BUREAU OF STRUCTURES

2026 Structure Inspection Refresher Training Webinar

Presented by
BOS Maintenance Section
March 4, 2026

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2026 Structure Inspector Refresher Training

Mandatory WisDOT Training

- **Webinar is being recorded**
- **4 hours of refresher training – 4 PDHs available.**
- **Required training to complete bridge inspections in 2026**
  - **Register through WisDOT's LearnCenter, and**
    - **ATTEND LIVE WEBINAR**

    OR
    - **WATCH RECORDED WEBINAR**
      - **Recording will be available on the LearnCenter by mid-March**
        - **After watching the recording –**
          - **Send an email indicating completion to**
            - **structure-inspection@dot.wi.gov**

2026 Structure Inspector Refresher Training

Mandatory WisDOT Training

For today's training –

- **Webinar link emailed to you from LearnCenter is tied to the registered individual.**
- **If not using the link, or**
- **Sharing a link, or**
- **Watching on a shared computer**

Enter your name in the CHAT today as proof of participation.

- **Once video is posted to LearnCenter, it is available to watch again.**

2026 Structure Inspector Refresher Training

Mandatory WisDOT Training

- Slides and other documents referred to in this Webinar are available
  - WisDOT's Bureau of Structure – Maintenance & Inspection webpage

  - QR Code

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Agenda:

- NSTM Bridge Inspections
- HSIS Update
- SNBI Items
- SIM Updates
- Critical Findings
- QA Review Findings
- Inspection Reminders and Updates
- Signage
- Structural Reviews
- Maintenance Items/Actions
- Q&A

Today's presenters:

Dave Bohnsack
Ryan Bowers
Matt Coupar
Scott Reay
Alex Pence
Anthony Stakston

Slide Status – top left corner

N = New topic

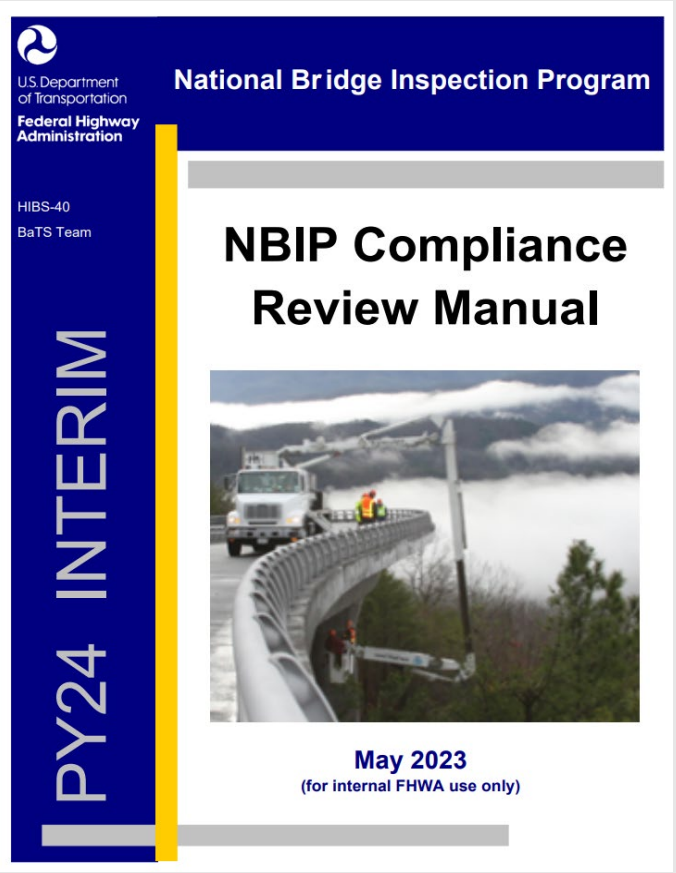
R = Reminder/review of existing topic

U = Updated topic

NSTM Bridge Inspections

Metric #16: Inspection Procedures – NSTM

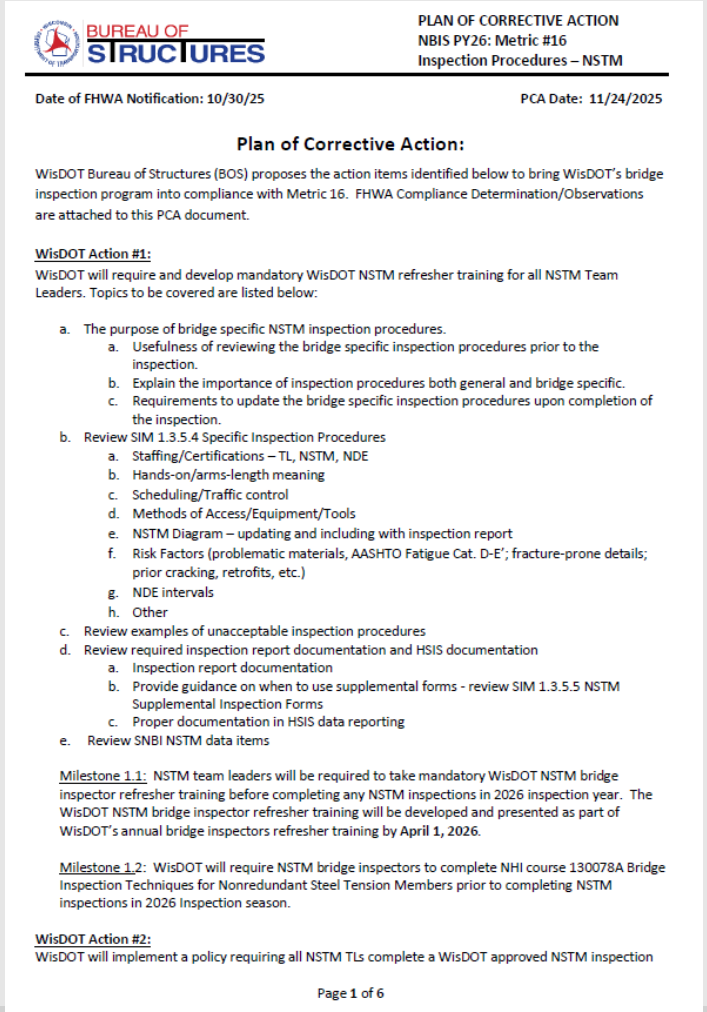
- **WisDOT Program found to be non-compliant during 2025 FHWA review**
  - Unacceptable bridge specific inspection procedures
  - Inspection procedures not always incorporated with future inspection reports
  - NSTM diagrams did not always identify all NSTMs
  - Method of access questionable for arms-reach inspection
  - No policy or criteria for reduced NSTM inspection interval ≤ 12 months



NSTM Bridge Inspections

Metric #16: Inspection Procedures – NSTM

- **WisDOT developed a Plan of Corrective Action**
  - **Required NSTM Refresher Training – NHI and WisDOT**
    - **Includes Bridge Specific Inspection Procedure requirements**
    - **Review access and arms-reach requirements**
  - **Develop inspection QC policy - implement later this year**
  - **Additional QA procedures – implement later this year**
  - **QA review of additional NSTM inspections**
  - **Develop policy and criteria for reduced NSTM inspection interval**



BUREAU OF STRUCTURES

PLAN OF CORRECTIVE ACTION
NBIS PY26: Metric #16
Inspection Procedures – NSTM

Date of FHWA Notification: 10/30/25 PCA Date: 11/24/2025

Plan of Corrective Action:

WisDOT Bureau of Structures (BOS) proposes the action items identified below to bring WisDOT's bridge inspection program into compliance with Metric 16. FHWA Compliance Determination/Observations are attached to this PCA document.

WisDOT Action #1:
WisDOT will require and develop mandatory WisDOT NSTM refresher training for all NSTM Team Leaders. Topics to be covered are listed below:

a. The purpose of bridge specific NSTM inspection procedures.
   a. Usefulness of reviewing the bridge specific inspection procedures prior to the inspection.
   b. Explain the importance of inspection procedures both general and bridge specific.
   c. Requirements to update the bridge specific inspection procedures upon completion of the inspection.
b. Review SIM 1.3.5.4 Specific Inspection Procedures
   a. Staffing/Certifications – TL, NSTM, NDE
   b. Hands-on/arms-length meaning
   c. Scheduling/Traffic control
   d. Methods of Access/Equipment/Tools
   e. NSTM Diagram – updating and including with inspection report
   f. Risk Factors (problematic materials, AASHTO Fatigue Cat. D-E'; fracture-prone details; prior cracking, retrofits, etc.)
   g. NDE intervals
   h. Other
c. Review examples of unacceptable inspection procedures
d. Review required inspection report documentation and HSIS documentation
   a. Inspection report documentation
   b. Provide guidance on when to use supplemental forms - review SIM 1.3.5.5 NSTM Supplemental Inspection Forms
   c. Proper documentation in HSIS data reporting
e. Review SNBI NSTM data items

Milestone 1.1: NSTM team leaders will be required to take mandatory WisDOT NSTM bridge inspector refresher training before completing any NSTM inspections in 2026 inspection year. The WisDOT NSTM bridge inspector refresher training will be developed and presented as part of WisDOT's annual bridge inspectors refresher training by **April 1, 2026**.

