

Peer Exchange Report Out: Paint & Coatings



**Southeast Bridge
Preservation Conference
Norfolk, Virginia
2013**

Discussion Highlights (note main discussion items)

- **Location of the county can affect costs (ie union vs non-union), types of painting needed, and frequency.**
- **Agencies in group did not make use of spot painting – mainly a replacement option for the southern-most states**
- **Northern states in the group utilized more painting maintenance options**
- **Paint types can be affected by region of the country – heat and humidity can affect curing times**
- **Pack rust options – 100% solids epoxy penetrant sealers used to seal pack rust**
- **Different levels of the use of weathering seals**

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

- **Spot painting as soon as corrosion visible the use of spot painting will give you the best life cycle cost – extend time between complete coating replacement**
- **Stripe coat usage**
- **Use of proper inspection to ensure proper application of paint systems – contract inspection forces because state forces are not experienced – one of the keys to getting maximum paint system life**
- **Metalizing – provides galvanic protection – coating life up to 50 years – life cycle costs where biggest benefit is realized – costs are similar to other paint systems**

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

- **Development of regional based specifications for paint and paint application – provide testing and verification of paint systems – better idea of what is being used and where and what works best**
- **Provide information to states on options for funding large painting options – large cost acts as a limitation in considering certain paint options**

Discussion Highlights (note main discussion items)

- WVDOT / NYCDOT Overcoating used in limited applications
- LADOT – more funds expended for Preventative Maintenance, including Paint Sys, in recent years
- Preventative Maintenance – increased attention due to both Federal Funding assistance and better understanding at Agency level of best practice.
- MOOG - Underbridge equipment manufacturer supports painting contracts. Increased liability concerns, requirements for operator training & certification. Advantages/disadvantages of equipment ownership vs. lease / hire.
- TermaRust representative – discussed preparation efforts blast vs. power-wash for impacted rust areas prior to product application. WV and VDOT have trial applications.
- Weathering Steel is used by DOT's.

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

- Practices WVDOT Combines Washing with Paint Contract – Performs Spot, Zone, Full Re-Painting – operates under Fed funding as well as solely State Funding – Selection process – District Bridge Engrs provide annual candidates by priority
- VDOT – HR District – Combines coating assessment with deck/joint evaluation – GCR 5 or 6, but use element level data.
- LADOT – Element level data collection.
- WVDOT – Coating chloride testing on every painting project. Repeated washing and testing to ensure level of chloride level is met prior to repainting. Goal is not complete elimination, but get down to an acceptable level.

Discussion Highlights (note main discussion items)

- Painting- Spot vs. Zone Vs. Full Replacement
- Utilizing experts
- Specifications

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

- Containment and MOT are the expensive portions of the painting job. Spot painting and zone painting can mitigate these costs.
- Our group has limited painting experience.
- Utilizing experts in paint is important when determining coating life and best systems for use.
- National specifications are tough if not impossible due to environmental differences. Regional specifications are a possibility but still difficult due to local geography.
- Specifications on preparation are most important and less important on the actual system until get up to full replacement.
- Generally, 2 and three coat systems are most applicable unless in a low aesthetic area.
- FL & VA are moving to weathering steel as much as possible. Co Houston is having good luck with their inventory.
- Debris removal, detailing, and general maintenance can be big issues for weathering steel.
- GA is trying to utilize concrete as much as possible for superstructures.
- When to paint can depend upon local considerations i.e. tourist locations or high visibility areas. But generally should look at the paint condition and available budget.
- Performance based specifications for paint and requiring minimum level of performance at the end of the term but allow the contractor to choose his products/system. Contractors can be resistant. Currently, FL is doing a DB pilot project to explore this idea. Similar to ideas being used in pavement.
- Galvanizing bridges is being used in VA for short span, local roads. But is predominately used in traffic signals and high mast lighting.

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

- Investigate Performance based contracts for painting.
- Investigate galvanizing bridges.
- Promote weathering steel

2. Improved Specifications

Problems

Chloride detection

Sealing in chlorides by painting over it

Remediation – thorough cleaning, pressure washing, chemicals available to make the chlorides more soluble

Virginia DOT has tightened their spec's

SSPC, NACE training are very useful

Tennessee DOT has started with third party inspections by coating inspectors

General consensus is coating inspections are beneficial and positive reception to the new NBE's which include coating as a separate Element

3. Should we work for a nat'l or regional spec?

Good idea, but may be difficult to cooperate among the states

Many spec's were written many years ago and are tweaked for a particular job

Perhaps a general regional spec that each state can tweak

Should be project-specific specifications

Would be a good idea for a warranty/guarantee on overlays, painting, etc.

Warranty should pertain to responsibility for paint company and the parties who apply it

Inspecting a contractor's painting work can cover them and the State... it needs to be emphasized that it keeps all parties safe

Discussion on weathering steel –

Georgia uses a lot of pre-stressed concrete members, less steel these days

VDOT is doing the same

Tennessee DOT uses weathering steel throughout the state

Discussion Highlights (note main discussion items)

Spot Painting

- **Does anyone do this as a practice; concensus is no**

Aesthetics

- **Driven by politics, not by engineering**
- **Some colors do not hold**
- **Application of a clear coat over topcoat can help protect the color**

Paint Durability

- **Training and qualifications of the inspectors**
- **Suitability of paint system for the structure**
- **SSPC certifications for paint contractors**

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

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

Discussion Highlights (note main discussion items)

