

# Update from the FHWA

2006  
Michigan Bridge Conference

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Federal Highway Administration  
February 2006

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U.S. Department of Transportation  
Federal Highway Administration

Michigan Division

## Topics

- SAFETEA-LU & HBRRP (HBP) changes
- Bridge Inspection issues
  - Recent failures
  - Inspection quality


Calendar No. 418  
**S. 732**  
August 10, 2005

**H. R. 3**  
August 10, 2005

**AN ACT**  
To amend the Department of Transportation, highway safety, and other related matters, and for other purposes.

**BRIDGE INSPECTION AHEAD**

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## SAFETEA-LU

- Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (P.L. 109-59)
- Signed into law on August 10, 2005
- Authorizes Federal surface transportation programs for 2005-2009
  - highways, highway safety, and transit

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## SAFETEA-LU & HBRRP

- Title 23 – Highways
  - Highway bridge program defined in Section 144 of Title 23 (23 USC 144)
- SAFETEA-LU modifies Title 23 – Highways
  - Sec. 1114 of SAFETEA-LU modifies 23 USC 144

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## What Did Congress Change? - 1

- Highway Bridge Replacement and Rehabilitation Program renamed **HIGHWAY BRIDGE PROGRAM (HBP)**
  - change reflects additional flexibility provided in the program

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## What Did Congress Change? - 2

- Language was cleaned up
  - *the several States* with *States*
  - *significantly important and is unsafe* with *structurally deficient or functionally obsolete*
  - The term *unsafe* replaced with SD/FO in several locations

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## What Significantly Changed?

- Added systematic preventive maintenance
  - applies to all bridges (both on and off-system)
- Removed 35% cap for off-system bridges
- FHWA report describing construction materials used in FA bridge projects
- Bridge Discretionary Program discontinued after 2005

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## Systematic Preventive Maintenance

- Systematic...?
  - A documented methodology regularly applied to repeatedly achieve a desired outcome or goal.
  - A systematic process should:
    - Define how needs are identified
    - Outline how needs are prioritized and programmed
    - Define goal, incl resources & timeframes to reach goal
    - Demonstrate cost-effective in extending the service life
    - Dedicate resources to reach goal
    - Track, evaluate, and report on progress / adjust resources accordingly.

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## Other Provisions

- National Historic Covered Bridge Program
  - Continued at \$10 million per year
- Debris from HBP bridge demolition
  - available for shore erosion control, ecosystem restoration, marine habitat creation
  - recipient bears cost & responsibilities

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## SAFETEA-LU Money!!!!

- HBP funds authorized – MI apportionments
  - \$4.19 B for FY 2005 – MI \$132 M [\$158.8 M\*]
  - \$4.25 B for FY 2006 – [MI \$143 M\*]
  - \$4.32 B for FY 2007
  - \$4.38 B for FY 2008
  - \$4.45 B for FY 2009

\* Includes minimum guarantee funds

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## Bridge Inspection Issues

- Recent failures
  - MDOT Bridge Inspection Advisory - Recent Bridge Failures
- NBIS Quality issues
  - Quality Assurance
  - Load rating
  - Scour evaluations and action plans

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## Very Recent Kansas 'Failure' - 1



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## Very Recent Kansas 'Failure' - 2



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## Rocker Bearing Failure - 1

- Albany, NY 7/27/05
- Ramp in the I-787  
Dunn Mem Bridge  
interchange
- Span failed due to  
tipped-over rocker  
bearing



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## Rocker Bearing Failure - 2



- Relatively tall  
rocker bearings
  - Bearings leaning  
for some time
  - partly due to  
horizontal  
movement of pier

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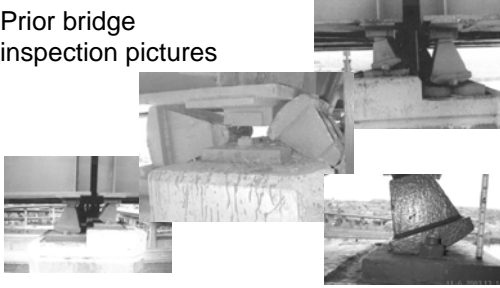
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## Rocker Bearing Failure - 3

