

# Bridge Repair and Rehabilitation

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## The Next 18 Months of Bridge Projects

31 New/Replacement  
60 Rehabs (more than overlay)

**494** Preventative Maintenance



<b>Preventative Maintenance</b>	<ul style="list-style-type: none"><li>• What exactly is it?</li><li>• What's it mean to designers?</li></ul>
<b>Polymeric Overlays</b>	<ul style="list-style-type: none"><li>• When should they be used?</li><li>• Guidance/Tips for Designers</li></ul>
<b>Rehabilitation Issues</b>	<ul style="list-style-type: none"><li>• Hydrodemolition</li><li>• Fiber Wrap</li><li>• Example Repairs</li></ul>

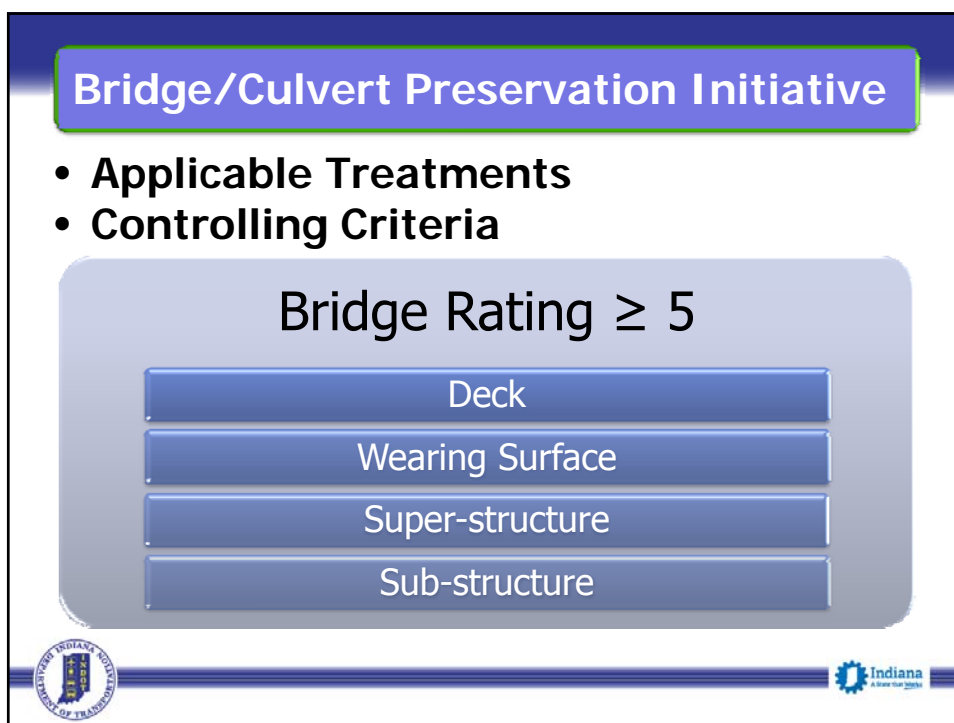
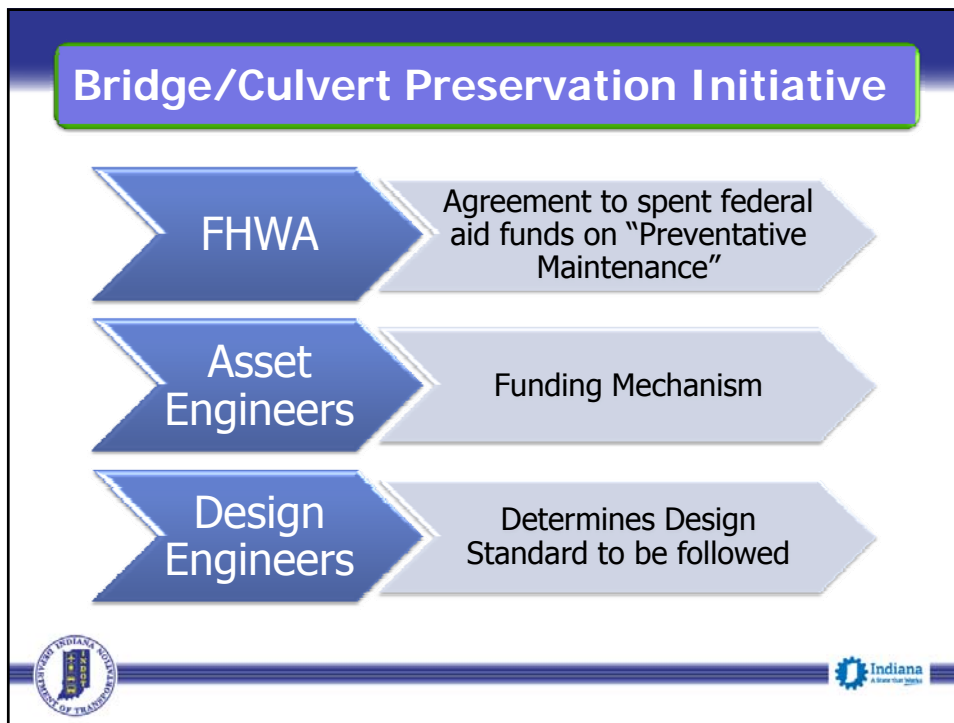
## Preventative Maintenance