Milestone 1.2: WisDOT will require NSTM bridge inspectors to complete NHI course 130078A Bridge Inspection Techniques for Nonredundant Steel Tension Members prior to completing NSTM inspections in 2026 Inspection season.

WisDOT Action #2:
WisDOT will implement a policy requiring all NSTM TLs complete a WisDOT approved NSTM inspection

Page 1 of 6

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NSTM Bridge Inspections

Mandatory NSTM Inspector Refresher Training

- **NEW FOR 2026 Mandatory NSTM refresher course** for NSTM team leaders
- **NHI 130078A Bridge Inspection Techniques for NSTMs Refresher – 2025**
  - Free 5 hour on-line self-directed course through
  - Schedule through FHWA's NHI Blackboard platform

NSTM Bridge Inspections

Mandatory NSTM Inspector Refresher Training

- **Submit completion certificates** to WisDOT using QR code or link below

https://wisdot.app.box.com/f/15a855c61122424f923ba05de62879aa

- Enter the **completion date** (mm/dd/yyyy) in the *Comments*.
- Upload certificate filename in this format:

  NHI NSTM Refresher*(YY-MM-DD)***.pdf** where YY-MM-DD is the completion date.
- Drag and drop or select the Certificate PDF after clicking *Select Files*.
- Once added, select *Submit*.

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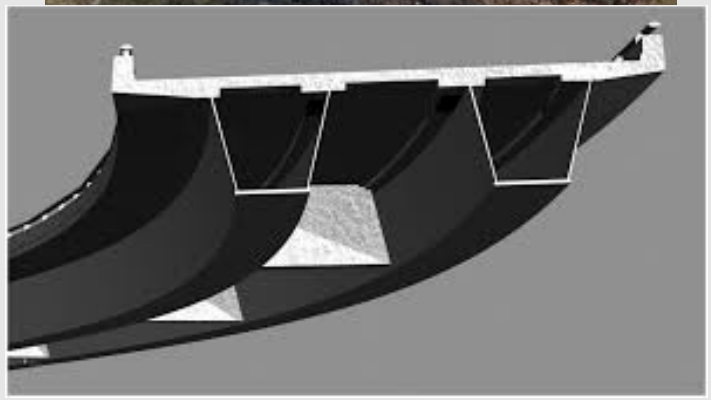
NSTM Bridge Inspections

Non-Redundant Steel Tension Member (NSTM)



- A primary steel member
- Fully or partially in tension
- Without load path, system, or internal redundancy
- Whose failure may cause a portion of or the entire bridge to collapse.

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NSTM Bridge Inspections

Hands-On / Arms-Reach required for all NSTM surfaces

Hands -On

At Arms-Length

From a Member's Surfaces

Hands-on inspection is performed at arm's length for all NSTM surfaces.

NSTM Bridge Inspections

Hands-On / Arms-Reach required for all NSTM surfaces

- All surface of NSTM must receive a hands-on inspection to find defects before serious problems develop.
- Fatigue cracks may initiate on any NSTM surface, near weld terminations, near material flaws, and at changes in member cross-section.
- Early-stage fatigue cracks are almost impossible to see beyond an arm's length.
- Fatigue cracks must be found before fracture occurs.
- Regular checks of enclosed members for water intrusion to find problems early before serious corrosion defects and section loss develop.

NSTM Bridge Inspections

Access – document in the bridge specific inspection procedures and inspection report

Underbridge Access Vehicle

Rope Access (SPRAT)

Ladder

Bucket Truck

Ariel Lift

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NSTM Bridge Inspections

Access - Ladder

Ladder – placed in water, on ice, or in a boat?

- Is this safe?
- Where is the inspector's focus if safety is a concern?
- Can all required NSTM surfaces be reached?
- What is the actual access method used?
- Is there a better access option?

- **Contact WisDOT region PM for consultation.**

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NSTM Bridge Inspections
Access - Ladder

Example QA reviews found comments indicating a ladder was used to reach NSTM

- "Placed ladder in water to reach element"
  - Inspection team consisted of 1 person.
  - Water depth records indicate +6' deep with swift current.
- "Complete NSTM inspection in winter months after water has frozen - set ladder on ice."
  - Inspection photos show open water all around – how was the inspection completed?
- Access explained that a flat bottom boat with a step ladder was used.
  - Is it safe - how good is the inspection if you are not safe? Where is the inspectors focus?

NSTM Bridge Inspections

Access – Climbing/Rope Access

WisDOT requires compliance with OSHA standards which includes adhering to SPRAT requirements for climbing

- SPRAT - Society of Professional Rope Access Technicians (sprat.org)
  - Industry-recognized standards for safe rope access.

Unsafe and not arms-reach examples found in NSTM inspections

- *"Walked the bottom chord"* - impossible to walk the bottom chord of a truss and complete hands-on within arms reach of underside panel point.
- *"Standing on deck surface, look at the inside of the south girder. Check the floorbeam & stiffener connection…Then with your feet on the bottom flange and holding on to the top flange, walk the outside girder…Watch for wasps."*

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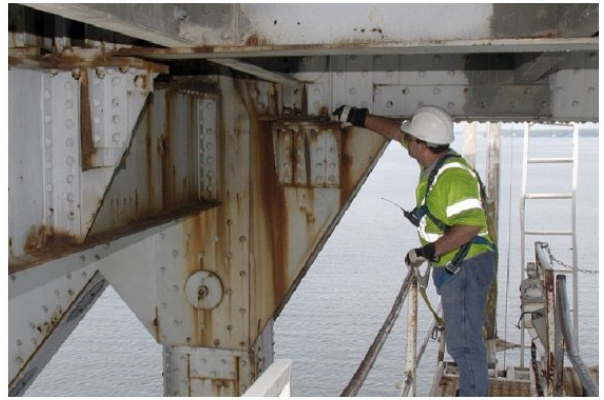
NSTM Bridge Inspections

Access – document in the inspection report and bridge specific inspection procedures

Inspection Report

- Latest version will have a list (dropdown in electronic version) to select from.

Bridge Specific Inspection Procedures



- Document the method of access and access equipment needed
  - Equipment description
  - Recommended equipment size with minimum/maximum limitations
  - Location of the element/component for the access equipment
  - Special equipment placement location, configuration, or procedures for equipment to access required locations.
- Provide any additional information on access
  - Access door locations
  - Keys or special tools/equipment needed to open and access areas.

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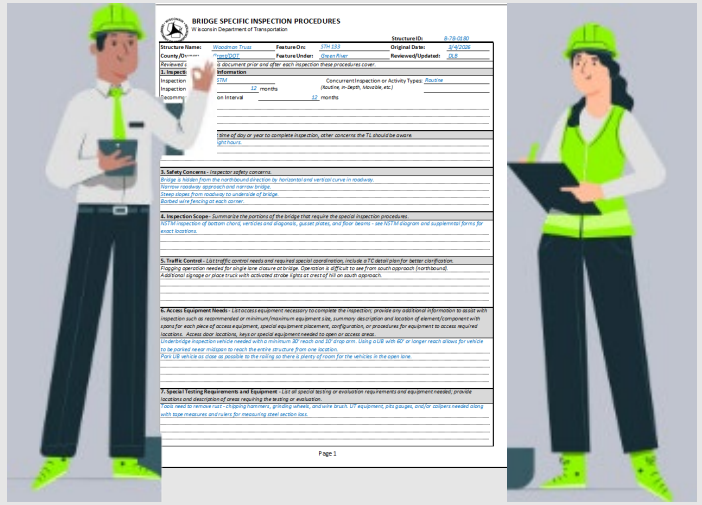
NSTM Bridge Inspections

Bridge Specific Inspection Procedures

- Provides information to the inspection team for the specific bridge.
- Ensures inspection details are communicated to future inspection teams.
- Organized in an easily reviewable single document for future inspection teams.
- **Review before the inspection.**
- **Update after the inspection.**
- Required per the WisDOT policy and NBIS.
- Not a summary of the inspection findings



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NBIS Bridge Inspections

Bridge Specific Inspection Procedures

Purpose of reviewing before the inspection prior to the inspection:

What, when, where, who, why, and how of the specific bridge and the inspection type.

