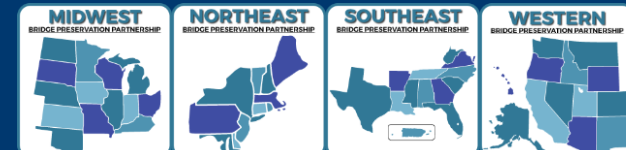


# BRIDGE PRESERVATION CONSTRUCTION QUALITY WORKING GROUP

NBPC, Salt Lake City, UT  
September 11, 2024  
Tim Sherrill - NCDOT



# When Are The Calls?

Fourth Thursday of each month

11:00 a.m. Eastern Time

# Frequent Participants

Fouad Jaber – Nebraska DOT

David Dobson - Oregon DOT

Dick Dunne – GPI

Merritt Hanson – KwikBond

Glen McAninch - Virginia DOT

Joe Navarra – Maryland DOT

Adam Hales – Phoscrete

Pat Martens – Bridge Preservation and Inspection Services

Doug Beer – TxDOT

Nancy Huether – TSP2

Wisconsin, Utah, Indiana DOTs

- Monthly calls for the Bridge Preservation Construction Quality Working Group started in late Summer/ early Fall 2019.
- Not quite sure how to proceed for many of our first calls (what should we focus on?)
- Calls fell off during COVID and we did not do much until coming back in 2021 or 2022.
- Survey was sent out for Agencies to provide feedback on their preservation practices and methods that were presenting difficulties or were particularly good in regard to construction quality.
- Fouad Jaber got control of things, and we started focusing on good design details and specifications for bridge preservation activities.

- We worked to share information between agencies on various operations – thin polymer overlays, polymer concrete overlays, hydro-demolition, joints, deck patching, etc.
- We did a deep dive into polyester polymer concrete overlays, spending multiple calls discussing good and bad specifications between Oregon, North Carolina, Nebraska, KwikBond. Resulted in white paper on polyester polymer concrete (still in draft).

# Where do we go from here?

- survey topics
- other deck overlays
- painting or coating for steel and concrete
- concrete repairs for delaminations/ spalls
- prestressed or post-tensioned concrete repairs, preservation
- cathodic protection
- training for construction inspectors

# CONCRETE REPAIRS

## GENERAL

- The location and extent of repairs shown on the plans described herein are general in nature. The Engineer shall determine the extent of removal in the field based on an evaluation of the condition of the exposed surfaces.
- No more than 30% of circumference a round or square column or 30% of the bearing area under a beam shall be removed without a temporary support system and approval from the Engineer.
- No more than 10 linear feet of column height removed without approval from the Engineer.

## SURFACE PREPARATION

- Prior to concrete removal, introduce a shallow saw cut, minimum 1/2" in depth, around the repair area at right angles to the concrete surface. Sawcut should be located a minimum 2" beyond the perimeter of the deteriorated concrete area to be repaired.
- Remove all concrete within the sawcut to a minimum depth of 1/2".
- If concrete removal exposes reinforcing steel, remove all deteriorated concrete 1" below the reinforcing steel with a 17 lb (maximum) pneumatic hammer.
- Abrasive blast all exposed concrete surfaces and existing reinforcing steel in repair areas to remove all debris, loose concrete, loose mortar, rust, scale, etc.
- If there is more than 10% reduction in the rebar diameter, splice in and securely tie supplemental reinforcing bars.



- Thoroughly clean the repair area of all dirt, grease, oil, or foreign matter, and remove all loose or weakened material by abrasive blasting before applying concrete repair material.
- Follow all abrasive blasting with vacuum cleaning.

## APPLICATION AND SURFACE FINISH

- Apply repair material to damp surfaces only when allowed by repair material recommendations and approved by the Engineer. Use a blowpipe with only oil-free compressed air to facilitate removal of free surface water.
- When surface preparation is completed, mix and apply repair material in accordance with the Standard Specifications and/ or repair material manufacturer's recommendations.
- Maximum size of aggregate shall not exceed  $2/3$  of the minimum depth of the repair area, or  $3/4$  of the depth of excavation behind the reinforcing steel, whichever is smaller.
- Unless otherwise required by the repair material manufacturer, apply bonding agent to all repair areas immediately prior to placing repair material.

- Repair areas shall be formed unless otherwise approved by the Engineer. Form and finish all repaired areas, including chamfered edges, as close as practicable to their original “As Built” dimensions and configuration.
- Cure finished Class A concrete repair material by maintaining 95% relative humidity at the repair and surrounding areas by fogging, moist curing, or other approved means for seven (7) days. Cure polymer modified concrete repair material in accordance with manufacturer’s recommendations.

## REPAIR MATERIAL OPTIONS

- Polymer Modified Concrete Repair Material

Repair material shall be polymer modified cement mortar for vertical or overhead applications and shall be suitable for applications in marine environments. Material shall be approved for use by NCDOT.

- Class A Concrete Repair Material

Repair material shall be Class A Portland Cement Concrete as described in Article 1000-3 of the Standard Specifications.

QUESTIONS?  
THOUGHTS?  
PLEASE JOIN US!  
THANK YOU!