METRICS REVIEW/GENERAL UPDATES

2025 BRIDGE INSPECTION WORKSHOP

Anthony Marino, P.E., Bridge Inspection Program Manager
Joshua Heigert, P.E., FHWA Bridge Engineer

MEETING AGENDA

- 2025 Training
- SNBI Implementation
- LPA Program Manager Update
- FHWA Annual Review – Bridge 23 Metrics
- Metric 12: Quality Inspections
- Metric 14 Post or Restrict
- Metric 18 Scour
- Josh Heigert – FHWA PY2025 Metrics Review

2025 TRAINING

1. NHI 130053: Bridge Inspector Refresher Training.
   Requesting August 2025.
2. NHI 130078: Bridge Inspection Techniques for NSTM.
   Requesting September 2025.
3. NHI 135017: Stream Stability and Scour at Highway Bridges for Bridge Inspectors.
   Requesting October 2025.

SBRITE Courses – Based on need.

SNBI IMPLEMENTATION

1. SNBI Inspections started on January 1, 2025.
2. CY2025: SNBI Hybrid for March 2026 SNBI Hybrid Fed Tape.
3. CY2026: SNBI Hybrid for March 2027 SNBI Hybrid Fed Tape.
4. CY2027: Fully populated and compliant SNBI Inspections for March 2028 SNBI Fed Tape submission.

Understanding that not all SNBI fields will be populated as part of the upcoming hybrid inspection years.

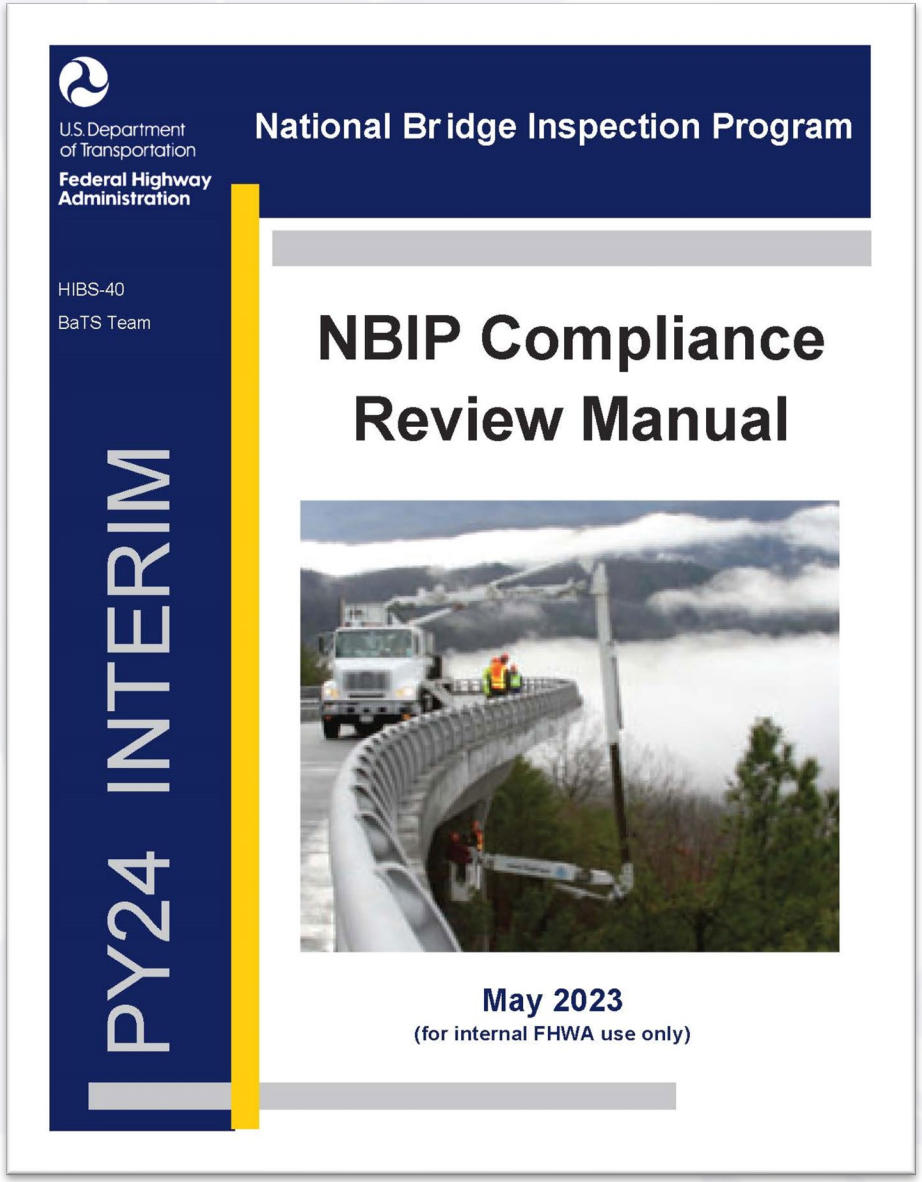
Next presentation will provide more specifics…

LPA PROGRAM MANAGER UPDATE

Jesse Avant is leaving INDOT – last day is January 17th.

Sharon Street will be handling these duties for the immediate future.

FHWA ANNUAL REVIEW – BRIDGE 23 METRICS



FHWA ANNUAL REVIEW – BRIDGE 23 METRICS

- Eliminated Metric 4: Qualifications of Personnel – Load Rating Engineer
  - No longer defined in the NBIS.
  - Metric 13 (Load Ratings): verify all load ratings done under P.E. supervision.
- Combined Metrics 6 and 7: Routine Inspections, Low and High Risk
- Combined Metrics 8 and 9: Underwater Inspections, Low and High Risk

Added Three New Metrics (*Assessing in PY 25*):

- New1: Qualifications of Personnel – Damage, Special, and Service
- New2: Inspection Interval – Special, In-Depth, and Service.
- New3: Inspection Procedures – In-Depth.

FHWA ANNUAL REVIEW – BRIDGE 23 METRICS

HOW IS INDOT DOING?

