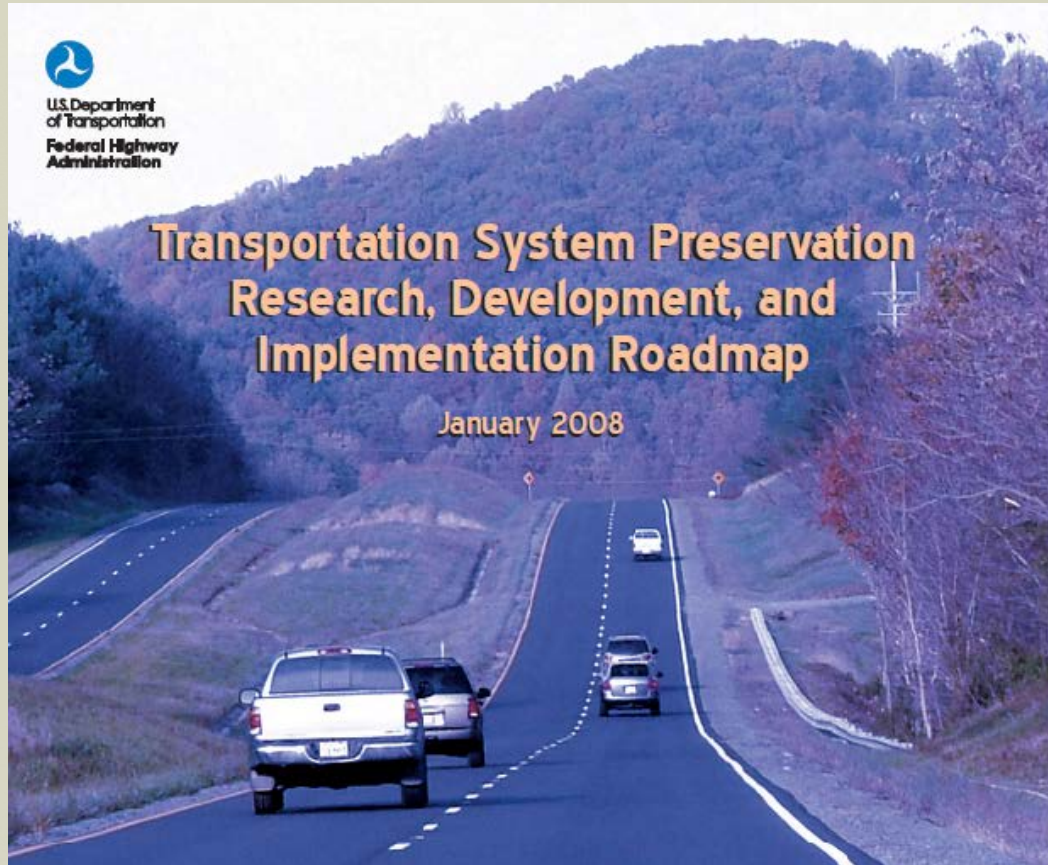




Report on
Session 2 – *Bridge Preservation Research Needs*
from the
NEBPP 2015 Annual meeting



Session 2, Part 1



2008 Research Needs Statements

Bridge	25
Pavements	43



Session 2 Organization

3 parts (objectives):

1. Review/discuss/rate research problem statements from 2008 roadmap
2. Brainstorm and identify key research topics important to the NE states
3. Discuss overall research priorities and possible NE research needs working group



Bridge Problem Statements

Bridge Topic Areas	# of Needs Statements		Statement Details
Asset Management	7		Title
Decks & Joints	4		Background
Superstructures	5		Objective
Substructures	5		Tasks
Performance of Strategies & Treatments	2		Deliverables
Project Selection	2		Estimated Cost
			Expected Duration



Recent Developments in Preservation

- Bridge Preservation Partnerships formed and now meet annually to
 - Exchange information; discuss issues
 - Establish working groups, develop products and tools
 - Conduct small research activities; e.g., small movement joints
 - Identify research priorities
- Each includes a strong involvement by a diverse and active industry group



Recent Developments in Preservation

Groups actively promoting bridge preservation research:

- AHD37 – Full Committee status at TRB
- ASSHTO SCOM – Bridge Working Group
- ASSHTO SCOBS – T-9, T-18
- FHWA BPETG- FHWA/DOT/Industry/Academia

TSP2 Preservation Research Database created ~ 800 bridge preservation research studies included



www.pavementpreservation.org



NATIONAL CENTER FOR PAVEMENT PRESERVATION



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The National Center for Pavement Preservation (NCPP) was established by Michigan State University and FP2, Inc. to lead collaborative efforts among government, industry, and academia in the advancement of pavement preservation by advancing and improving pavement preservation practices through education, research and outreach.