Prior bridge inspection pictures



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## P/S Box Beam Failure - 1

- PA 12/28/05
- Over I-70 south of Pittsburgh
- Fascia beam collapsed on Interstate below
- This & 2 similar bridges over I-70 demolished



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## P/S Box Beam Failure - 2

- Side-by-side box beams
  - Bit directly on beams
- Cause still under investigation
  - Corrosion of p/s strand evident
  - Old impact damage



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## P/S Box Beam Failure - 3

- Similar to recent Illinois failures
- Word search of supstr comments reveals ~75 bridges w/ broken or exposed strands
- Need to be conservative with p/s box beam bridges!
  - Particularly when corrosion is evident



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## MDOT Bridge Inspection Advisory

- Issued 1/5/06 by email to all bridge owners & MDOT/consult inspectors
- Rockers leaning excessively
  - Detailed inspection and remedial action should be taken
- Deteriorated box beams
  - Difficult to assess condition of p/s strands
  - Inspectors and load rating engineers should be cautious and conservative



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## NBIS Quality Issues

- NBIS Revision Recap
  - Published in Federal Register - December 14, 2004
  - Effective - January 13, 2005
  - Full implementation - January 13, 2006

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## NBIS Quality Assurance

- States **REQUIRED** to have systematic QC/QA program
- QC/QA must include
  - Field review
  - Refresher training
  - Independent review of reports & computations
- MDOT working with CRAM

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## Load Rating/Posting – Why?

PA - 3-ton  
*Spring Township  
bridge no match  
for 28-ton truck*



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## Load Rating

- Load rating **REQUIRED** by the NBIS
  - NBIS compliance issue!!!
- New MDOT Bridge Analysis Guide (BAG)
- Many local agency bridges may not be load rated!
  - Over 1,200 bridges
  - IR=FedOR; IR=36 & FedOR=36 or 45; ...
  - **NEARLY 20%!**

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## Scour Evaluation / Plan of Action

- Now REQUIRED by the NBIS
  - Scour evaluations
  - Plan of Action (POA) for scour critical bridges
- NBIS compliance issue!!!
- Many local agency bridges over waterways have not been evaluated for scour
  - 2,410 (incl 491 culv) of 6,105 not eval/properly coded
  - **NEARLY 40%!**

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## Other Inspection Quality Issues

Num Insp	#	Br	min/br
32	2	64	22.5
31	1	31	23.2
29	1	29	24.8
26	1	26	27.7
23	1	23	31.3
22	3	66	32.7
21	4	84	34.3
20	4	80	36.0
19	8	152	37.9
18	8	144	40.0
17	7	119	42.4
16	13	208	45.0
15	16	240	48.0
<b>Total</b>	<b>1,266</b>		

- Number of bridges inspected per day
  - 12 hr / 32 br = 22½ min incl travel & doc
  - 12 hr / 15 br = 48 min incl travel & doc
- 20% of local agency bridges

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## Other Inspection Quality Issues

- Initial inspections – over 55% of LA bridges let in 2003 not done as required (2005 NBI)
  - NBIS requires LA data be updated w/in 180 days
- Bridges w/ sup/sub in serious/critical condition
  - 292 of 354 (82%) remain on 24 mo inspection cycle
  - MDOT has guidance on frequency
- Inspector comments
  - Many items rated w/o comments – particular concern for poor, serious, critical sup/sub condition
  - “Bridge is closed” yet Item 41 = ‘A’

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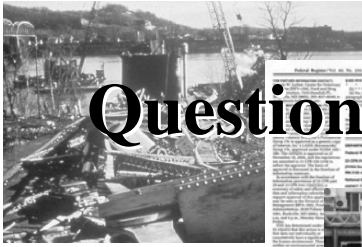
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# Questions?

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