Carryovers from previous year reviews:

- Metrics 6, 7, 8, 9, and 10 (Inspection Interval) Conditionally Compliant.
- Metric 12 (Quality Inspections) Substantially Compliant.
- Metric 23 (Timely Updating of Data) Conditionally Compliant.
- Metric 18 (Scour) Conditionally Compliant.

Substantially Compliant – Under a 12-month Improvement Plan.

Conditionally Compliant – All under active Plans of Corrective Action.

FHWA ANNUAL REVIEW – BRIDGE 23 METRICS

HOW IS INDOT DOING?

Current year (PY25) review:

- Metric 14 (Post or Restrict) determined Non-Compliant.
- Metric 19 (Complex Feature) determined Non-Compliant.

INDOT developing new Plans of Corrective Action for both. Once accepted, both metrics would become Conditionally Compliant.

FHWA ANNUAL REVIEW – BRIDGE 23 METRICS

HOW DOES THIS AFFECT STATE INSPECTION OPERATIONS?

- Metrics 6, 7, 8, 9, 10, and 23
  - All foundational Action Items completed.
  - Continue to get field inspections for all inspection types started and done on-time.

    FHWA allows 2-to-3-month tolerances; INDOT is *not allowing* this.
  - Continue to get Inspection Reports Approved On-Time.

    FHWA allows 3-month tolerance after field work is done.

    INDOT BIM 24-01 controls: Approved no later than the last calendar day of the second month following the last calendar day of the inspection compliance month.

- Metric 18 (Scour) Conditionally Compliant.
  - Discussion coming up...

FHWA ANNUAL REVIEW – BRIDGE 23 METRICS

HOW DOES THIS AFFECT STATE INSPECTION OPERATIONS?

- Metric 14 (Post or Restrict).
  - Plan of Corrective Action under development and includes a status audit of posted bridges and additional QA reviews.
  - Discuss this more on the next slide.

- Metric 19 (Complex Features).
  - Plan of Corrective Action will address the 6 bridges in Indiana that have complex features: 3 movable bridges and 3 cable-stay bridges.
  - INDOT will implement the proposed corrective action items.

METRIC 12: QUALITY INSPECTIONS

Quality Control (QC): Procedures that are intended to ***maintain the quality*** of a bridge inspection and load rating at or above a specified level.

Quality Assurance (QA): The use of sampling and other measures to ***assure the adequacy*** of quality control (QC) procedures to verify or measure the quality level of an entire bridge inspection and load rating program.

METRIC 12: QUALITY INSPECTIONS

Metric 12 Improvement Plan Implementation:

- INDOT increased number of bridges for the 2024 Annual QA Review.
  - Increased from 24 to 32 randomly-selected bridges files.
  - Number included 23 LPA Bridges, 2 Toll Bridges, and 7 State Bridges.
  - Annual QA Report was submitted November 2024 to FHWA.

- INDOT will be revising BIM Part 4 (QA/QC).
  - First step: issue BIM Memorandum 25-01 by the end of January.
  - Next step: use BIM Memorandum 25-01 as basis for full revision of BIM Part 4.

METRIC 12: QUALITY INSPECTIONS

Highlights of Memorandum 25-01:

- State-owned/maintained bridges.
  - QC Office Reviews on 100% of all bridge inspections for ***all inspection types***.
  - Enforced using iTAMS workflow.
  - Approvals must be done by an approved team leader who was not involved in the inspection.
  - Retiring use of the QA/QC NBIP File Review Checklist Form currently in the BIM Appendix.

METRIC 12: QUALITY INSPECTIONS

Highlights of Memorandum 25-01:

- LPA-owned/maintained bridges.
  - All bridge inspection consulting firms/organizations shall carry out QC in accordance with their formal “Quality Control and Quality Assurance Procedures for Bridge Inspections”.
  - Procedures shall be formally written out in a manual format.
  - Provide details, including review forms and/or checklists necessary to ensure that bridge inspection procedures are being adhered to, and that accurate and comprehensive bridge inspection condition information is collected and reported.
  - Firms shall maintain all bridge inspection QC/QA records/documentation that are done under their responsible charge.

METRIC 12: QUALITY INSPECTIONS

Highlights of Memorandum 25-01:

- LPA-owned/maintained bridges (continued).
  - All bridge inspection consulting firms/organizations shall carry out QC during ***each phase*** of an inspection contract in accordance with their procedures.
  - QC must still include using the iTAMS Inspection Report workflow.
  - All bridge inspection consulting firms/organizations shall provide INDOT a copy of the "Quality Control and Quality Assurance Procedures for Bridge Inspection" manual if requested.
  - All bridge inspection consulting firms/organizations shall provide INDOT copies of their QC/QA documentation if requested.

METRIC 12: QUALITY INSPECTIONS

Highlights of Memorandum 25-01:

- Quality Assurance.
  - INDOT will do its Independent Oversight each year (30 bridges minimum) that includes both Field and Bridge File Reviews.
  - INDOT will sponsor either the Bridge Inspection Workshop(s) or Test Control Bridge each year.
  - Still require all bridge inspection consulting firms/organizations to carry out QA in accordance with their formal “Quality Control and Quality Assurance Procedures for Bridge Inspections”.

METRIC 12: QUALITY INSPECTIONS

Highlights of Memorandum 25-01:

- Disqualification Process.
  - INDOT is striving to make this process more cooperative and less adversarial.
  - Process will happen when INDOT's Quality Assurance procedures indicate that either inspection team leaders individually or bridge inspection consulting firms/organizations responsible for carrying out bridge inspections in Indiana are not meeting acceptable standards for bridge inspections and load ratings.

METRIC 12: QUALITY INSPECTIONS

Highlights of Memorandum 25-01:

- Disqualification Process – Corrective measures may include one or more of the following:
  1. Formal meeting.
  2. Require unacceptable field inspections and inspection reports be returned to the inspectors or firm to have all concerns and comments addressed at no additional cost to the agency.
  3. Require engineering consulting firms or bridge owners to create either written Improvement Plans or Plans of Corrective Action to self-direct themselves back into compliance.
  4. Suspension or revocation of approved inspection team leader credentials.