- **What** – inspection type, information, risk factors, elements to inspect,…
- **When** – current and recommended inspection interval, best time to compete the work,…
- **Where** – element location, areas to inspect, areas of concern,…
- **Who** – inspection team qualifications, equipment needs, coordination with others,…
- **Why** – reason for the specialized inspection,…
- **How** – traffic control required, safety, inspection sequence,…

Organized in an easily reviewable single document for future inspection teams.

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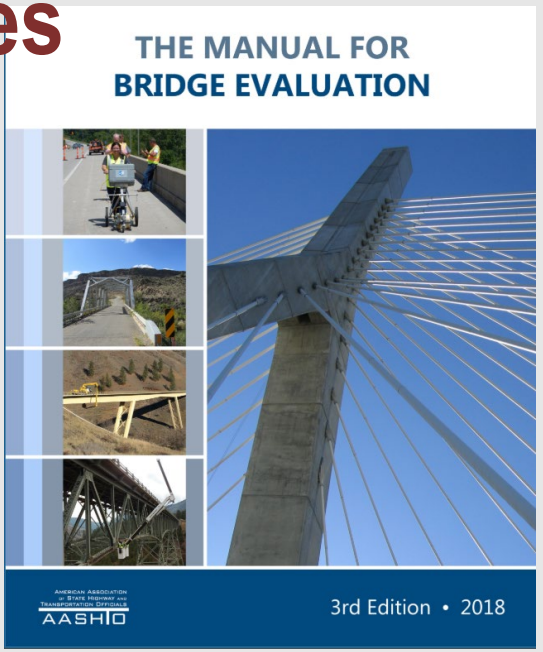
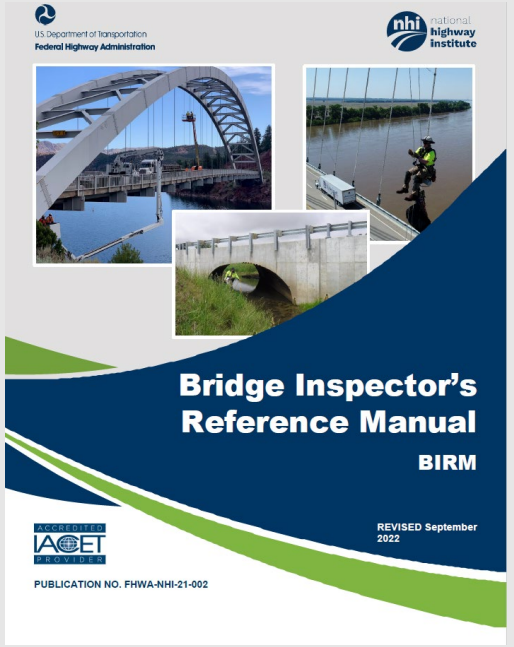
NSTM Bridge Inspections
Bridge Specific Inspection Procedures

References:

- AASTHTO Manual for Bridge Evaluation (MBE), Third Edition,
  - Section 4.2.5 Inspection Procedures
- Bridge Inspector's Reference Manual (BIRM)
  - Part 1 Chapter 2 Inspection Fundamentals
- WisDOT's Structure Inspection Manual
  - Section 1.3.5.4 Specific Inspection Procedures





Structure Inspection Manual (2025)

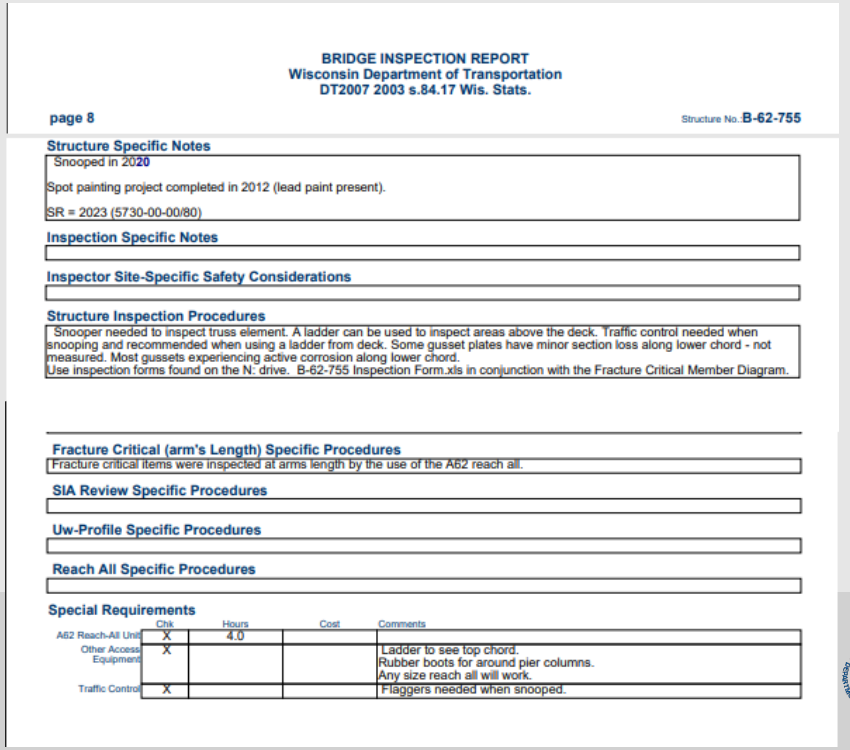
- 4/25 SIM Summary of Changes
- 7/24 SIM Summary of Changes
- 3/24 SIM Summary of Changes
- Part 1 - Administration
- Part 2 - Bridges
- Part 3 - Movable Structures
- Part 4 - Ancillary Structures
- Part 5 - NDT and PDT Testing
- Part 6 - Tunnels
- Full Document

NSTM Bridge Inspections

General Procedures vs Bridge Specific Procedures

General inspection procedures –

- Address the common aspects of bridge inspections
- SIM Chapter Part 2 covers general procedures and provides references
- Additional general procedures and information can be added to in the inspection reports
  - Structure Specific Notes
  - Inspection Specific Notes
  - Structure Inspection Procedures



BRIDGE INSPECTION REPORT
Wisconsin Department of Transportation
DT2007 2003 s.84.17 Wis. Stats.

page 8 Structure No. B-62-755

Structure Specific Notes

Snooped in 2020

Spot painting project completed in 2012 (lead paint present).

SR = 2023 (5730-00-00/80)

Inspection Specific Notes

Inspector Site-Specific Safety Considerations

Structure Inspection Procedures

Snooper needed to inspect truss element. A ladder can be used to inspect areas above the deck. Traffic control needed when snooping and recommended when using a ladder from deck. Some gusset plates have minor section loss along lower chord - not measured. Most gussets experiencing active corrosion along lower chord.
Use inspection forms found on the N: drive. B-62-755 Inspection Form.xls in conjunction with the Fracture Critical Member Diagram.

Fracture Critical (arm's Length) Specific Procedures

Fracture critical items were inspected at arms length by the use of the A62 reach all.

SIA Review Specific Procedures

Uw-Profile Specific Procedures

Reach All Specific Procedures

Special Requirements

	Chk	Hours	Cost	Comments
A62 Reach-All Unit	X	4.0		
Other Access Equipment	X			Ladder to see top chord. Rubber boots for around pier columns. Any size reach all will work.
Traffic Control	X			Flaggers needed when snooped.

NSTM Bridge Inspections

General Procedures vs Bridge Specific Procedures

Bridge Specific Inspection Procedures

- Ensures the specific inspection details are communicated to future inspection teams.
- SIM Chapter 1.3.5.4 – Specific Inspection Procedures
  - Also referred to as Special Inspection Procedures in some areas of the SIM.
- Layout what should be done during the inspection
- Used by the team leader to prepare for a thorough inspection.
- Inspection results and findings lead to updates in the procedures.
- Required per the 23CFR 650.313(g)

NSTM Bridge Inspections

General Procedures vs Bridge Specific Procedures

Bridge Specific Inspection Procedures

23CFR 650.313

(g) ***NSTM, underwater, in-depth, and complex feature inspection procedures.*** Develop and document inspection procedures for bridges which require NSTM, underwater, in-depth, and complex feature inspections in accordance with Section 4.2, AASHTO Manual (incorporated by reference, *see* § 650.317). State transportation departments, Federal agencies, and Tribal governments can include general procedures applicable to many bridges in their procedures manual. Specific procedures for unique and complex structural features must be developed for each bridge and contained in the bridge file.