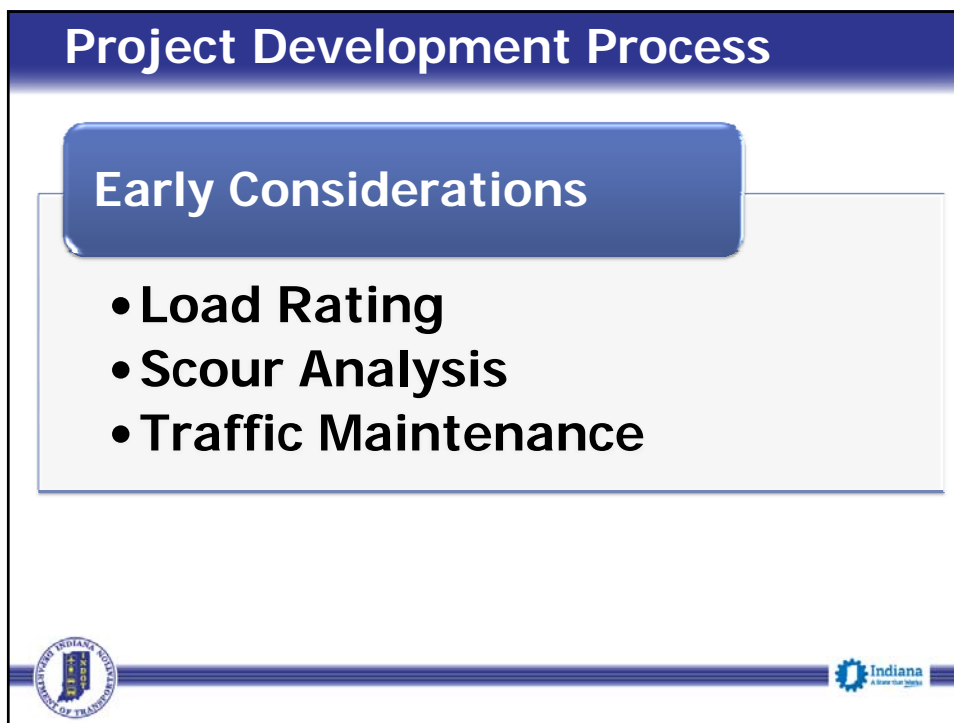
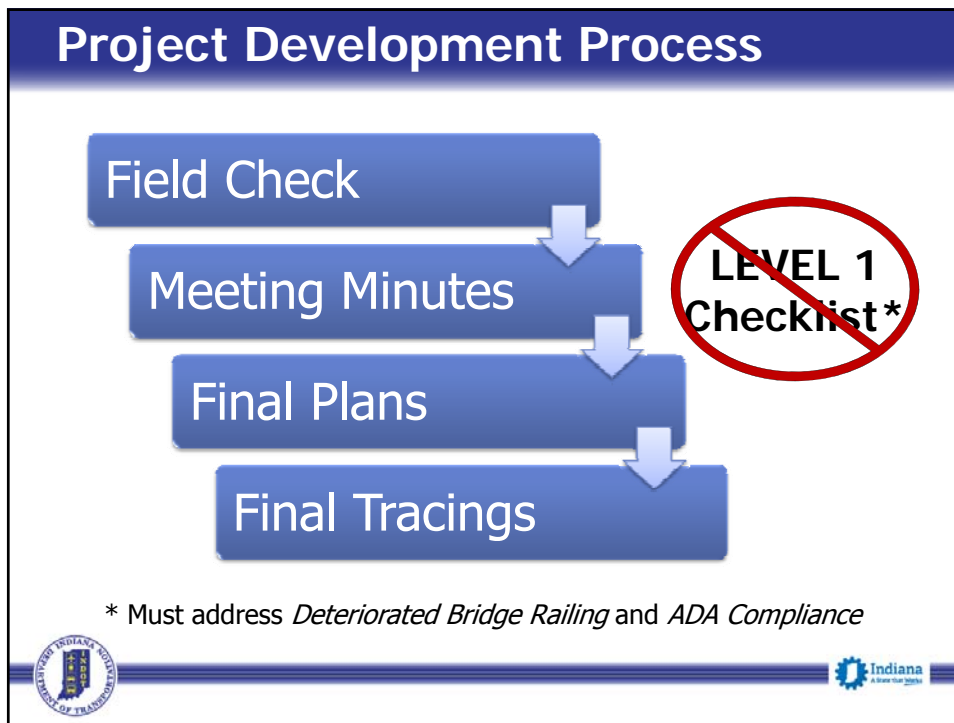
**Design Memo 14-08 "Bridge Preservation"**

