U.S. Department of Transportation
Federal Highway Administration
Office of Infrastructure

FHWA Bridge Program Update - AASHTO RADBUG Meeting August 8, 2023

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Presentation Topics

- Bridge Investment Program Grants
- National Bridge Inspections Standards (NBIS) and Specifications for the National Bridge Inventory (SNBI)
- Uncoated Weathering Steel – FHWA Memo (7/19/23)
- A514/T1 Grade 100 Steel – FHWA Memo (12/13/21)
- FHWA Load Rating Program Updates

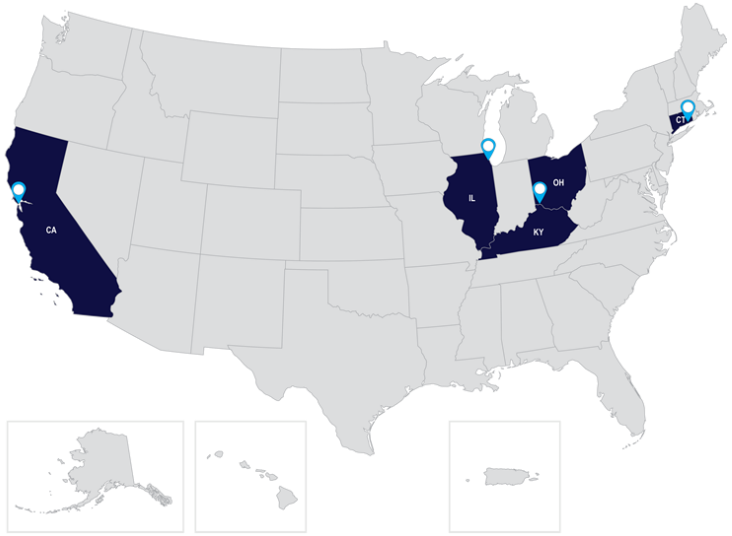
Bridge Investment Program Overview

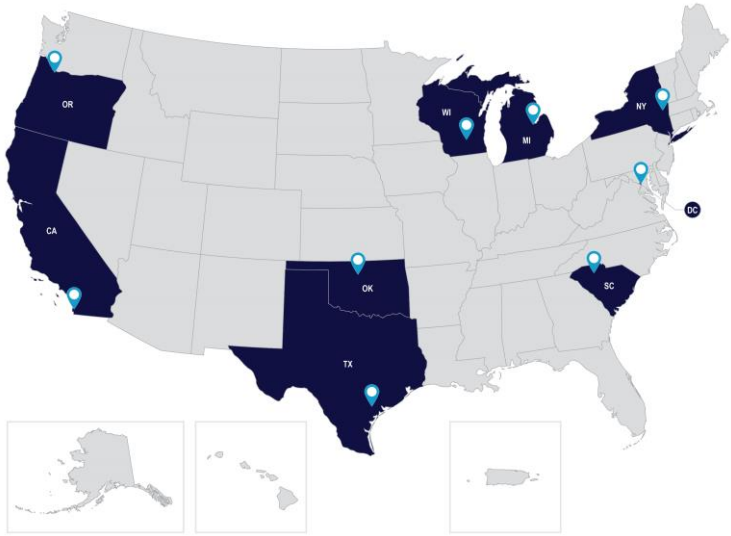
Purpose	Improve bridge (and culvert) condition, safety, efficiency, and reliability
Funding	$12.5 B (FY 22-26), including— • $3.3 B (FY 22-26) in Contract Authority from the HTF; and • $9.2 B (FY 22-26) in advance appropriations from the GF
Eligible entities	States, MPOs, local governments, public authorities, Federal land management agencies, and tribal governments
Eligible projects	• Project to replace, rehabilitate, preserve or protect one or more bridges on the National Bridge Inventory • Project to replace or rehabilitate culverts to improve flood control and improve habitat connectivity for aquatic species