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NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Ensure inspection info is communicated to future inspection teams

12 Focus Areas:

1. **Inspection type and information** – inspection interval, type, other info …
2. **Considerations & concerns** – scheduling and other concerns the TL should consider
3. **Safety concerns** – inspector or public
4. **Inspection scope** - summarize the portions of the bridge that require the special inspection procedures
5. **Traffic control** - list traffic control and required special coordination

Continued on the next slide…

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NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Focus areas to ensure inspection details are communicated to future inspection teams:

6. **Access requirements & equipment** – UB unit, SPRAT, aerial lift, … equipment requirements and placement
7. **Special testing requirements & equipment** - identify special testing or evaluation requirements and equipment; provide locations and description of areas requiring the testing or evaluation
8. **Special Coordination** – special coordination or procedures (Coast Guard, security, emergency responders, property owners, local agencies, etc.)
9. **Inspection Personnel Qualifications** - indicate any qualifications for inspection personnel

Continued on the next slide…

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NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Focus areas to ensure inspection details are communicated to future inspection teams:

10. **Risk factors** - identify conditions at the bridge site that may impact structural safety or serviceability

- NSTM condition code of 4 or less
- Discontinuities resulting in stress risers
- Fatigue and fracture prone details
- Out-of-plane distortion details
- Retrofits/repairs to NSTM
- Un-arrested steel cracks
- Arrested cracks
- Identified defect
- Welds - tack, field, poor welds
- Designed prior to 1978 fracture control plan
- Web gap details
- Problematic materials
- Debris and pack rust build up
- Historic or risk of impact damage
- Load posted
- Service life > 30 years
- High Truck Traffic
- Pin/Hanger connections
- Other

Continue on the next slide...

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NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Focus areas to ensure inspection details are communicated to future inspection teams:

11. **Inspection sequence** – step by step summarizing the order of the NSTM inspection

Example:

- *Ideal to start at the south end and work north in the cardinal direction*
- *Start with the UB parked as far forward as needed to reach back to the opposite panel point*
- *Start inspection at end panel point., inspect both sides of gusset at all panel points.*
- *Move laterally across end floorbeam to opposite end panel point.*
- *Inspect along the bottom chord to the next panel point on opposite side.*
- *Inspect along verticals and diagonals and around gusset plates.*
- *Move along the lower chords, working back and forth along floorbeams, up and down along diagonals and verticals until finished….*

Continue on the next slide…

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NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Focus areas to ensure inspection details are communicated to future inspection teams:

12. **Identify members and elements to be inspected as part of the specific inspection**
    - **NSTM diagram and supplemental forms**
      - **Include**
        - **Floorbeams spaced >14’**
        - **Gusset plates**

Continued on the next slide…

Knowledge Check

When are the bridge specific inspection procedures required to be Reviewed?

Before the bridge inspection

When are the bridge specific inspection procedures required to be updated?

After the bridge inspection

NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Nearly-compliant Example:

DT2010 - Outdated

Missing focus areas –

- Coordination
- Risk factors
- Access
- Others

Included inspection conclusions and recommendations – not to be part of the inspection procedures.

BRIDGE FRACTURE CRITICAL INSPECTION REPORT
Wisconsin Department of Transportation
DT2010 7/2003 (Replaces DT1273) s.84.17 Wis. Stats.

This form is required as a supplement to form DT2007, for Fracture Critical Inspections.

Structure Number:

List AASHTO Fatigue Detail Type

1. Built-up Plate Girders	3.
2.	4.

Inspection Documentation

Component	General Location	Specific Location	Inspection Comments
Built-up Plate Girder	North Side		5% section loss to webs at level of conc. deck (splash zone) @ inside face of plate. Freckle rust through entire length of lower flanges - no section loss.
Built-up Plate Girder	South Side		5% section loss to webs @ inside splash zone. (same as north side) (conservative estimate)
Inspection Procedure: Standing on the deck, look at the inside face of the south girder. Then look at the outside face with your feet on the bottom flange and holding on to the top flange. Check rivets, connections and look for section loss. Repeat with the north girder. (Watch for wasps)			

Conclusion Comments

No problems with plate girders or floor beams

2017) No change

2019) No change

2023. No Change
2025. No Change

Recommendations

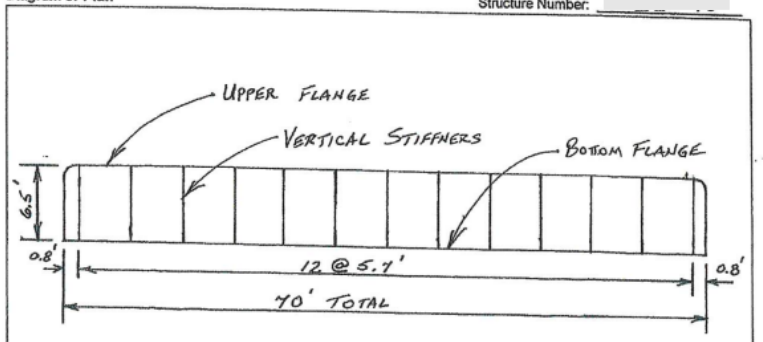
Continue to inspect on 2 yr. interval

BRIDGE FRACTURE CRITICAL INSPECTION SUPPLEMENTAL REPORT
Wisconsin Department of Transportation
DT2011 2003 s.84.17 Wis. Stats.

This form is required as a supplement to form DT2007 for Fracture Critical Inspections. Use this form to provide a drawing or plan identifying fracture critical and non-fracture critical tension members.

Diagram or Plan

Structure Number:



Bottom Flange is in tension, but check all built-up connections between flanges, stiffners and plate. Also check floor beam connections to plate girder.

Walk outside of plate girders holding on to top flange with feet on lower flange. Watch for wasps!

2013) All rivets & bolts are tight, connections are aligned properly.

2015) No change

Page 2 of 2

2016) No change

2023. No Change
2025. No Change

NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Nearly-compliant Example:

DT1273 - Outdated

Missing some focus areas.

FRACTURE CRITICAL BRIDGE INSPECTION REPORT

Wisconsin Department of Transportation

DT 1273 95

Structure Number		County	Owner	
B[redacted]		~~Chippewa~~	**Chippewa County**	
Feature On		Feature Under	Maintaining Agency	
[redacted]M		[redacted]r	**Chippewa County**	
SPAN CONFIGURATION		**Pony Truss**	PLANS AVAILABLE	Y/N
FRACTURE CRITICAL MEMBERS/COMPONENTS			Original Design	**N**
Lower chord and floor beam connections			"As-Built" Plans	**Y**
CONSTRUCTION HISTORY			Original Shop	**Y**
DATE	Work Performed		Rehabilitation	**Y**
1950	**New Structure**		Maintenance	**N**
			Other	**Y**
REHABILITATION HISTORY			ACCESS EQUIPMENT	
DATE	Work Performed		**WISDOT "Reach All" Truck**	
2003	**Painting, Deck Overlay**			
MAINTENANCE HISTORY			INSPECTION EQUIPMENT REQUIRED	
DATE	Work Performed		**Sounding hammer**	
TRAFFIC CONTROL REQUIRED			EST INSP. TIME	**8-10 hrs**
Close to traffic. 7 Type 3 barricades 2 road closed signs, 3 road closed miles ahead signs.				

Conclusion:
Lower chord gusset plate distortion. Worst distortion noted at SWL14 and NWL22 gusset plates. Distortion noted below most
Fracture Critical diagonals. Measured with no change to gusset plate distortions noted from 2022 inspection.
Change in measurements comes from using Reach All Truck. Easier to get more accurate measurements from bucket.
Pack rust beginning to form between connection plates/gusset plates/diagonals on lower chord and top chord connections.
Lower chord channels have minor section loss to inside faces between lateral brace plates.
Upper chord gusset plates bowing out in some locations. All upper 17 gusset plate locations have the worst cases of bowing.

Recommendations:
Continue to monitor lower gusset plate distortions.
Monitor upper gusset plates located where NSTM member diagonals to lower chord.
U7 U9 U15 U17. U17 outside gusset plates seem to have most distortion.