[TSP2 Pavement & Bridge Partnerships](#)



[Equipment Management Partnership](#)



[NCPP Hosted Conferences and Meetings](#)



[Technical Video Library](#)





Agenda - Session 2, Part 1

	SESSION 2 – Bridge Preservation Research Needs	Moderator: Richard Dunne, MBI
8:00 – 8:20	2008 Bridge Preservation Research Roadmap Outline Breakout Group Objectives	John Hooks, NCPP@MSU
8:20 – 10:00	Adjourn to Research Breakout Groups by Topic	All
Pt. 1 Roadmap Statement Review/Rating ----- Pt. 2 Research Needs Brainstorming	Topic Preservation of Bridge Decks Preservation of Bridge Joints Preservation of Bridge Superstructures Preservation of Bridge Substructures Asset Management Incorporating Bridge Preservation	Facilitators M. Stenko & R. Thornton T. Shenton & J. Hawkins B. Foster & K. Irving S. Johnson & D. O’Shea J. Edgerton & J. Bruner
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2008 Transportation System Preservation Research, Development, and Implementation Roadmap

Bridge Preservation Research Problem Statements

for the

2015 NEBPP Meeting

Session 2

Bridge Preservation Research Needs

Research Area: **Preservation of Decks**

Contents

Introduction.....	3
Summary Table of Bridge Deck Preservation Research Topics	3
Preservation of Bridge Decks	4
Determine the Recommended Practice and the Life-Cycle Cost Savings for Using Thin Overlays to Preserve Concrete Bridge Decks.....	4
Determine the Recommended Practice and the Life-Cycle Cost Savings for Using Sealers to Preserve Concrete Bridge Decks.....	5
Best Practices for Preserving Bridge Decks.....	7
Performance Assessment of Existing Concrete Structure Corrosion Prevention/Mitigation Technologies	9
High Durability Coatings and Sealer Materials for Structural Concrete.....	10



2008 Roadmap Research Needs Statement Evaluation Sheet- **Preservation of Bridge Decks**

Considering your perspective and understanding of the current state-of-the-art and the state-of-the-practice of preservation of bridge decks, please rate the following studies as to their relevance/importance and as to the urgency of completing and implementing the research.

For example, rate the problem statement (circle the corresponding score) according to how urgent it is to address the need statement is; a score of 1 equals a low level of urgency and they score of 6 equals a very high level of urgency.

Please add any comments you have including any suggestions on refocusing/rewriting the needs statement, combining the needs statement with other similar needs, etc.

Problem Statement Title: **Determine the recommended practice and the life-cycle cost savings for using thin overlays to preserve concrete bridge decks**

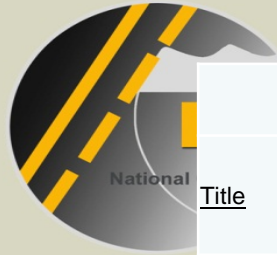
No Relevance or Importance 0	1	2	3	4	5	Very Relevant & Important 6
Not Urgent 0	1	2	3	4	5	Very Urgent 6