METRIC 12: QUALITY INSPECTIONS

Highlights of Memorandum 25-01:

- Disqualification Process:

Ultimately, INDOT reserves the right to immediately and indefinitely revoke the credentials of an Approved Team Leader if gross negligence, misconduct, or major omissions are discovered.

METRIC 14 (POST OR RESTRICT) ACTIONS

- BIM Memorandum 24-03
- INDOT has 15 Bridges that require Weight Limit Sign Installations.
- By January 31, 2025: Verify that Weight Limit Sign photographs are attached to the “Photos” section in the iTAMS Bridge Asset File.
- To Date: ***17 of 92 Counties Reported***
- For all Routine Inspections going forward:
  1. Routine Inspection Reports ***must*** include photos of all weight limit signs.
  2. Missing weight limit signs must be reported as Critical Findings.
  3. Attach the new weight limit sign photos to the “Photos” section in the iTAMS Bridge Asset File and ***Delete*** the old photos – Bridge Asset Files must always show the current photos.

METRIC 18 (SCOUR) ACTIONS

- Under a Plan of Corrective Action – reworking due dates with FHWA.
- INDOT working on issuing lists of all bridges over waterways to all bridge owners/districts for required actions.

Actions Required:

1. Validate B.AP.03 – Scour Vulnerability (formerly NBI 113).
   - Review bridge file documentation.
   - Obtain scour documentation for bridges built after 1998 for coding checks.
2. Review and Update (or Create) all Scour Plans of Action (POAs).
   - Must be reviewed and signed-off at each Routine Inspection.

METRIC 18 (SCOUR) ACTIONS

Reviewing and updating all existing Scour Plans of Action (POAs).

- Review triggers against Scour section in the BIM.
- Coordinate with bridge owners to include detailing, scheduling, and implementation of Scour Countermeasures.
- Create new Scour POAs where NBI Item 113 = 7
  - SNBI Item ID B.AP.03 = **C** or **E** for *"Temporary (not designed)"*.
- Designed and Functioning Countermeasures in Place:
  - Situation equivalent to NBI Item 113 = 8.
  - SNBI Item ID B.AP.03 = **B** for *"…dependent upon designed and functioning countermeasures"*.
  - That designation eliminates need for Scour POAs.

METRIC 18 (SCOUR) ACTIONS

Also…

Make sure that scour inspections are being executed when trigger events occur.

- Special: One-time inspection when scour trigger event happens.
- Scour Monitoring: Following one-time scour trigger event Special Inspection and conditions require monitoring over a time period until scour situation returns to normal.

Metrics Review/General Updates

Josh Heigert, P.E., FHWA Bridge Engineer
Anthony Marino, P.E., Bridge Inspection Program Manager

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Disclaimer

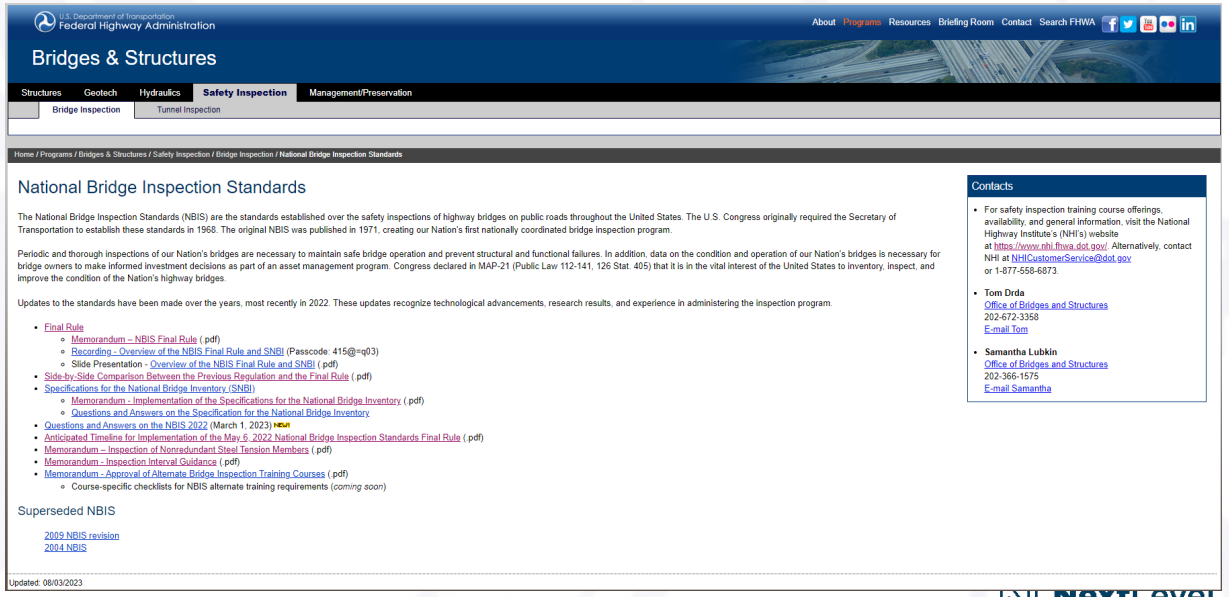
- Except for any statutes or regulations cited, the contents of this presentation do not have the force and effect of law and are not meant to bind the public in any way. This presentation is intended only to provide information to the public regarding existing requirements under the law or agency policies.
- The Federal Highway Administration is the source for all images unless otherwise noted.