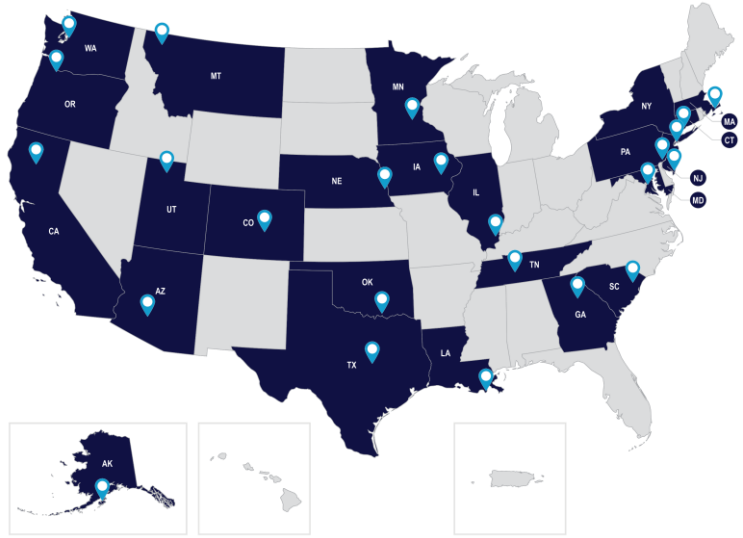
Grant Types	• Construction grants
	  • Large Bridge Project grants for projects with total eligible costs exceeding $100 million
	  • Bridge (Other Than Large) Project grants
	• Planning grants

Other Key Provisions	• At least 50% of funding reserved for Large Bridge Projects; option for multi-year funding agreements • Each State that submits justifiable applications shall be awarded at least one Large Bridge Project grant or two Bridge (Other Than Large) Project grants during the 5 years of the program • After the first year, requires an annual Report to Congress on Funding Recommendations for Large Bridge Projects

FY 2022 Bridge Investment Program







Large Bridge Projects
- $2.1 billion
- 4 Projects in 5 States
  - Brent Spence Bridge (KY, OH)
  - Golden Gate Bridge (CA)
  - Gold Star Mem. Bridge (CT)
  - Calumet River Bridges (IL)

Bridge Projects
- $296 million
- 9 Projects in 9 States

Planning Grants
- $20 million (statutory set-aside)
- 24 Projects/24 States, including:
  - Interstate Bridge Replacement-IBR (OR)
  - Cape Cod Bridges (MA)
  - East River Bridges (NY)

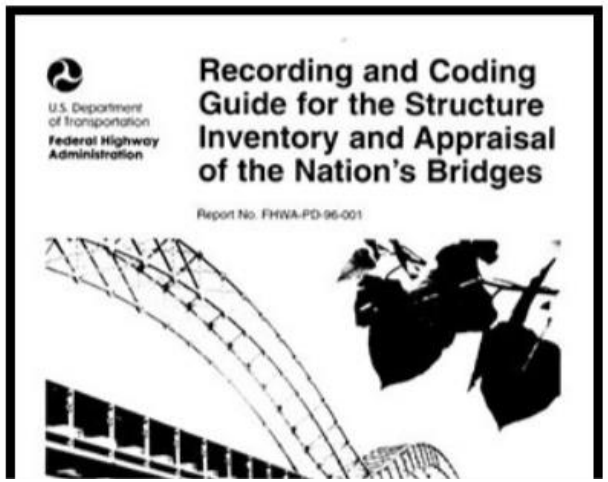
NBI/SNBI

Home / Programs / Bridges & Structures / Management and Preservation / National Bridge Inventory

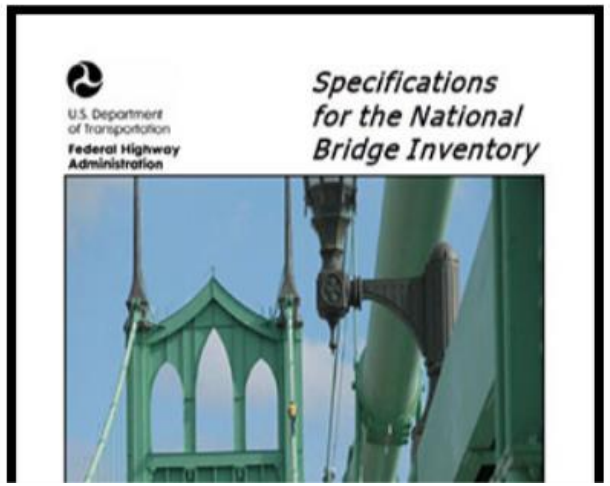
National Bridge Inventory (NBI)

