leadership, communication, facilitation, technical assistance, etc)

- **Work closely with industry.**
- **Develop regional standards, specifications, paint systems and inspector qualifications.**
- **Develop a process. – Start with training to understand corrosion.**
- **Bridge the gap between bridge people and material's people.**