INSPECTING AGENCY	**Chippewa County Highway Department**	Inspection Frequency	
Inspector (Team Leader) X	**Wayne Krejci**	Date	**9/10/25**
Program Manager X	**Wayne Krejci**	Date	**9/10/25**

Wisconsin County Highway Association

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NSTM Bridge Inspections
Bridge Specific Inspection Procedures

Non-compliant Examples:

#1

Fracture Critical (arm's Length) Specific Procedures

Elements and assessments looked at during the fracture critical inspection: Steel truss, steel floor beam, steel gusset plate.

All elements and assessments looked at during routine (walk through) inspection. No special access equipment was used - viewed elements from ground or deck.

#2

NSTM (arm's length) Specific Procedures

Fracture critical members were inspected using the WisDOT reach-all truck. All upper and lower gussets were inspected, along with bottom chord and floor beam connections.

NSTM Bridge Inspections
Bridge Specific Inspection Procedures

Non-compliant Example:

Missing focus areas
- Risk factors
- Safety concerns
- Traffic control
- Considerations
- Others

Fracture Critical Member Inspection Procedure

Structure: B- 1
Roadway:

Fracture Critical Members:
South Truss Lower Chord
North Truss Lower Chord
South Truss Tension Members: U1-L1, U1-L2, U3-L3, U3-L4, L4-U3', U3'-L3', L2'-U1', U1'-L1'
North Truss Tension Members: U1-L1, U1-L2, U3-L3, U3-L4, L4-U3', U3'-L3', L2'-U1', U1'-L1'

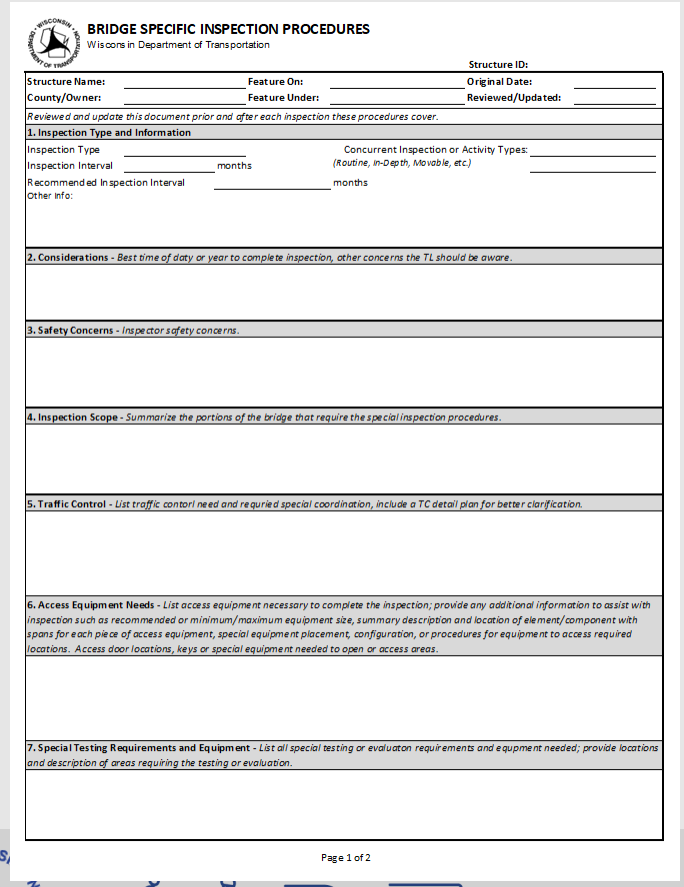
Equipment requirements:
Camera
Ladder

Inspection Procedure:
Beginning with the North truss, web members in tension, U1-L1, U1-L2, U3-L3, U3-L4, L4-U3', U3'-L3', L2'-U1', U1'-L1', are inspected starting at the upper chord, proceeding to the lower chord. Next, web members in tension, U1-L1, U1-L2, U3-L3, U3-L4, L4-U3', U3'-L3', L2'-U1', U1'-L1', of the South truss are inspected starting at the upper chord, proceeding to the lower chord. Following inspection of the web tension members, the lower chords are inspected from below utilizing a ladder, where needed. The North lower chord is inspected starting at the East Abutment, progressing to the waterway. The South lower chord is then inspected starting at the East Abutment, progressing to the waterway. The South lower chord is then inspected starting at the West Abutment, progressing to the waterway. The North lower chord is then inspected starting at the West Abutment, progressing to the waterway. Following the inspection of the fracture critical members, the routine inspection commences.

NSTM Bridge Inspections
Bridge Specific Inspection Procedures

New Template: Based on template provided in the NHI *Bridge Inspection Techniques for NSTM Refresher*

Found on WisDOT BOS website - covers the focus area for the bridge specific inspection procedures.



BRIDGE SPECIFIC INSPECTION PROCEDURES
Wisconsin Department of Transportation

Structure ID:

Structure Name: Feature On: Original Date:
County/Owner: Feature Under: Reviewed/Updated:

Reviewed and update this document prior and after each inspection these procedures cover.

1. Inspection Type and Information
Inspection Type
Inspection Interval months
Recommended Inspection Interval months
Other info:
Concurrent Inspection or Activity Types: *(Routine, In-Depth, Movable, etc.)*

2. Considerations - *Best time of daty or year to complete inspection, other concerns the TL should be aware.*

3. Safety Concerns - *Inspector safety concerns.*

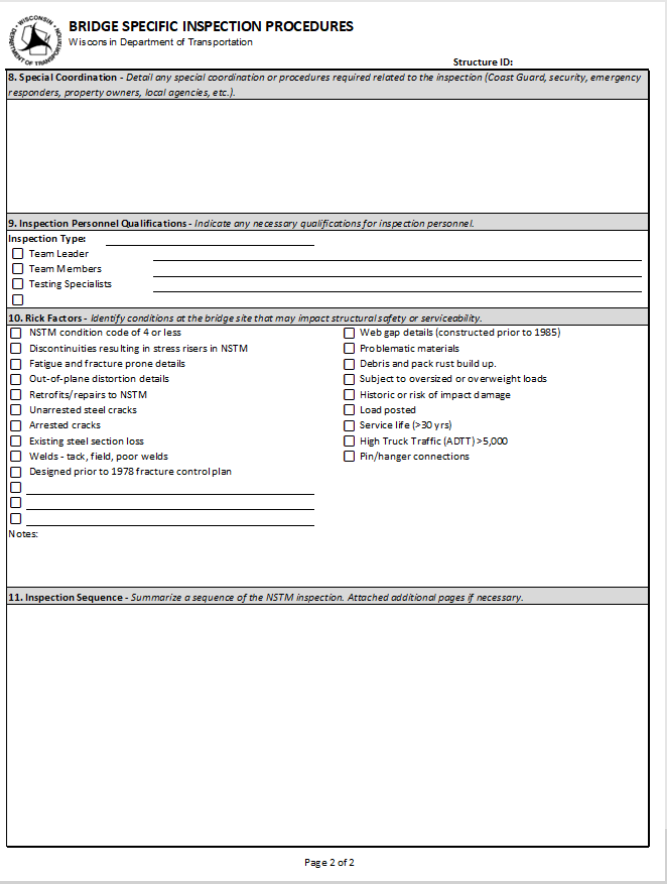
4. Inspection Scope - *Summarize the portions of the bridge that require the special inspection procedures.*

5. Traffic Control - *List traffic contorl need and requried special coordination, include a TC detail plan for better clarification.*

6. Access Equipment Needs - *List access equipment necessary to complete the inspection; provide any additional information to assist with inspection such as recommended or minimum/maximum equipment size, summary description and location of element/component with spans for each piece of access equipment, special equipment placement, configuration, or procedures for equipment to access required locations. Access door locations, keys or special equipment needed to open or access areas.*

7. Special Testing Requirements and Equipment - *List all special testing or evaluaton requirements and equpment needed; provide locations and description of areas requiring the testing or evaluation.*

Page 1 of 2



BRIDGE SPECIFIC INSPECTION PROCEDURES
Wisconsin Department of Transportation

Structure ID:

8. Special Coordination - *Detail any special coordination or procedures required related to the inspection (Coast Guard, security, emergency responders, property owners, local agencies, etc.).*