NBI data and reporting is transitioning to a new data standard, guidance, procedures, and web application. Data will continue to be reported to FHWA using the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, guidance, procedures, and web application until the annual submittal date specified in FHWA's Implementation Memo. Subsequent submittals will be reported using the Specifications for the National Bridge Inventory (SNBI), guidance, procedures, and web application. Agencies will need to act now to satisfy the requirements of FHWA's Implementation Memo.

National Bridge Inventory – Based on the Coding Guide



National Bridge Inventory – Based on the SNBI



Key Dates

- NBIS was published in Federal Register on May 6, 2022
- NBIS became effective June 6, 2022 (thirty days after publication)
- Several specific sections in the NBIS take effect 24 months from the effective date of final rule - outlined in upcoming slide

Transition to the revised NBIS/SNBI

- Data Collection
  - CY 2022-2025: Recording and Coding Guide
  - CY 2026-2028: Specifications for the National Bridge Inventory

- NBIS Compliance (23 Metrics)
  - CY 2022: current metrics plus 30-day requirements
  - CY 2023-2025: current metrics plus 30-day and 24-month requirements
  - CY 2026-2027: hybrid metrics
  - CY 2028: revised metrics

- State DOT Transition Plans (July 1st)
  - Some States have started and will transition before the deadline,
  - Some States will start early but need assistance,
  - Encourage Routine Conversations with FHWA Division Bridge Engineer

Key Dates

The following sections take effect on June 6, 2024 (24 months from the effective date of the final rule)

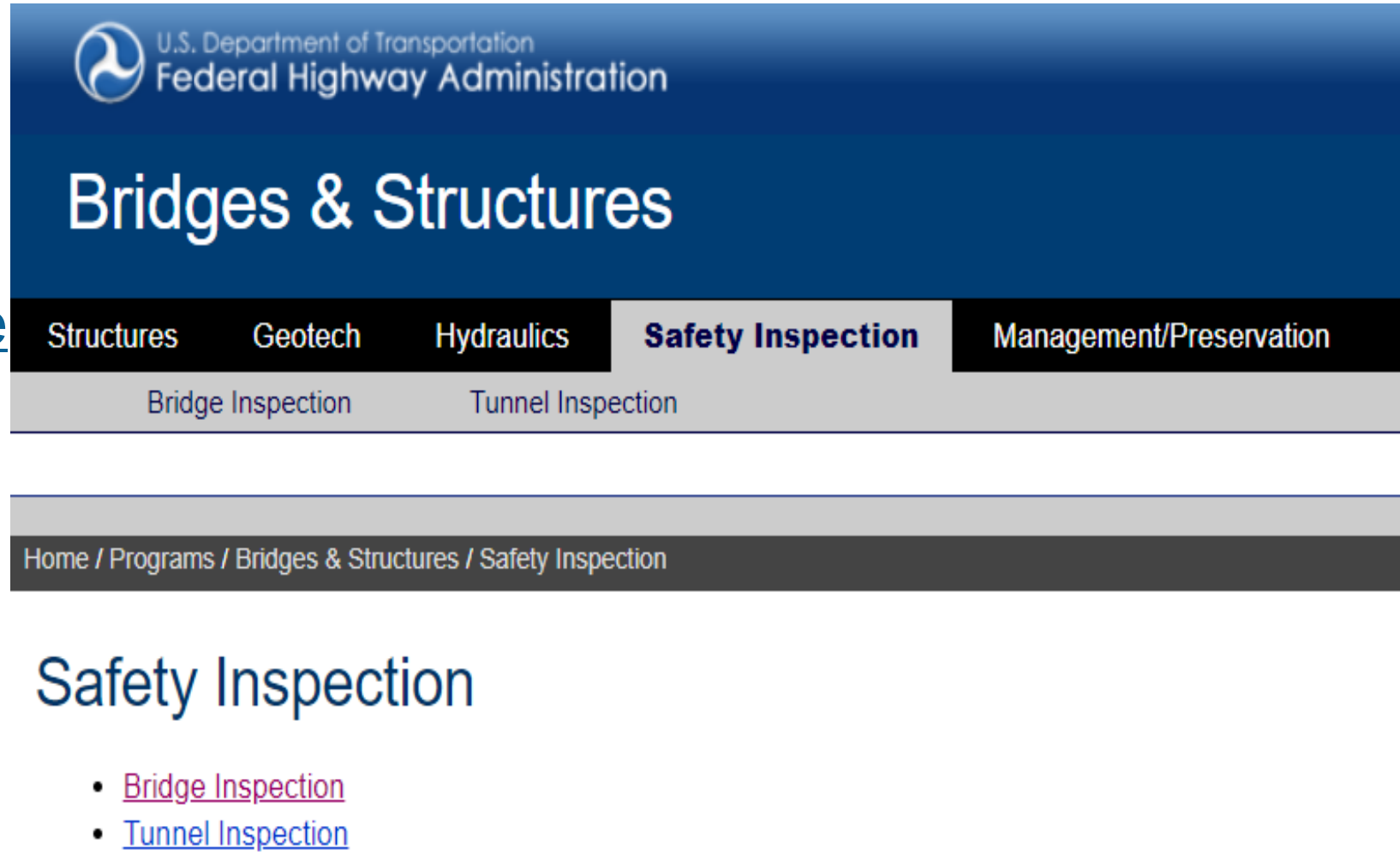
Section	Description
650.309(a)	Program manager qualifications for existing PM
650.309(b)	Team leader qualifications for existing TL
650.309(c)	Team leaders on NSTM inspections
650.309(h)(3)	FHWA-approved alternate training under prior regulations
650.311(a)(1)(ii)	Routine inspections, Reduced intervals
650.311(b)(1)(ii)	Underwater inspections, Reduced intervals
650.311(c)(1)(ii)	NSTM inspections, Reduced intervals
650.311(g)	Prior FHWA approved extended inspection interval policies