FHWA's Role

- National
  - Policy and guidance
- Divisional
  - Stewardship and Oversight
- Division Bridge Engineer
  - Annual compliance review of INDOT's bridge inspection program
  - Technical assistance
  - Liaison between FHWA and INDOT Inspection Program

National Bridge Inspection Standards (NBIS)

- 23 CFR 650, Subpart C
- Standards over the safety inspections of highway bridges on public roads throughout the United States
- Originally published in 1971
- Last updated in 2022
- https://www.fhwa.dot.gov/bridge/nbis.cfm



2022 NBIS Updates

- Latest revision went into effect June 6, 2022
- Numerous changes throughout, summarized in a side-by-side comparator on the FHWA website
  - Side-by-Side Comparison: NBIS 2004 Regulation with 2009 Update and NBIS 2022 Final Rule (dot.gov)
- Most changes were effective immediately, some had delayed implementation
  - PM qualifications, TL qualifications, and alternate training approvals
  - All requirements in effect as of June 6, 2024
- Some key changes
  - Applicability
  - Qualifications
  - Intervals
  - Rating and Posting timeframes
  - Critical findings
  - Inventory timeframes
  - SNBI

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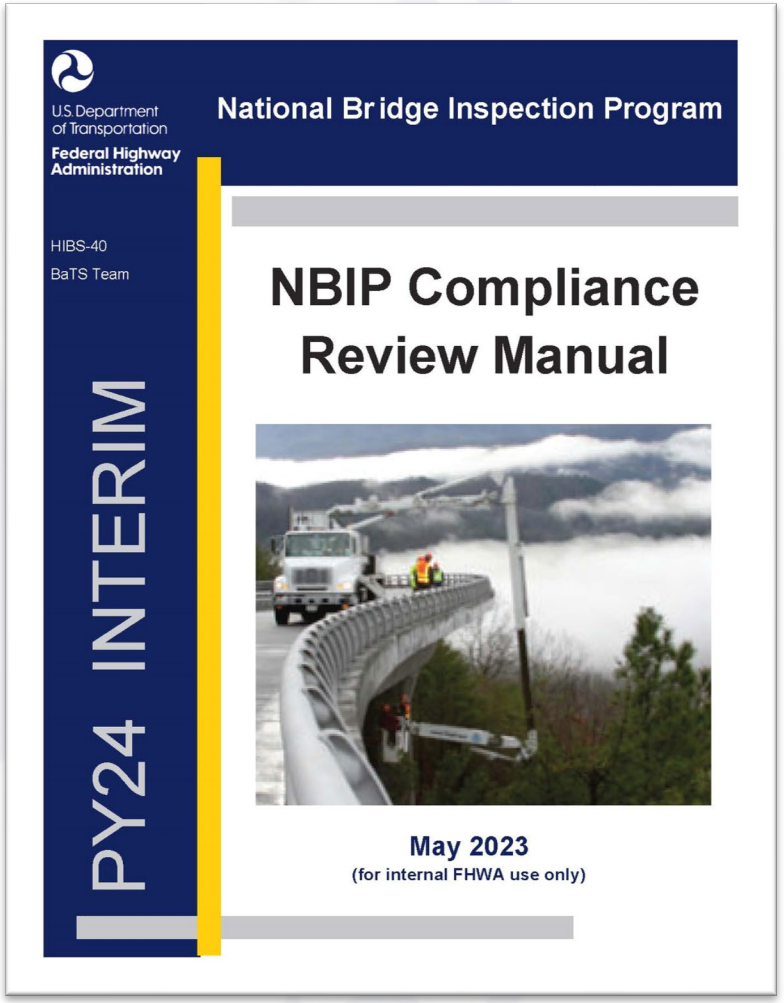
NBIS Metrics

- Tools to assist in the oversight of the NBIS
- Compliance Review Manual
  - Provides guidance for quantitatively and qualitatively assessing compliance with the NBIS requirements
- 23 Metrics
  - Metrics have been revised, combined, introduced, and removed over the past few years



NBIS Metrics

- Metric #1: Bridge Inspection Organization (23 CFR 650.307)
- Metric #2: Qualifications of Personnel – Program Manager (23 CFR 650.309(a); 650.313(p))
- Metric #3: Qualifications of Personnel – Team Leader(s) (23 CFR 650.307(e)(2); 650.309(b),(c); 650.313(p))
- *Metric #4: Qualifications of Personnel – Load Rating Engineer (Discontinued)*
- Metric #5: Qualifications of Personnel – Underwater Bridge Inspection Diver (23 CFR 650.309(e))
- *Metric #New1: Qualifications of Personnel – Damage, Special, and Service Inspection Types (23 CFR 650.309(f),(g)) – New in PY25*
- Metric #6: Inspection Interval – Routine (23 CFR 650.311(a),(e), 650.313(e))
- *Metric #7: Inspection Interval – Routine – Higher Risk Bridges (23 CFR 650.311(a),(e)) (Discontinued)*
- Metric #8: Inspection Interval – Underwater (23 CFR 650.311(b),(e); 650.313(e))
- *Metric #9: Inspection Interval – Underwater – Higher Risk Bridges (23 CFR 650.311(b),(e); 650.313(e)) (Discontinued)*
- Metric #10: Inspection Interval – Nonredundant Steel Tension Member (NSTM) (23 CFR 650.311(c),(e); 650.313(f))
- *Metric #New2: Inspection Interval – Special, In-Depth, and Service (23 CFR 650.311(d)) – New in PY25*
- Metric #11: Inspection Interval – Interval Criteria (23 CFR 650.311)
- Metric #12: Inspection Procedures – Quality Inspections (23 CFR 650.313(a) to (j))
- Metric #13: Inspection Procedures – Load Rating (23 CFR 650.313(k))
- Metric #14: Inspection Procedures – Post or Restrict (23 CFR 650.313(l),(m))
- Metric #15: Inspection Procedures – Bridge Files (23 CFR 650.313(n))
- Metric #16: Inspection Procedures – Nonredundant Steel Tension Member (NSTM) (23 CFR 650.313(f), (g))
- Metric #17: Inspection Procedures – Underwater (23 CFR 650.313(e),(g))
- Metric #18: Inspection Procedures – Scour (23 CFR 650.313(o))
- Metric #19: Inspection Procedures – Complex Feature (23 CFR 650.313(g))
- *Metric #New3 Inspection Procedures – In-Depth and Special (23 CFR 650.313(g,h)) – New in PY25*
- Metric #20: Inspection Procedures – Quality Control (QC) and Quality Assurance (QA) (650.307(e)(6); 650.313(p))
- Metric #21: Inspection Procedures – Critical Findings (23 CFR650.313(q))
- Metric #22: Inventory – Bridge Data Quality (23 CFR 650.303; 650.305; 650.307(e)(7); 650.315(a); 650.317)
- Metric #23: Inventory – Timely Updating of Data (23 CFR 650.315)