**Highlights**

- **Bridge/Culvert Preservation Initiative**
- **Addition of LMC Overlays**
- **Level One Exempt**





## Is it Preventative Maintenance?!



### SR 61 over Koehler Ditch

- LMC Overlay
- Barrier Reconstruction
- Resurface Approach Asphalt



## Is it Preventative Maintenance?!



### I-469 over Houk Ditch

- LMC Overlay
- Coping Reconstruction
- New RCBA's



## Is it Preventative Maintenance?!



Co. Rd. over  
I-65

- Polymeric Overlay
- Mudwall Patching
- Joint Repair



## Is it Preventative Maintenance?!



US 31 over  
Mayflower Road

- LMC Overlay
- Convert to Semi-Integral
- New RCBA's



## Preventative Maintenance Wrap Up

- Memo 14-08 and BCPI set criteria
- Streamlined project development process (PDP)
- Discuss expectations at Field Check





## Polymeric Overlays a.k.a. Thin Overlays



## When is Polymeric Appropriate?



More Appropriate	Not Appropriate
<ul style="list-style-type: none"><li>• Ratings <math>\geq 5</math></li><li>• Original Deck Surface</li><li>• Minimal other work required</li><li>• Newer Bridge Decks</li></ul>	<ul style="list-style-type: none"><li>• Ratings <math>&lt; 5</math></li><li>• Overlaid Surface</li><li>• Structure has additional issues</li><li>• Older Bridge Decks</li></ul>



## Polymeric Overlay

### Considerations

- **Future Repair Schedule**
- **Other Work Items**
- **Traffic Maintenance**
- **Life Cycle Cost**