NBIS/SNBI Resources Update

- NBIS and SNBI Questions and Answers
- SNBI (electronic, only)
  - Data crosswalk, Data submittal schema, Validation Logic and Transition tool now available
- Two version of Bridge Inspectors Reference Manual (BIRM) – R/C Guide and SNBI versions
- NHI Bridge Inspection Training updated and available in October 2023
- 2.5-day SNBI Training available in October 2023 (free of charge)

NBIS and SNBI – Implementation

- FHWA Bridge Inspection Website
- www.fhwa.dot.gov/bridge



Uncoated Weathering Steel Bridges

- FHWA Memorandum Issued July 19, 2023
- Result of the Forbes Ave Bridge collapse over Fern Hollow Jan. 28, 2022
- NTSB issued interim report and recommendation to FHWA
  - *Develop a risk-based, data-driven process and encourage its use by state Departments of Transportation, as well as highway-bridge-owning federal agencies and tribal governments, to help them identify, prioritize, and perform follow-up actions documented in inspections of bridges with uncoated weathering steel components. (H-23-13)*
  - NTSB determined that maintenance actions identified in inspection reports for the Fern Hollow bridge during an 11-year period leading up to the collapse were not performed.

Uncoated Weathering Steel Bridges

- Categorize and identify all uncoated weathering steel bridges
  - Group 1 – 'bridges with weathering steel in primary load path in substructure or superstructure in condition state 4 or less'
  - Report all bridges in Group 1 to FHWA by Oct 31 ,2023
- 'By Dec 31, 2024, for Group 1 bridges, review inspection and maintenance records to confirm that bridge inspector-recommended or otherwise recommended work items have been completed that address deficiencies resulting from poor performance of uncoated weathering steel and verify load ratings include the severity and documented deterioration adequately'.
- Work with their FHWA Division Office to update the inventory data reported in paragraph 3 on a quarterly basis until all follow-up actions and documentation are completed

Documenting Deterioration

- Section Loss Measurement and Evaluation (MBE Article 4.3.5.6.1[2])

  Inspect structural steel members for loss of section due to corrosion. Where a build-up of rust scale is present, a visual observation is usually not sufficient to evaluate section loss. Hand scrape areas of rust scale to base metal and measure the remaining section using calipers, ultrasonic thickness meters, or other appropriate method. Take sufficient measurements to allow the evaluation of the effect of the losses on member capacity.