Red – Discontinued
Blue – New in PY2025

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Metrics Review Process

- Assessment Levels
  - Minimum
  - Intermediate
  - In-Depth
- Compliance Levels
  - Compliant
  - Substantially Compliant
  - Non-compliant
    - Conditionally Compliant
- Corrective Actions
  - Improvement Plans
  - Plans of Corrective Action

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Metrics Review Process

- National Bridge Inventory (NBI) Data submittal – March 15
  - Data reviewed by FHWA and corrected by INDOT as necessary
- Upon acceptance of the data enter “compliance season”
- Initial compliance determinations due December 31st
- Final compliance determinations due the following March 31st

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Metrics Review Process

- Qualifications
- NBI Data Review
  - Intervals
  - Timely Reporting
  - Data Accuracy
- Procedures
  - File Reviews
  - Field Reviews
  - Bridge Manual Reviews

PY2026 Compliance Review Updates

- Anticipated new compliance criteria for PY2026
  - Metric 8
    - *First underwater inspections are completed within 12 months of bridge opening to traffic or have had portions underwater that have been rehabilitated*
  - Metric 10
    - *The first NSTM inspection for each bridge and for each bridge with rehabilitated NSTMs is performed within 12 months of the bridge opening to traffic.*
  - Metric 11
    - *All coded bridge inspection intervals as reported to the NBI are consistent with established criteria.*

PY2025 Metrics Review

- Summary of Findings

	PY2021	PY2022	PY2023	PY2024	PY2025*
Compliant	16	15	15	12	13
Substantially Compliant	4	4	4	2	2
Non-compliant	0	0	0	0	2
Conditionally Compliant	3	4	4	8	6

* Note that Metric 8 absorbed the criteria previously under Metric 9, and therefore also the M9 conditionally compliant status. Additionally, the relocation of certain criteria formerly under Metric 11 led to the deficiencies noted under that metric in PY2024 no longer being applicable. Metric 11 was therefore assessed as compliant in PY2025.

PY2025 Metrics Review

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- Metric #18: Inspection Procedures – Scour (23 CFR 650.313(o))
- Metric #19: Inspection Procedures – Complex Feature (23 CFR 650.313(g))
- Metric #New3 Inspection Procedures – In-Depth (23 CFR 650.313(g))
- Metric #20: Inspection Procedures – Quality Control (QC) and Quality Assurance (QA) (650.307(e)(6); 650.313(p))
- Metric #21: Inspection Procedures – Critical Findings (23 CFR650.313(q))
- Metric #22: Inventory – Bridge Data Quality (23 CFR 650.303; 650.305; 650.307(e)(7); 650.315(a); 650.317)
- Metric #23: Inventory – Timely Updating of Data (23 CFR 650.315)

Green – Compliant
Purple – Substantially Compliant
Orange – Conditionally Compliant
Red – Non-compliant
Blue – Not Applicable

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PY2025 Metrics Review

- Conditionally Compliant Metrics
  - Metrics 6, 8, 10
    - Timeliness of Inspections
    - Monthly monitoring of inspections, enhanced outreach on local contracts, backup on-call consultant
  - Metric 13
    - Items 64/66
      - Design Inventory and Operating ratings
    - Data errors in ratings related NBI Items
      - Posting Status
  - Metric 18
    - Scour procedures and POAs
  - Metric 23
    - Timeliness of inspection data reporting
    - Monthly monitoring of inspection data approval

Image clip taken from inspection reports

PY2025 Metrics Review

- Metric 1
  - Nationally Certified Bridge Inspector (NCBI) Registry
    - Ensure documentation of all trainings, inspection experience, and licensure/education are maintained in ITAMS
    - Keep documentation for each refresher training taken
  - Border Bridge Agreements
    - All bridges that cross a state or federal boundary must have a border bridge agreement in the bridge file that outlines NBIS responsibilities between stakeholders.
    - For bridge files missing border agreements, or existing/new bridges that haven't been added to the NBI yet, contact the SPM.

PY2025 Metrics Review

- Metric 12 – Quality Inspections
  - A few inspections had issues with:
    - NBIS/MBE procedures
    - Identification of defects/Defect documentation
    - Condition Ratings

Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 1
  - Identification of defects/Defect documentation
  - NBIS/MBE procedures
  - Condition Ratings
    - Deck: 5
    - Super: 5
    - Sub: 4
  - Appraisal Rating
    - Scour: 3 (spread footing on sand/gravel)

Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 1

South Abutment

North Abutment

Images taken from inspection report

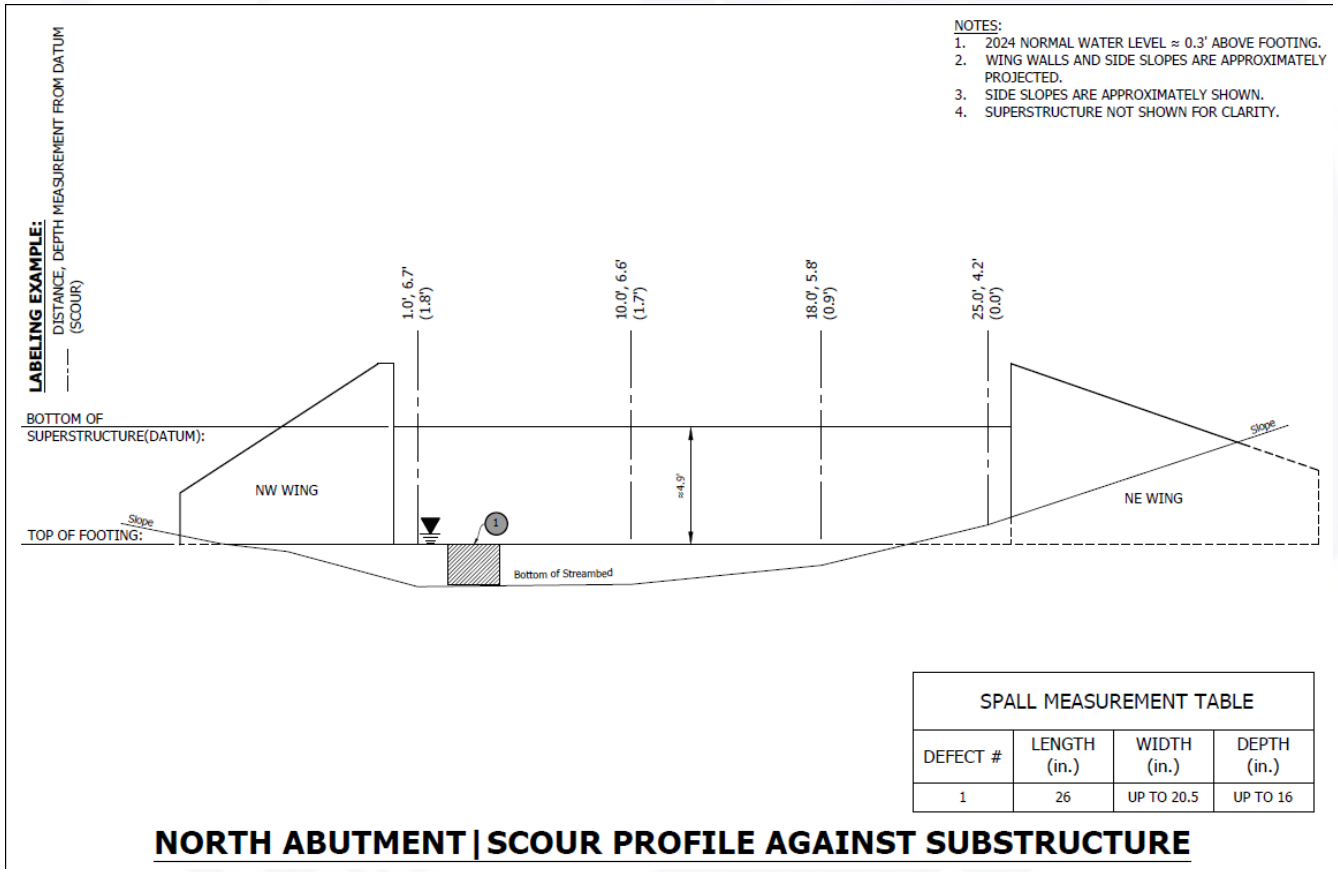
PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 1

Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 1



SPALL MEASUREMENT TABLE			
DEFECT #	LENGTH (in.)	WIDTH (in.)	DEPTH (in.)
1	26	UP TO 20.5	UP TO 16

NORTH ABUTMENT | SCOUR PROFILE AGAINST SUBSTRUCTURE

Inspection Report Notes

Substructure:

Up to 2.5' Footing Exposed South Abutment. 1.6' Footing Exposed SW Wing. 2.5' Footing Exposed SE wing. Up to 1.8' Footing Exposed North Abutment. 270"L x 20"H x 17"D Spall South Abutment/SW Wing Footing. 56"L x Up to 5"T x Up to 10"D Concrete Spall North Abutment Footing. Erosion Behind Southwest Wing.

Scour:

Up to 2.5' Footing Exposed South Abutment. 1.6' Footing Exposed SW Wing. 2.5' Footing Exposed SE wing. Up to 1.8' Footing Exposed North Abutment.

Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 1
  - Identification of defects/Defect documentation
  - NBIS/MBE procedures
  - Condition Ratings
    - Deck: 5
      - FHWA Rating: 4 due to advanced deterioration in soffit of deck
    - Super: 5
    - Sub: 4
      - FHWA Rating: 2 due to scour, 3 if scour were ignored
  - Appraisal Rating
    - Scour: 3
      - FHWA Rating: 2 due to scour critical with observed scour

Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 2
  - Narrative documentation
  - NBIS/MBE procedures
  - Condition Ratings
    - Deck: 4
    - Super: 4
    - Sub: 3
  - Appraisal Rating
    - Scour: 5 (spread footing on bedrock)

Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 2
  - Narrative Documentation of Defects

(58) Deck:	4 - Poor Condition (advanced deterioration)
POOR - SPALLS, BEAMS EXPOSED Material: 18" CONCRETE SLAB	

(59) Superstructure:	4 - Poor Condition (advanced deterioration)
POOR - SPALLS, FLAKING RUST ON BEAMS, LONGITUDINAL CRACKING ON ENCASEMENT CONCRETE, BEAMS EXPOSED AT COPINGS Material: CONCRETE ENCASED STEEL BEAMS	

(60) Substructure:	3 - Serious Condition (primary structure affected)
SERIOUS - FOOTINGS EXPOSED, A2 CRACKED, WINGWALLS FAILED, NORTHEAST WINGWALL FAILED AND DETACHED, NORTHWEST WINGWALL CRACKED, SPALLED, AND LEANING Material: CONCRETE ABUTMENTS	

  - Greater detail is needed in defect documentation – the lower the rating the more extensive the amount of expected documentation.

Clips taken from inspection reports

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 2

TYPE, SEVERITY, LOCATION, EXTENT!!

Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections –Inspection Notes Examples
  - Item 58 (Deck): Rating = 7
    - Deck underside has hairline to minor width transverse cracks spaced approximately every 5’ to 6’ apart with light efflorescence at the center of the span where SIP metal forms are removed. No corrosion noticed in SIP metal forms that would indicate issues with deck underside.”
  - Item 59 (Super): Rating = 4
    - Steel thru truss - new black paint and new stringers. NEL2L1 has 1 inch diameter hole in interior angle with 50% section loss, exterior angle with 20% section loss, overall 40% section loss. SWU1L1 has heavy pitting and 100% section loss of interior angle leg at top and bottom of connection, overall 40% section loss. SEU1L1 has holes along leg of interior angle with 75% local section loss, overall 30% section loss. See fracture critical report for additional comments.