## Recurring Special Provision

738-B-297 Polymeric Concrete Bridge Deck Overlay

### Step 1: Patching



## Recurring Special Provision

738-B-297 Polymeric Concrete Bridge Deck Overlay

### Step 2: Shot Blasting



## Recurring Special Provision

738-B-297 Polymeric Concrete Bridge Deck Overlay

Step 3:  
Test Patch



## Recurring Special Provision

738-B-297 Polymeric Concrete Bridge Deck Overlay

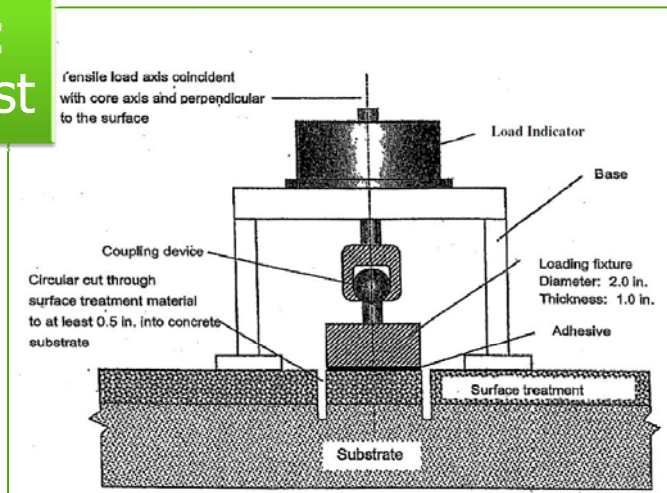
Step 4 & 5:  
Application



## Recurring Special Provision

738-B-297 Polymeric Concrete Bridge Deck Overlay

### Step 6: Final Test



## Polymeric Overlay Stats

24 Contracts since 2009

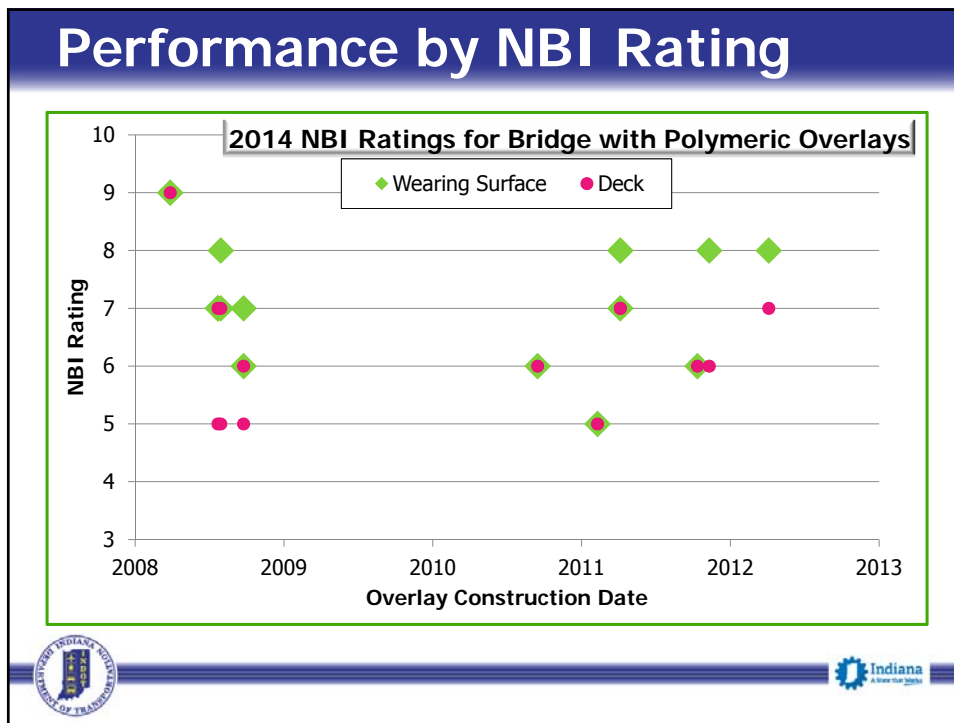
Total Contract Cost

- Average: \$15/sft
- Range: \$5 – 26/sft

Factors

- Amount of "Other" Work
- Maintenance of Traffic
- Bridge Size





### Polymeric Overlays Wrap Up

- ❑ Not the answer to all our problems...
- ❑ Use accurate costs for comparison
- ❑ Don't forget to consider design life
- ❑ **KEEP THE PLANS SIMPLE**