- **Spot painting – Texas – Small area may not need the same environmental requirements**
- **Paint specs – Let state have std template to expedite process**
- **Expand use of weathering steel – expand use where applicable**
- **Std procedures OK but one size does not fit all**
- **Aesthetics might be needed for some bridges**

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

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

Discussion Highlights (note main discussion items)

- **Are we using the "Best"**
 - **VDOT Research**
 - **3 Coat System**
 - **Zinc System**
 - **30 Yrs Data**
 - **Research painting in other "Industries"**
 - **Holds up well for new coating and recoating if prep is performed correctly**
 - **Florida**
 - **1 Coat inorganic better**
 - **NASA tested**
 - **Expect 30 plus years**
 - **Less expensive**
 - **Same as VDOT except for overcoat for aesthetic paint jobs**
- **Issues**
 - **Waste holding especially for lead based**
 - **Inspectors need to be qualified**
 - **Inspector needs to be well trained**
 - **Specs need to be "tight"**
 - **When do you spot, zone, replace**
 - **Combine decision with maintenance such as joint replace or removal to stop part of problem**
- **Weathering Steel**
 - **Grade separation overpasses perform poorly**
 - **Salt spray**
- **Polysoloxane – metalization - fluoropolymer**
 - **High performance system for the future**
 - **VDOT investigating metallization**
- **Estimation**
 - **Issues with SF vs LF**
 - **NBI inspection does not work well with maintenance**
 - **Challenge to get SF costs**
 - **Historical cost**
 - **Large number of environmental variables**
 - **Site dependent**
 - **Service life**
 - **MOT**
 - **Cost MOT**
 - **Lead present**
 - **Current interest rate**
 - **Complexity**
 - **Deteriation curve**
 - **Area dependent**
 - **De-icing**
 - **One size does not fit all**
- **AASHTO – 75 year Bridge Life**
 - **Need system that limits number of times structure has to be "coated" in field**
 - **Field coating not the same as shop coating**
 - **Harder to ensure proper surface prep in field**
 - **Issue with shop prep is moving of members to field – could cause damage**
- **Historical Data**
 - **A lot of historical data is based on poor adherence to specs, poor field practices, etc.**
- **Schedule**
 - **Major issue – painting done at end of contract when contractor is trying to finish on schedule**
- **Funding**
 - **Many needs – few \$\$**

Discussion Highlights (note main discussion items)

- **Surface Preparation**
Removal of soluble salts is very important for durable maintenance coatings.
- **Qualifications**
Requiring certifiable qualifications helps ensure qualified contractors as well as qualified inspectors.
- **Weathering Steel**
The best paint system is no paint system.
- **Metalizing**
What is the anticipated service life for metalizing.
- **Galvanizing**
Is this a viable alternative.
- **Assessment**
What is need for paint assessment?

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

- **VDOT Weathering Steel**
VDOT chooses weathering steel as the first option for steel designs where it is consistent with FHWA guidelines.
- **Qualifications**
VDOT requires SSPC certifications for contractors and inspectors for paint projects. They also specify hold points during the project for completing quality control testing.

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

- **Create a regional database of coating and contractor performance.**
- **Scan international preservation painting practices**

Discussion Highlights (note main discussion items)

- **Complete Removal and Recoating**
- **Dates when lead paint was discontinued**
- **Extent of section loss after blast cleaning**
- **Coating of concrete beam ends and substructure caps**
- **Sealing of cracks in prestressed beams with silane**
- **Three coat paint systems**
- **Use of Weathering steel**
- **NCHRP Project 14-30**
- **SSPC TU-3 Procedure to evaluate for over-coating**
- **Aesthetics**
- **SEBPP Paint Group Procedure**
- **Construction Inspection**
- **Contractor certification**
- **Surface Preparation – SP10**

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

- **Review extent of section loss after blast cleaning and perform structural steel repairs as needed during project – include pay items for structural steel repair in contract**
- **Epoxy coating of concrete beam ends and substructure caps under joints**
- **Training for paint construction inspectors**
- **SSPC QP-1 and QP-2 Certification for contractors**

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

- **Develop regional model specification for bridge painting**

Discussion Highlights:

- **Paint Study – VDOT – Final Draft**
- **Therमारुस्ट Applications**
- **Installing Process – Good Specs - Quality Contractor – Inspections are important**
- **Warranty Issues -**
- **Surface Preparations**
- **Compatibility between paint coatings**
- **Training to Inspectors – Come out of the truck to inspect**
- **Evaluation – Spot painting Vs. Repaint**
- **Lead Paint Issues**
- **VOC laws...**
- **Over Coating 10 – 12 Years life**

Notable practices:

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Action Items:

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Discussion Highlights (note main discussion items)

- **SPOT/ZONE/OVERCOATING**
- **WEATHERING STEEL**
- **APPLICATION**

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

- **Not many instances of spot painting**
- **Due to containment costs having decreased significantly over the years, overcoating is increasingly giving way to total removal and painting.**
- **Not many uses for galvanization.**
- **Significant use of Weathering Steel and zone-coating under deck joint areas.**
- **Source of corrosion is critical in remediating corrosion, is it chlorides, sulphates, nitrates, etc.**
- **QA/QC activities crucial. Most DOT's don't have qualified inspectors in-house, therefore, most QC activities being turned over to third parties.**
- **No standard procedure to help determine proper paint decision. Will welcome tool/software to help substantiate decisions.**
- **Mostly use inorganic systems, but recently accommodating organic systems.**

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

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