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 2
- Narrative documentation
- NBIS/MBE procedures
- Condition Ratings
  - Deck: 4
  - Super: 4
  - Sub: 3
  - Appraisal Rating
    - Scour: 5 (spread footing on bedrock)
      - FHWA Rating: 4, due to stable foundation but having observed scour at footing needing mitigation. Note that the scour assessment also rated this bridge a 4; however, the inspection report rated it a 5.

Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 3
  - Identification of defects/Condition ratings
  - Condition Ratings
    - Deck: 8 (since 2020)
      - 2019 Rating: 5
      - Deck replaced in 2019
    - Super: 8 (since 2020)
      - 2019 Rating: 6
      - Bridge painted in 2019
    - Sub: 7 (since 2020)
      - 2019 Rating: 6
      - Concrete patching in 2019

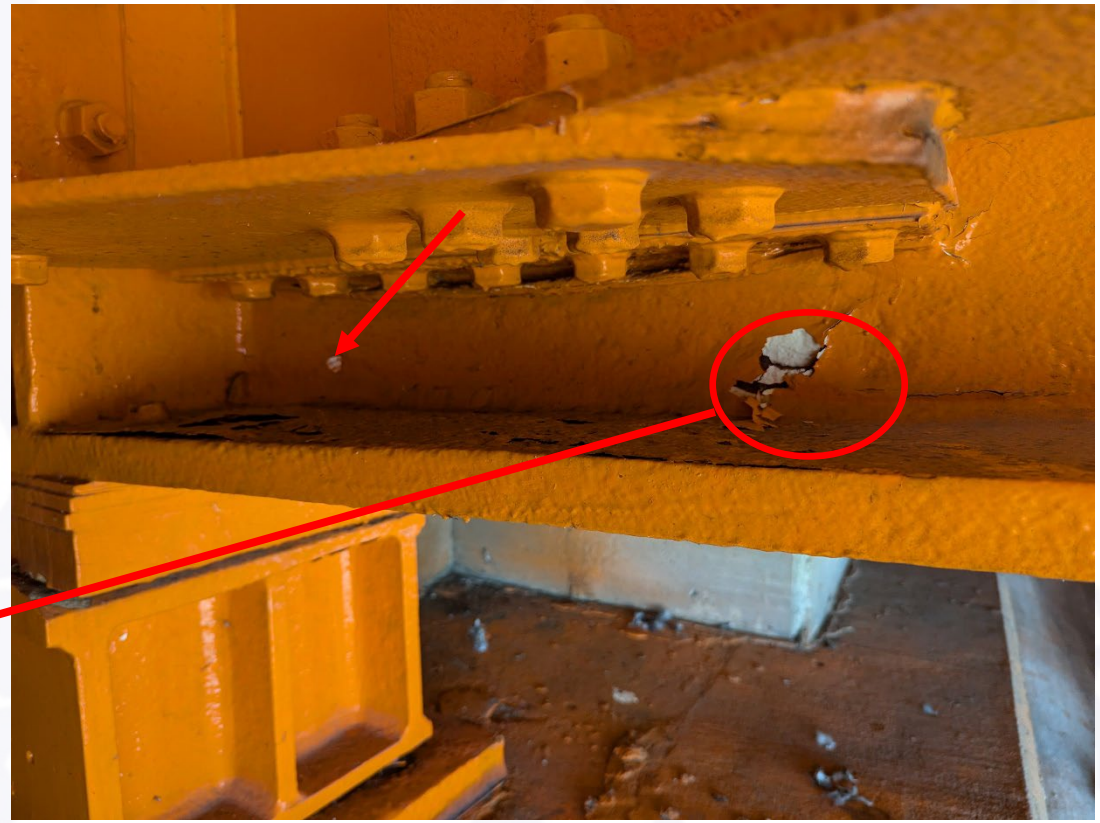
Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 3
  - Superstructure Rating
    - 2019 Superstructure Notes – “Bearing 2 at Abutment 1 loose, few bearings at Abutment 1 need reset. Small hole in Beam 9 at Abutment 1. Some section loss from paint.”
    - 2020 Superstructure Notes – None
    - 2023 Superstructure Notes – “Beams and bearings are in good condition.”

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 3
  - Section loss/cracking had been painted over and may not have been visible at time of recent inspections.
  - Defect notes should be retained
  - Past inspection reports, beyond the most recent, should be reviewed



Images taken from inspection report

PY2025 Metrics Review

- Metric 12 – Quality Inspections – Example 3
  - Identification of defects/Condition ratings
- Condition Ratings
  - Super: 8 (since 2020)
    - FHWA Rating: 5 (“all primary structural elements are sound but may have minor section loss, cracking, spalling or scour” – NBI Coding Guide)

Images taken from inspection report

PY2025 Metrics Review

- Metric 14 – Post or Restrict
  - Missing/incomplete/inaccurate documentation
  - Improper load posting/missing signage
  - Load posting inconsistent with load ratings
  - Signage not in conformance with the MUTCD

PY2025 Metrics Review

- Metric 14 – Post or Restrict

Sign is obscured by foliage. This is both a safety issue and does not meet the documentation requirements. Additionally, the placement of the EV sign behind the commercial further limits visibility to drivers.

Images taken from inspection report

PY2025 Metrics Review

- Metric 14 – Post or Restrict

For a two-way street, signage must be placed on the right-hand side of the road. Additionally, the signs are posted too low. See MUTCD Chapter 2A.

Images taken from inspection report

PY2025 Metrics Review

- Metric 14 – Post or Restrict

Photos should be taken close enough to signage to be easily read. This bridge was noted as having insufficient documentation of the load postings.

Images taken from inspection report

PY2025 Metrics Review

- Metric 14 – Post or Restrict
  - Any bridge that is currently, or needs to be, posted for less than 3 tons gross must be closed immediately!

PY2025 Metrics Review

- Metric 19 – Complex Bridges
  - Team Leader requirements – must be present for all aspects of inspection
  - Inspection procedures – must be bridge specific and comprehensive. Procedures should be followed during inspections and deviations must be documented.

SNBI Highlights

- Condition Ratings

SNBI

Table 20. Codes and descriptions for component condition ratings.