[2] 23 CFR 650.317(a)

U.S. Department of Transportation
Federal Highway Administration

A514/T1 Grade 100 Steel - December 13, 2021 Memo

Subject: **ACTION:** Non-Destructive Testing of Fracture Critical Members Fabricated from AASHTO M244 Grade 100 (ASTM A514/A517) Steel

Date: December 13, 2021

From: Hari Kalla
Associate Administrator, Office of Infrastructure

HARI KALLA Digitally signed by HARI KALLA Date: 2021.12.13 11:01:42 -05'00'

In Reply Refer To: HIBS

To: Division Administrators
Directors of Field Services

The purpose of this memorandum is to provide direction regarding the in-service inspection, inventory, and testing of butt welds in fracture critical members fabricated from AASHTO M244 Grade 100 (ASTM A514/A517) steel, more commonly known as "T-1" steel.

December 13, 2021 Memo

- *Requires* that State DOTs:
  - Identify bridges with fracture critical members fabricated from T-1 steel without requirements to meet the provisions of the AASHTO/AWS FCP and document them in the FCM inspection procedures[1]
  - Supplement hands-on inspection of T-1 FCMs with Non-Destructive Evaluation verifying the soundness of butt welds in tension[2]
    - Unless previous verification has been documented
    - Previous verification needs have been performed a minimum of 48 hours after original welding (≤ 2“ thick, 72 hours for > 2" thick)
  - Classify rejectable indications (using AASHTO/AWS criteria) as critical findings[3]
  - Report an inventory of bridges with T-1 FCMs and actions taken to perform verification and follow up on findings[4]

[1] 23 CFR 1.36, 23 CFR 650.313
[2] 23 CFR 1.36, 23 CFR 650.313
[3] 23 CFR 1.36, 23 CFR 650.313
[4] 23 CFR 1.36, 23 CFR 650.315

Timeframe

- March 31, 2022 – Report an inventory of bridges with A514/T1 with butt welds in tension without FCP.

- March 31, 2024 – Complete NDT of butt welds.

Excerpt from December 13, 2021 Memo

State DOTs are required to report the information requested in paragraph 2 for the inventory of bridges identified in paragraph 1(a) by March 31, 2022. For bridges with butt welds in tension that have not yet been verified to be sound using NDT, State DOTs are required to perform that testing and report the information requested in paragraphs 2(b), 2(c) and 2(d) by March 31, 2024. State DOTs are required to update the information requested in paragraph 2 for the inventory bridges at six-month intervals until all testing and documentation is completed.