## Other Rehabilitation Issues

### Highlights

- **Fiber Wrap**
- **Hydrodemolition Update**
- **Joint Repairs**
- **Pile Bent Repair**



## Fiber Reinforced Polymers (FRP)



Fiber Wrap Repair Process



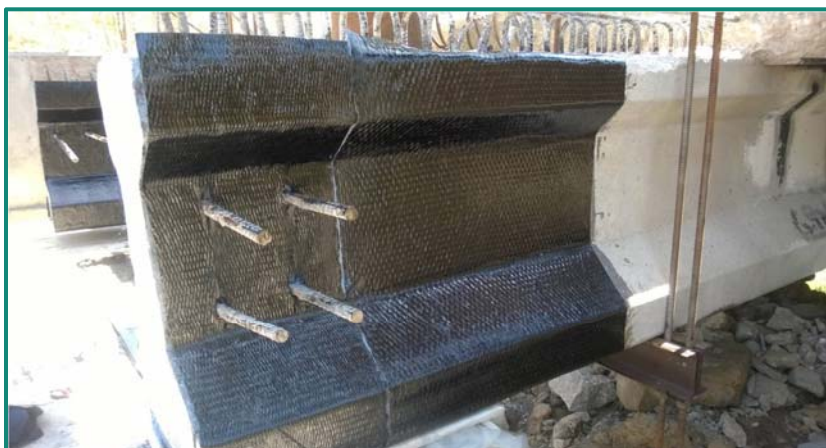
Step 1: Remove  
Deteriorated  
Concrete



Step 2: Reconstruct  
Deteriorated  
Sections



Step 3: Apply  
Fiber Wrap



Step 4: Apply  
Finish Coating



## Fiber Wrap Stats

21 Contracts Since 2000

Use Increasing Recently

Primary Function: Encasement \*

Average Cost \$15/sft  
(when included with other work)





## Fiber Wrap Unique Provision



Show Limits in Plans

Glass Fiber (for Encasement)

Lump Sum Pay Item

Patching and Coating Included



\* Avoid pulling provisions from old contracts.  
\* Check INDOT website for most recent unique provisions.



## Fiber Wrap

### Considerations

- Design Life
- Alternative Repair Cost
- Is it Structural?



## Hydrodemolition Update

USP Revised 12/11/2014

"... all **waste water**... shall be contained, tested for pH, stored and transported to a disposal facility..."

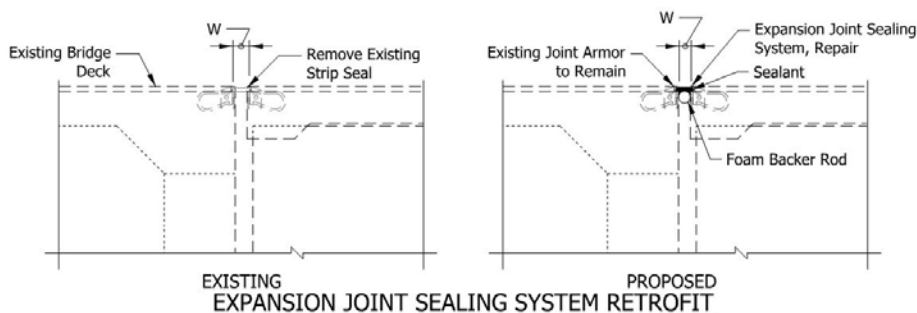


"The cost of the waste water control... shall be included in the cost of hydrodemolition."



## The 3Rs of Joints

- **Repair, Retrofit, Replacement**





Preventative  
Maintenance

Polymeric  
Overlays

Rehabilitation  
Issues

- **Conclusion**
- **Questions?**
- **Contact**

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