Code	Condition	Description
N	NOT APPLICABLE	Component does not exist.
9	EXCELLENT	Isolated inherent defects.
8	VERY GOOD	Some inherent defects.
7	GOOD	Some minor defects.
6	SATISFACTORY	Widespread minor or isolated moderate defects.
5	FAIR	Some moderate defects; strength and performance of the component are not affected.
4	POOR	Widespread moderate or isolated major defects; strength and/or performance of the component is affected.
3	SERIOUS	Major defects; strength and/or performance of the component is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.
2	CRITICAL	Major defects; component is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions in order to keep the bridge open.
1	IMMINENT FAILURE	Bridge is closed to traffic due to component condition. Repair or rehabilitation may return the bridge to service.
0	FAILED	Bridge is closed due to component condition, and is beyond corrective action. Replacement is required to restore service.

Coding Guide

Code	Description
N	NOT APPLICABLE
9	EXCELLENT CONDITION
8	VERY GOOD CONDITION - no problems noted.
7	GOOD CONDITION - some minor problems.
6	SATISFACTORY CONDITION - structural elements show some minor deterioration.
5	FAIR CONDITION - all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
4	POOR CONDITION - advanced section loss, deterioration, spalling or scour.
3	SERIOUS CONDITION - loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
2	CRITICAL CONDITION - advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	"IMMINENT" FAILURE CONDITION - major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put back in light service.
0	FAILED CONDITION - out of service - beyond corrective action.

SNBI Highlights

- Defects

Section 7

As used in the condition rating tables, an inherent defect is not indicative of damage or deterioration, but is characteristic of the material or results from normal construction practices. A minor defect is one where damage or deterioration has initiated but is not yet considered significant. A moderate defect is one where damage or deterioration are significant, but the strength and performance of the component are not affected. A major defect affects the strength and/or performance of the component, as determined by a structural and/or hydraulic review. For joints, bearings, railings, and railing transitions, a major defect prevents the component from functioning as intended.

Appendix C

Table 47. Concrete - defect severity guidance for component condition ratings.

Defect	Minor	Moderate
Delamination, Spalling, Patched Area	Delamination, small spall, or patched area that is sound.	Large spall or patched area that is unsound or showing distress.
Exposed Rebar	Present without measurable section loss.	Present with measurable section loss.
Exposed Prestressing	Present without section loss.	Present with section loss.
Cracking	Unsealed medium width cracks or unsealed medium pattern (map) cracking.	Wide cracks or heavy pattern (map) cracking.
Abrasion, Wear, Scaling	Exposed coarse aggregate, but the aggregate remains secure in the concrete.	Coarse aggregate is loose or has popped out of the concrete matrix.
Efflorescence, Rust Staining	Surface white or leaching with little or no build-up. No rust staining present.	Rust staining or heavy build-up of efflorescence.

The concrete crack defect description definitions describe generalized distress, but the width, spacing, location, orientation, and structural or non-structural nature of the cracking should also be considered.

In general, cracks can be considered:

- Insignificant – crack width less than 0.004 inches (prestressed) or 0.012 inches (reinforced), or medium width cracks that have been sealed.
- Medium – crack width ranging from 0.004 – 0.009 inches (prestressed) or 0.012 to 0.05 inches (reinforced).
- Wide – crack width wider than 0.009 inches (prestressed) or 0.05 inches (reinforced).
- Medium pattern (map) – crack spacing of 1 ft. to 3 ft.
- Heavy pattern (map) – crack spacing less than 1 ft.

SNBI Highlights

- Scour

Scour Condition Rating (B.C.11)

Code	Condition Description
N	Bridge does not cross over water.
9	No scour.
8	Insignificant scour.
7	Some minor scour.
6	Widespread minor or isolated moderate scour.
5	Moderate scour; strength and stability of the bridge are not affected.
4	Widespread moderate or isolated major scour; strength and/or stability of the bridge is affected.
3	Major scour; strength and/or stability of the bridge is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.
2	Major scour; strength and/or stability of the bridge is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions to keep the bridge open.
1	Bridge is closed to traffic due to scour condition. Channel rehabilitation may return the bridge to service.
0	Bridge is closed due to scour condition, and is beyond corrective action. Bridge replacement is needed to restore service.

Commentary
Refer to Item B.AP.03 *(Scour Vulnerability)* to verify if the bridge has been determined to be stable or unstable for appraised scour conditions. Consider design scour depth and critical scour depth, commonly found in hydraulic designs, scour evaluations, and POAs, when determining the scour condition ratings. When observed conditions are not consistent with the scour design or the assumptions used in the scour appraisal, this indicates a need to reevaluate Item B.AP.03 *(Scour Vulnerability)*.

Table 46. All Materials - defect severity guidance for component condition ratings.

Defect	Minor	Moderate
Distortion	Distortion that has been mitigated or does not require mitigation.	Distortion that requires mitigation but has not been addressed.
Settlement	Exists within tolerable limits or arrested with no observed structural distress.	Exceeds tolerable limits.
Scour	Exists within tolerable limits established for the bridge.	Exceeds tolerable limits, but is less than the critical limits established for the bridge.

SNBI Highlights

- Scour

Scour Vulnerability (B.AP.03)

Code	Description
0	Scour appraisal has not been completed.
A	Scour appraisal completed. Bridge determined to be stable for scour.
B	Scour appraisal completed. Bridge determined to be stable for scour, dependent upon designed, and functioning countermeasures.
C	Scour appraisal completed. Bridge could become unstable for scour. Temporary (not designed) countermeasure installed to mitigate scour. Bridge is scour critical.
D	Scour appraisal completed. Bridge is, or may become, unstable for scour. Bridge is scour critical.
E	Scour appraisal has not been completed. Temporary (not designed) countermeasure installed to mitigate scour.
U	Scour appraisal has not been completed due to unknown foundations.

Resources

- Indiana Division Office
  - Josh Heigert (Joshua.Heigert@dot.gov)
- FHWA Website
  - Bridge Inspection - Safety Inspection - Bridges & Structures - Federal Highway Administration (dot.gov)
- NBIS/SNBI Questions email
  - NBIS_SNBI_Questions@dot.gov