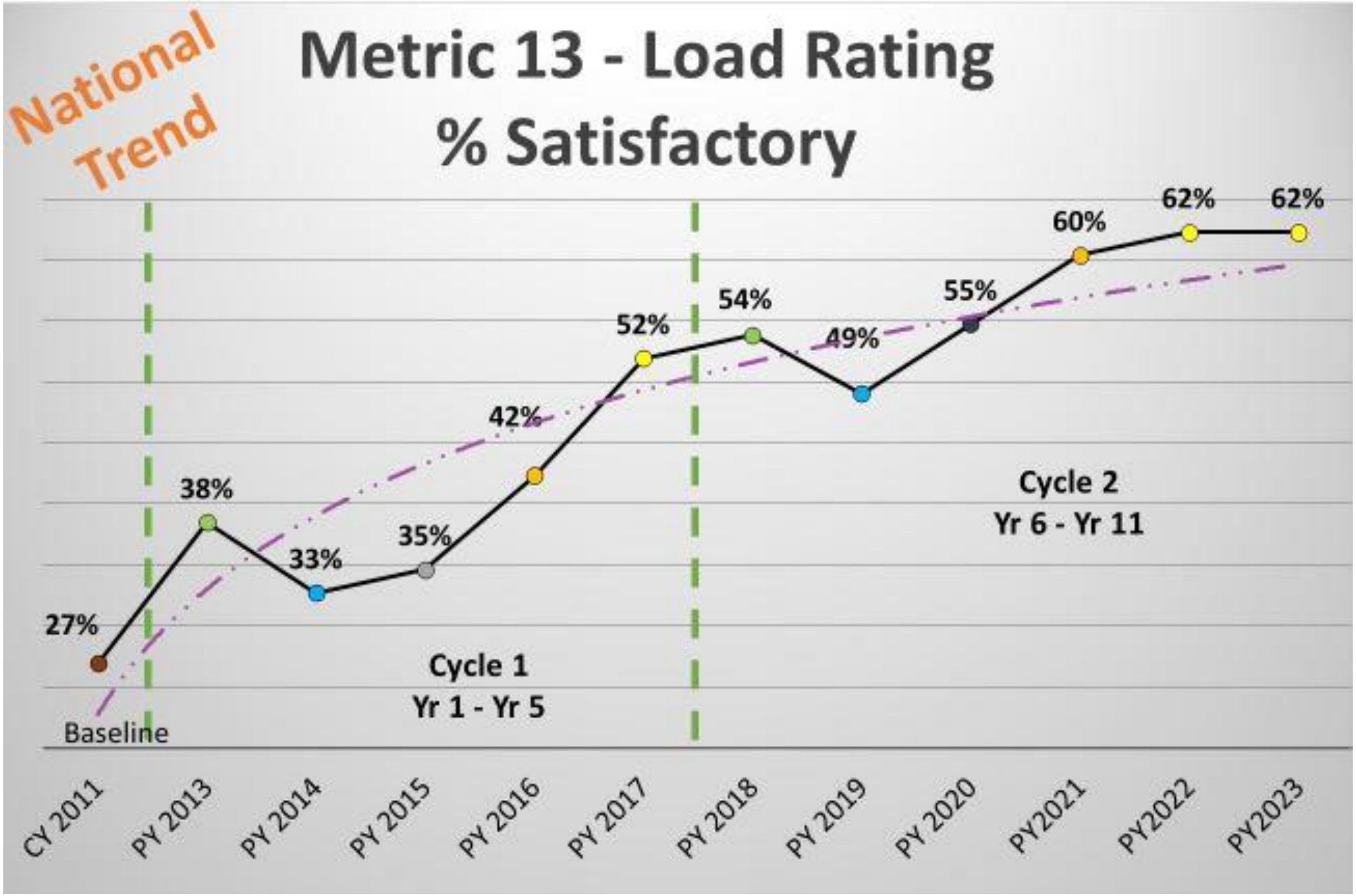
Response to Memo

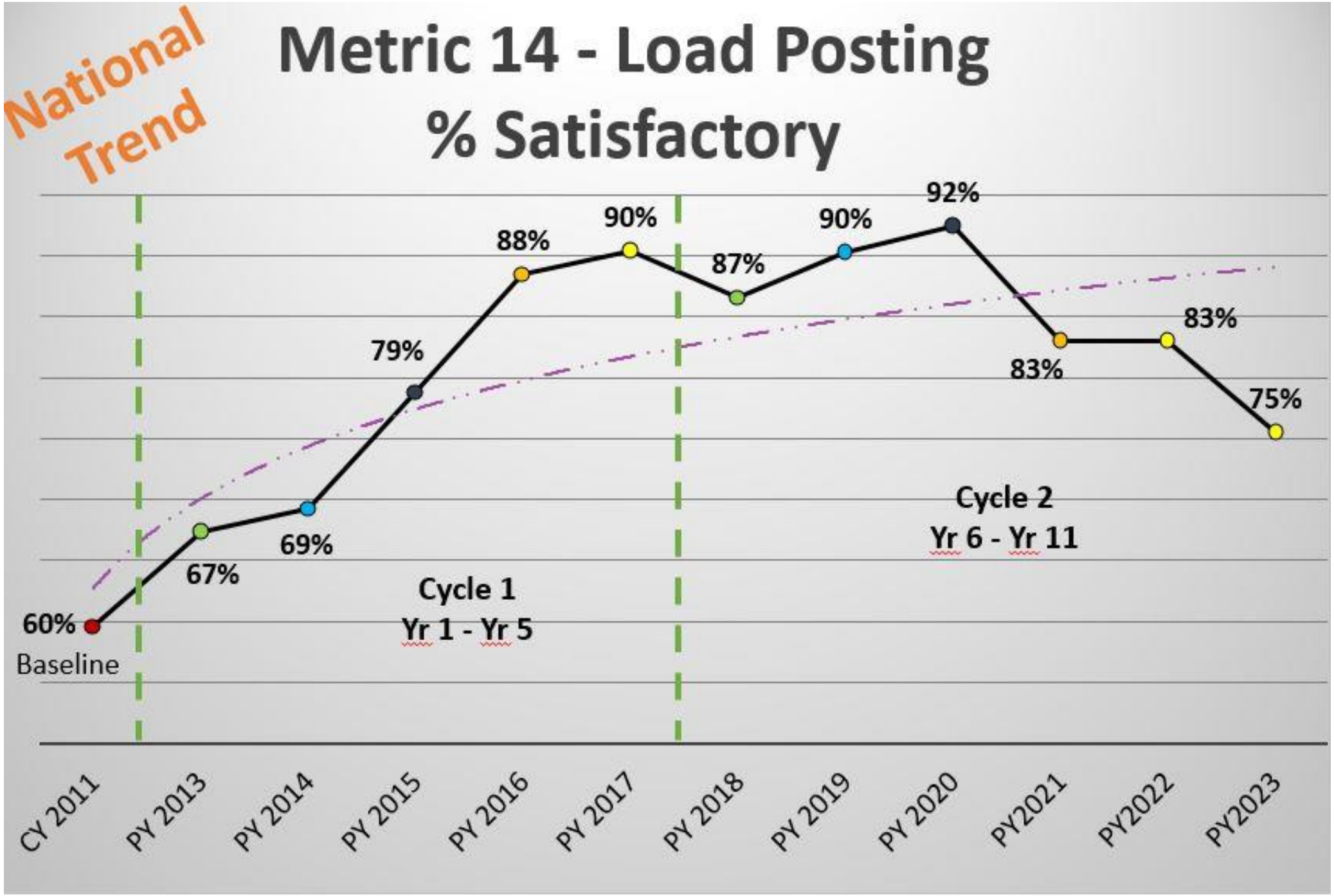
- 20 States identified bridges with Grade A514/T1 Steel
- 64 Bridges with A514/T1 Steel with Butt Welds
- 16 States have bridges which will require NDT by March 31, 2024

# of Bridges	State
11	CA
7	KY
6	WV
5	CO
5	MO
5	PA
4	LA
4	TN
3	IL
3	IN
2	AK
1	AR
1	GA
1	IA
1	ID
1	NJ
1	NM
1	NY
1	SD
1	TX

FHWA Load Rating Program Updates

- Annual reviews of National Bridge Inspection and Oversight Program Metrics 13 and 14, Bridge Load Ratings and Bridge Load Postings
- Projects/studies
- National Load Rating Peer Exchange
- Bridge and Tunnel Load Rating Resources and Training


National Trend
Metric 13 - Load Rating
% Satisfactory
27%
38%
33%
35%
42%
52%
54%
49%
55%
60%
62%
62%
Baseline
Cycle 1
Yr 1 - Yr 5
Cycle 2
Yr 6 - Yr 11
CY 2011
PY 2013
PY 2014
PY 2015
PY 2016
PY 2017
PY 2018
PY 2019
PY 2020
PY2021
PY2022
PY2023


National Trend
Metric 14 - Load Posting
% Satisfactory
60%
Baseline
67%
69%
79%
88%
90%
87%
90%
92%
83%
83%
75%
Cycle 1
Yr 1 - Yr 5
Cycle 2
Yr 6 - Yr 11
CY 2011
PY 2013
PY 2014
PY 2015
PY 2016
PY 2017
PY 2018
PY 2019
PY 2020
PY2021
PY2022
PY2023