COMMENTS: _____



Bridge Preservation Needs Statements

<u>Title</u>	<u>Weighted 2008 Score</u>	<u>NEBPP Score</u>	<u>2008 Rank</u>	<u>NEBPP Rank</u>
Best practices for preserving bridge decks	5.38	5.45	2	1
Preservation of concrete highway bridge substructure units by controlling the corrosion rate of the steel reinforcement once corrosion has initiated	5.68	5.25	1	2
Develop deterioration models that account for the performance of preservation actions	4.88	5.21	6	3
Improved Inspection Techniques for Steel Prestressing Strand, Cables, and Ropes	4.82	5.09	7	4
Determine the recommended practice and the life-cycle cost savings for preserving superstructure and substructure elements through the use and maintenance of watertight joints	4.62	4.58	12	5
Development of a test for assessment of performance of weathering steel	4.76	4.53	8	6
High-Durability Coatings and Sealer Materials for Structural Concrete	4.76	4.50	8	7
Modeling Early Bridge Deterioration and Prevention	4.76	4.50	8	7
Substructure preservation decision matrix to address corrosion issues of the steel reinforcement of concrete bridge substructure elements	4.94	4.39	4	9
Determine the recommended practice and the life-cycle cost savings for using thin overlays to preserve concrete bridge decks	4.44	4.35	14	10
Preservation of concrete highway bridge substructure units by preventing or delaying the initiation of active corrosion of the steel reinforcement	4.06	4.32	17	11
Determine the recommended practice and the life-cycle cost savings for using sealers to preserve concrete bridge decks	4.44	4.28	14	12
Performance Assessment of Existing Concrete Structure Corrosion Prevention/Mitigation Technologies	4.94	4.25	4	13
Better Direct and Indirect Cost Models for Bridge Management Systems	3.82	4.25	19	13
Develop bridge design guidelines to enhance Constructability and Maintainability	3.68	4.13	21	15



Bridge Preservation Needs Statements

<u>Title</u>	<u>Weighted 2008 Score</u>	<u>NEBPP Score</u>	<u>2008 Rank</u>	<u>NEBPP Rank</u>
Implementation of Preservation Practices on Highway Bridges by State DOTs	3.76	3.98	20	16
Preservation of steel bridge piles	5.18	3.89	3	17
Development of a high performance galvanic anode	4.62	3.86	12	18
Development of Procedures for Preservation of Weathering Steel Bridges	3.62	3.78	22	19
Development Of A Process For Estimating The Remaining Service Life (RSL) Of Bridge Components And The Overall Bridge System Based On Observable Data	3.50	3.56	24	20
Quantify the information necessary to guide bridge preservation decisions	4.76	3.34	8	21
Evaluation, Analysis, and Documentation of Successful Bridge Preservation Practices	3.50	3.23	24	22
Establishment of Uniform Terminology and Definitions for Transportation System Preservation	4.26	3.23	16	23
Development of a bridge preservation process framework ensuring a standardized repeatable process for bridge preservation	4.00	3.10	18	24
Evaluation of the AASHTO Commonly Recognized Elements (CoRe), Ten Years of Data	3.56	1.08	23	25



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Research Topics Identified - Joints

- Develop a comprehensive program for testing and evaluating joints
- Develop a national matrix for joints similar to the national deck matrix that is being created
- Life cycle cost analysis of various types of joints considering joint type, roadway classification, traffic, environment, etc.



Research Topics Identified - Decks

- Guide for best management practices for all parties involved – inspection, design, maintenance
- Design practices incorporating preservation features
- Best quality inspection practices



Research Topics Identified - Superstructure

- Study to evaluate effect of corrosion on structural critical components
- Cost effectiveness of steel coating systems – galvanizing, paint
- Stopping corrosion on Prestressed strands
- Design of jackable components for future maintenance/repair



Research Topics Identified – Asset Management

- Develop deterioration models incorporating NDE inspection technologies
- Multi-state documentation/comparison of asset management practices
- Bridge preservation activity documentation
- Document best design practices



Research Topics Identified - Substructure

- Rehab techniques for timber piles
- ASR mitigation techniques
- Corrosion mitigation admixtures for concrete mixes
- Develop underwater repair techniques



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Agenda - Session 2, Part 3

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What's Next?

- NEBPP
 - Organize research working group
 - Rank research topics to identify high priorities
 - Develop research problem statements
 - Communicate needs to other partnerships, SCOM, SCOBS, AHD37



What's Next?

- SEBPP – conduct research needs sessions at 2016 meeting
- WBPP – conduct research needs sessions at 2016 meeting
- MWBPP – expand research working group
- National research working group?



QUESTIONS?
COMMENTS?