9. Inspection Personnel Qualifications - *Indicate any necessary qualifications for inspection personnel.*

Inspection Type:
- ☐ Team Leader
- ☐ Team Members
- ☐ Testing Specialists
- ☐

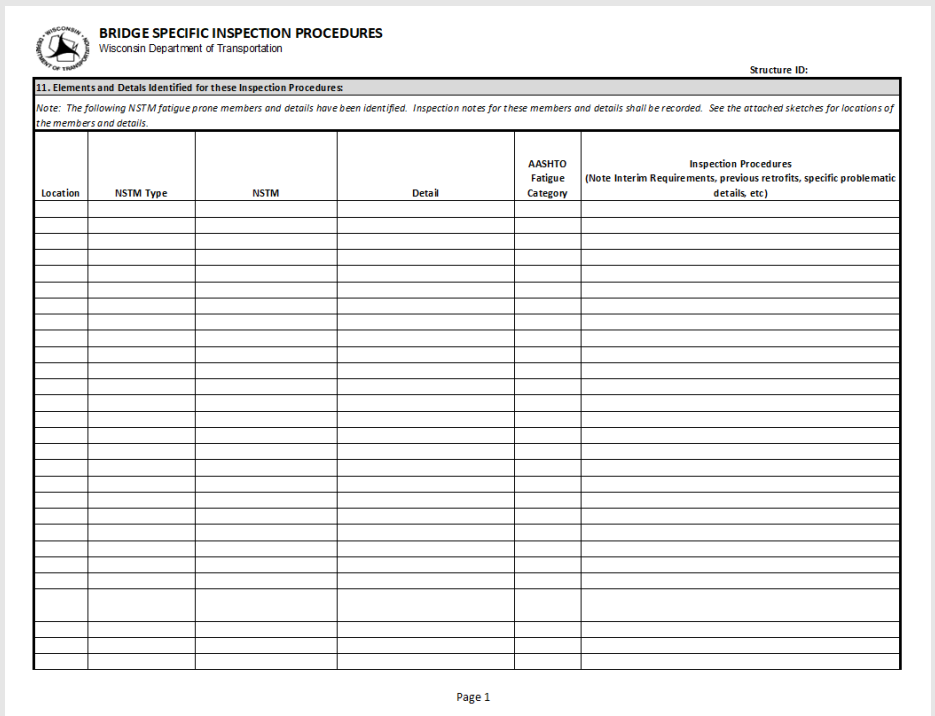
10. Rick Factors - *Identify conditions at the bridge site that may impact structural safety or serviceability.*

- ☐ NSTM condition code of 4 or less
- ☐ Discontinuities resulting in stress risers in NSTM
- ☐ Fatigue and fracture prone details
- ☐ Out-of-plane distortion details
- ☐ Retrofits/repairs to NSTM
- ☐ Unarrested steel cracks
- ☐ Arrested cracks
- ☐ Existing steel section loss
- ☐ Welds - tack, field, poor welds
- ☐ Designed prior to 1978 fracture control plan
- ☐ Web gap details (constructed prior to 1985)
- ☐ Problematic materials
- ☐ Debris and pack rust build up.
- ☐ Subject to oversized or overweight loads
- ☐ Historic or risk of impact damage
- ☐ Load posted
- ☐ Service life (>30 yrs)
- ☐ High Truck Traffic (ADTT) >5,000
- ☐ Pin/hanger connections
- ☐
- ☐
- ☐

Notes:

11. Inspection Sequence - *Summarize a sequence of the NSTM inspection. Attached additional pages if necessary.*

Page 2 of 2



BRIDGE SPECIFIC INSPECTION PROCEDURES
Wisconsin Department of Transportation

Structure ID:

11. Elements and Details Identified for these Inspection Procedures:

Note: The following NSTM fatigue prone members and details have been identified. Inspection notes for these members and details shall be recorded. See the attached sketches for locations of the members and details.

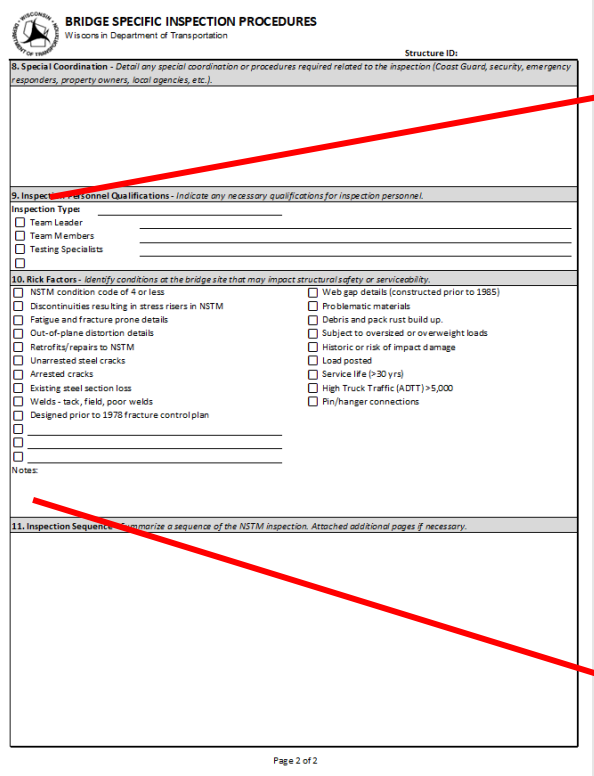
Location	NSTM Type	NSTM	Detail	AASHTO Fatigue Category	Inspection Procedures (Note Interim Requirements, previous retrofits, specific problematic details, etc)

Page 1

NSTM Bridge Inspections
Bridge Specific Inspection Procedures

New Template: Based on template provided in the NHI *Bridge Inspection Techniques for NSTM Refresher*

Common risk factors are already listed – only need to check the boxes or fill in blanks



BRIDGE SPECIFIC INSPECTION PROCEDURES
Wisconsin Department of Transportation

Structure ID:

8. Special Coordination - *Detail any special coordination or procedures required related to the inspection (Coast Guard, security, emergency responders, property owners, local agencies, etc.).*

9. Inspection Personnel Qualifications - *Indicate any necessary qualifications for inspection personnel.*

Inspection Type:
- ☐ Team Leader
- ☐ Team Members
- ☐ Testing Specialists
- ☐

10. Rick Factors - *Identify conditions at the bridge site that may impact structural safety or serviceability.*

- ☐ NSTM condition code of 4 or less
- ☐ Discontinuities resulting in stress risers in NSTM
- ☐ Fatigue and fracture prone details
- ☐ Out-of-plane distortion details
- ☐ Retrofits/repairs to NSTM
- ☐ Unarrested steel cracks
- ☐ Arrested cracks
- ☐ Existing steel section loss
- ☐ Welds - tack, field, poor welds
- ☐ Designed prior to 1978 fracture control plan
- ☐ Web gap details (constructed prior to 1985)
- ☐ Problematic materials
- ☐ Debris and pack rust build up.
- ☐ Subject to oversized or overweight loads
- ☐ Historic or risk of impact damage
- ☐ Load posted
- ☐ Service life (>30 yrs)
- ☐ High Truck Traffic (ADTT) >5,000
- ☐ Pin/hanger connections
- ☐ _____
- ☐ _____
- ☐ _____

Notes:

11. Inspection Sequence - *Summarize a sequence of the NSTM inspection. Attached additional pages if necessary.*

Page 2 of 2

10. Rick Factors - *Identify conditions at the bridge site that may impact structural safety or serviceability.*

- ☐ NSTM condition code of 4 or less
- ☐ Discontinuities resulting in stress risers in NSTM
- ☐ Fatigue and fracture prone details
- ☐ Out-of-plane distortion details
- ☐ Retrofits/repairs to NSTM
- ☐ Unarrested steel cracks
- ☐ Arrested cracks
- ☐ Existing steel section loss
- ☐ Welds - tack, field, poor welds
- ☐ Designed prior to 1978 fracture control plan
- ☐ Web gap details (constructed prior to 1985)
- ☐ Problematic materials
- ☐ Debris and pack rust build up.
- ☐ Subject to oversized or overweight loads
- ☐ Historic or risk of impact damage
- ☐ Load posted
- ☐ Service life (>30 yrs)
- ☐ High Truck Traffic (ADTT) >5,000
- ☐ Pin/hanger connections
- ☐ _____
- ☐ _____
- ☐ _____

NSTM Bridge Inspections

Bridge Specific Inspection Procedures

New Template: Completed example

BRIDGE SPECIFIC INSPECTION PROCEDURES
Wisconsin Department of Transportation

Structure ID: B-78-0180

Structure Name:	Woodman Truss	**Feature On:**	STH 133	**Original Date:**	3/4/2026
County/Owner:	Grant/DOT	**Feature Under:**	Green River	**Reviewed/Updated:**	DLB

Reviewed and update this document prior and after each inspection these procedures cover.