FHWA Load Rating Projects of Interest

- Truck Platooning Impacts – Service Limit States
  - Thanks to support from CA, FL, IL, MN, and PA
  - Strength Limit States assessment found limited impact of truck platoons except for long span bridges great than 200 feet, braking and centrifugal forces
- Risk-Based Methodology for Structural Evaluation of Bridge-Sized Culverts
  - Thanks to support from CA, DE, IL, MN and TX
- CY 2023-2024 National Load Rating Program Peer Exchange
  - Two face to face meetings with peers to discuss load rating, permitting and posting in early 2024
  - Iowa State University is contractor

FHWA Website – www.fhwa.dot.gov/bridge/loadrating

Load Rating

- Concrete Bridge Shear Load Rating Guide and Examples: Using the Modified Compression Field Theory, Publication No: FHWA-HIF-22-025 (04/2022)
- Tunnel Load Rating Examples: A Supplement to the Reference Guide for Load Rating of Tunnel Structures, Publication No. FHWA-HIF-20-058 (12/2020)
- Reference Guide for Load Rating of Tunnel Structures (05/2019)
- Manual for Refined Analysis in Bridge Design and Evaluation (05/2019)
- Report on Techniques for Bridge Strengthening (04/2019)
- Load Rating Policy and Guidance
- Load Rating for the FAST Act's Emergency Vehicles (11/03/2016)
  - Questions and Answers Revision R01 (03/16/2018)
- Load Rating of Specialized Hauling Vehicles (11/15/2013)
  - Questions and Answers (03/2014)
- Assigned Load Ratings (09/28/2011)
- America's Surface Transportation Act (FAST Act) Truck Size and Weight Provisions Guidance (02/24/2016)
- Assuring Bridge Safety and Serviceability in Europe (08/2010)

More Information

- LRFD

Contact

- **Lubin Gao**
  Office of Bridges and Structures
  202-366-4604
  E-mail Lubin

U.S. Department of Transportation
Federal Highway Administration

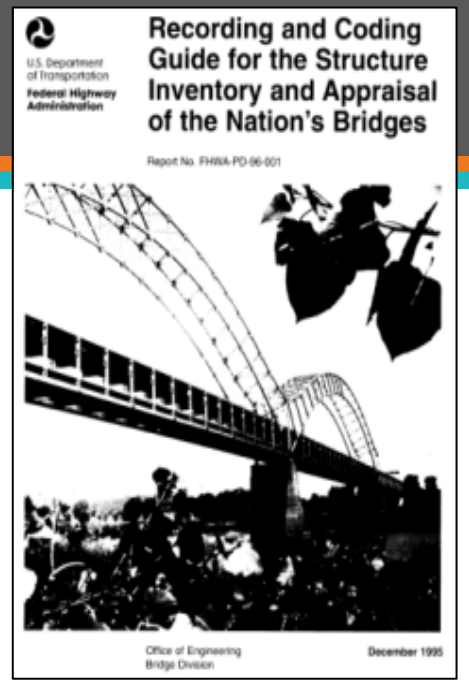
Thank You

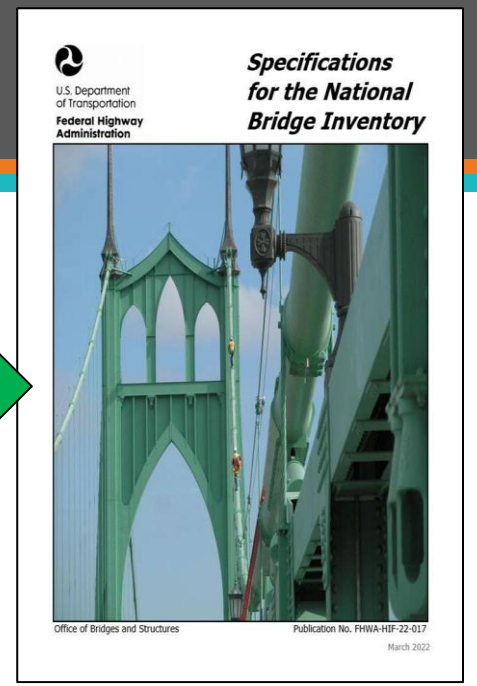
Email Question to:

NBIS_SNBI_Questions@dot.gov

For Load Rating Resources:

www.fhwa.dot.gov/bridge/loadrating





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