Spot Painting to Extend Highway Bridge Coating Life

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Presentation Based on NCHRP 14-30
Addressing Spot Painting

- Project performed by the Kentucky Transportation Center
  - Study completed in February 2018
- Study objectives were to
  - Develop a methodology to identify suitable spot coatings
  - Provide guidance for state highway officials to deploy spot painting
Laboratory and Field Work
Key Issues Related to that Work

- Assess the advantages & limitations of generic coatings/systems
- Assess non-traditional coatings/materials for spot painting
- Summarize user friendliness of spot coatings
- Identify service conditions affecting coating application & performance
- Recommend a selection procedure for spot coatings over various substrates
- Identify worker safety & environmental issues
- Determine service performance of spot coatings over existing coating types
Guidelines for Spot Painting

Decision to Use Spot Painting → Coating Selection → Field Deployment → Preparation & Application → Inspection & Demobilize → Completed Project

Compliance with Worker Safety and Environmental Regulations
Guidelines for Spot Painting of Steel Bridges

- Site Assessment
  - Coatings condition
  - Micro/macro environment
  - Identifies process
Guidelines for Spot Painting of Steel Bridges

- Identifies process
  - Surface prep
  - Coating materials
  - Application
  - Worker safety
  - Environmental concerns
  - Quantity/location of work
Site Assessment
Site Assessment

Coating Failure Exposing Rusted Mill Scale

Corrosion of Beam End, Cross Frame and Bearing

Inter-Coat Failure
Coatings Selection

- Coatings for SSPC SP 3 power tool cleaning
  - Barrier coatings (epoxies & polyurethanes)
  - Inhibitive coatings (alkyds & acrylics)
- Single-component coatings
  - User friendly
- Multi-coat systems are best for bold exposure
- Single coatings can be used in sheltered locations
Guidelines for Spot Painting (Field Mobilization)

- Identifying access restrictions and equipment
- Locating suitable staging/parking areas
- Determining traffic control requirements
- Develop a traffic control plan
- Identifying potential conflicts
- Obtaining equipment and supplies
Guidelines for Spot Painting
(Field Deployment)

- Establishing traffic control (if necessary)
- Initiating painting support activities in the staging area
- Creating a waste storage site (if necessary)
- Performing necessary site clean-up
- Placing access equipment at repair sites
- Establishing work areas
Guidelines for Spot Painting (Surface Preparation)

- Solvent Cleaning
- Hand Tool Cleaning
- Washing/Soluble Salt Treatment
- Power Tool Cleaning
Surface Preparation
Guidelines for Spot Painting (Coatings Application)

- Monitoring Conditions
- Coating Preparation
  - Mixing/Agitation
- Coatings application
  - Application method
  - WFT/DFT
  - Cure
Coatings Application
Coatings Application
Guidelines for Spot Painting
(Quality Management)

- Inspection
- QC
- QA
Guidelines for Spot Painting (Inspection)

- Inspection Hold Points
  - Pre-surface preparation
  - Post-surface preparation
  - Coating conditions for application (each coating)
  - Coating application (each coating)
  - Final inspection
Inspection
Guidelines for Spot Painting (Demobilization)

- Site Clean Up
- Waste Collection and Disposal
- Removal of Supplies and Equipment
- Removal of Traffic Control
Demobilization
Guidelines for Spot Painting (Worker Safety)

- Be aware of both Federal and State Worker Safety Regulations
- Primary hazards posed by spot painting
  - Fall Protection
  - Chemical Exposure
  - Respiratory Protection
  - Disturbing Lead-Based Coatings
Guidelines for Spot Painting (Environmental)

- Air
- Water
- Soil
Guidelines for Spot Painting (Environmental)

- Wastes generated by spot painting
  - Wastewater from washing operations
  - Airborne particulates from surface preparation operations
  - Miscellaneous solid wastes from cleaning and painting operations
  - Spent solvents and coatings/containers
  - Paint chips
  - Used respirator filters and disposable clothing

- Hazardous Materials in specific concentrations must be contained and properly disposed
Thank You

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