1. Inspection Type and Information

Inspection Type: NSTM
Inspection Interval: 12 months
Concurrent Inspection or Activity Types: Routine (Routine, In-Depth, Movable, etc.)
Recommended Inspection Interval: 12 months
Other Info:

2. Considerations - *Best time of day or year to complete inspection, other concerns the TL should be aware.*

Best to complete in daylight hours.

3. Safety Concerns - *Inspector safety concerns.*

Bridge is hidden from the northbound direction by horizontal and vertical curve in roadway.
Narrow roadway approach and narrow bridge.
Steep slopes from roadway to underside of bridge.
Barbed wire fencing at each corner.

4. Inspection Scope - *Summarize the portions of the bridge that require the special inspection procedures.*

NSTM inspection of bottom chord, verticles and diagonals, gusset plates, and floor beams - see NSTM diagram and supplemntal forms for exact locations.

5. Traffic Control - *List traffic control needs and required special coordination, include a TC detail plan for better clarification.*

Flagging operation needed for single lane closure at bridge. Operation is difficult to see from south approach (northbound).
Additional signage or place truck with activated strobe lights at crest of hill on south approach.

6. Access Equipment Needs - *List access equipment necessary to complete the inspection; provide any additional information to assist with inspection such as recommended or minimum/maximum equipment size, summary description and location of element/component with spans for each piece of access equipment, special equipment placement, configuration, or procedures for equipment to access required locations. Access door locations, keys or special equipment needed to open or access areas.*

Underbridge inspection vehicle needed with a minimum 30' reach and 10' drop arm. Using a UB with 60' or longer reach allows for vehicle to be parked neear midspan to reach the entire structure from one location.
Park UB vehicle as close as possible to the railing so there is plenty of room for the vehicles in the open lane.

7. Special Testing Requirements and Equipment - *List all special testing or evaluation requirements and equipment needed; provide locations and description of areas requiring the testing or evaluation.*

Tools need to remove rust - chipping hammers, grinding wheels, and wire brush. UT equipment, pits gauges, and/or calipers needed along with tape measures and rulers for measuring steel section loss.

Page 1

BRIDGE SPECIFIC INSPECTION PROCEDURES
Wisconsin Department of Transportation

Structure ID: B-78-0180

8. Special Coordination - *Detail any special coordination or procedures required related to the inspection (Coast Guard, security, emergency responders, property owners, local agencies, etc.).*

Notify county sheriff/emergancy dispatch about the work.
Enter lane closure into WisDOT LCS.

9. Inspection Personnel Qualifications - *Indicate any necessary qualifications for inspection personnel.*

Inspection Type: NSTM

- [x] Team Leader — *NSTM qualified*
- [ ] Team Members
- [x] Testing Specialists — *UT trained*
- [ ]

10. Rick Factors - *Identify conditions at the bridge site that may impact structural safety or serviceability.*

- [x] NSTM condition code of 4 or less
- [ ] Discontinuities resulting in stress risers in NSTM
- [x] Fatigue and fracture prone details
- [ ] Out-of-plane distortion details
- [ ] Retrofits/repairs to NSTM
- [ ] Unarrested steel cracks
- [ ] Arrested cracks
- [x] Existing steel section loss
- [ ] Welds - tack, field, poor welds
- [x] Designed prior to 1978 fracture control plan
- [ ] Web gap details (constructed prior
- [ ] Problematic materials
- [x] Debris and pack rust build up.
- [ ] Subject to oversized or overweight
- [x] Historic or risk of impact damage
- [ ] Load posted
- [x] Service life (>30 yrs)
- [ ] High Truck Traffic (ADTT)>5,000
- [ ] Pin/hanger connections

Bridge has areas of steel section loss and pack rust between plates in the NSTM members resulting in NSTM condi
Fatigue prone details identified on the supplemental form.
Numerous impacts to the truss members identified in the inspection report.

11. Inspection Sequence - *Summarize a sequence of the NSTM inspection. Attached additional pages if necessary*

Ideal to start at the south end and work north in the direction panel point numbering.
Structure is small enough to reach all areas of truss with a UB60 when placed near midspan.
Starting with the UB near midspan or as far forward as needed to reach back to the opposite panel point.
Start inspection at end panelpoint., inspect both sides of gusset at all panel points.
Move laterally across end floorbeam to opposite end panelpoint.
Inspect along the bottom chord to the next panel point on opposite side.
Inspect along verticals and diagonals and around gusset plates.
Move along the lower chords, working back and forth along floorbeams, up and down along diagonals and vertica
Inspect both sides of panel point gussets, all along all surfces of NSTMs.

Page 2

BRIDGE SPECIFIC INSPECTION PROCEDURES
Wisconsin Department of Transportation

Structure ID: B-78-0180

12. Elements and Details Identified for these Inspection Procedures:

Note: The following NSTM fatigue prone members and details have been identified. Inspection notes for these members and details shall be recorded. See the attached sketches for locations of the members and details.

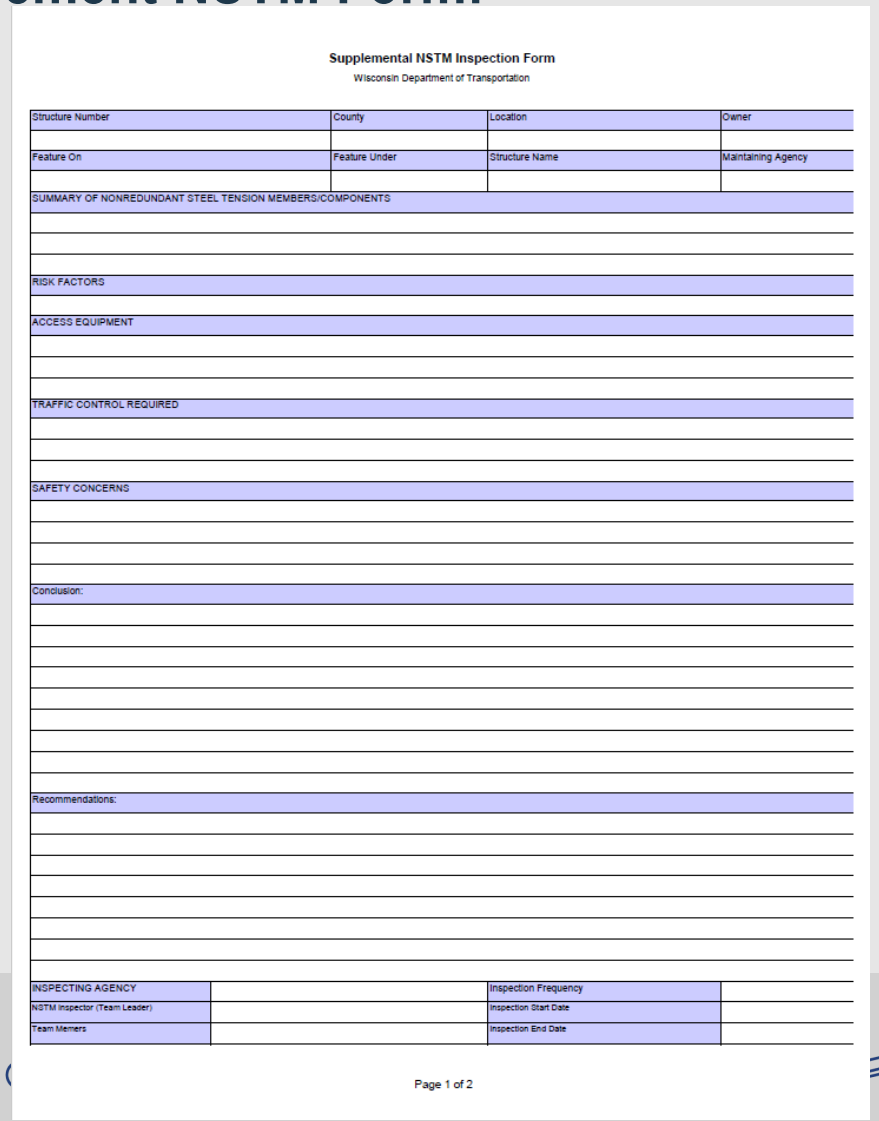
Location	NSTM Type	NSTM	Detail	AASHTO Fatigue Category	Inspection Procedures (Note Interim Requirements, previous retrofits, specific problematic details, etc)
East Truss	Gusset Plates	L0	Contain rivetted connections		
	Bottom Chord	L0-L1	Contain rivetted connections		
	Floorbeam	FB0	Coped top flange at connection to chord		
	Vertical	L1-U1	Contain rivetted connections		
	Diagonal	U1-L2	Contain rivetted connections		
	Gusset Plates	L1	Contain rivetted connections		
	Floorbeam	FB1	Coped top flange at connection to chord		
	Bottom Chord	L1-L2	Contain rivetted connections		
	Gusset Plates	L2	Contain rivetted connections		
	Floorbeam	FB2	Coped top flange at connection to chord		
	Bottom Chord	L2-L3	Contain rivetted connections		
	Gusset Plates	L3	Contain rivetted connections		
	Gusset Plates	U3	Contain rivetted connections		
	Vertical	L3-U3	Contain rivetted connections		
	Floorbeam	FB3	Coped top flange at connection to chord		
	Vertical	L1-U1	Contain rivetted connections		
	Diagonal	U1-L2	Contain rivetted connections		
	Gusset Plates	L1	Contain rivetted connections		

Page 1

NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Supplement NSTM Form:



Supplemental NSTM Inspection Form

Wisconsin Department of Transportation

Structure Number	County	Location	Owner
Feature On	**Feature Under**	**Structure Name**	**Maintaining Agency**

SUMMARY OF NONREDUNDANT STEEL TENSION MEMBERS/COMPONENTS

RISK FACTORS

ACCESS EQUIPMENT

TRAFFIC CONTROL REQUIRED

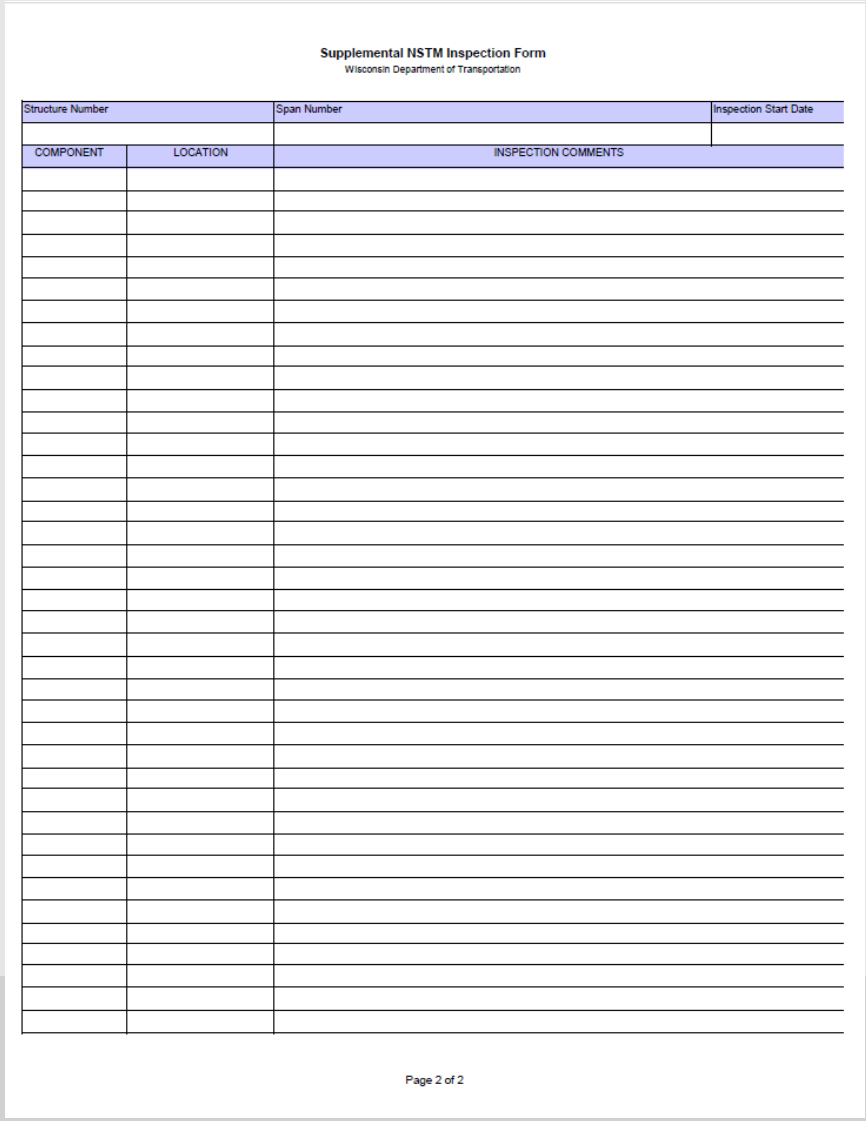
SAFETY CONCERNS

Conclusion:

Recommendations:

INSPECTING AGENCY		Inspection Frequency	
NSTM Inspector (Team Leader)		Inspection Start Date	
Team Memers		Inspection End Date	

Page 1 of 2



Supplemental NSTM Inspection Form

Wisconsin Department of Transportation

Structure Number	Span Number	Inspection Start Date

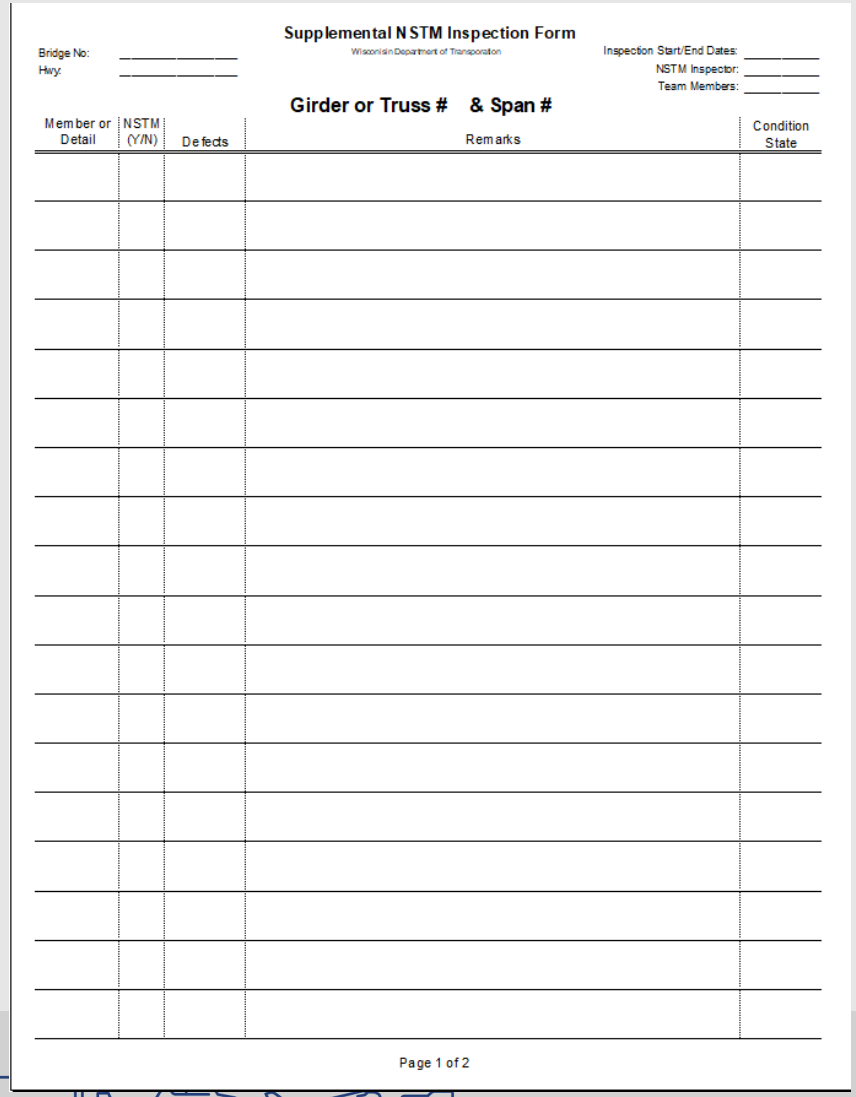
COMPONENT	LOCATION	INSPECTION COMMENTS

Page 2 of 2

NSTM Bridge Inspections

Bridge Specific Inspection Procedures

Supplement NSTM Form:



Supplemental NSTM Inspection Form

Wisconsin Department of Transporation

Bridge No: _____
Hwy: _____

Inspection Start/End Dates: _____
NSTM Inspector: _____
Team Members: _____

Girder or Truss # & Span #

Member or Detail	NSTM (Y/N)	Defects	Remarks	Condition State

Page 1 of 2

NSTM Bridge Inspections
NSTM Inspection Forms

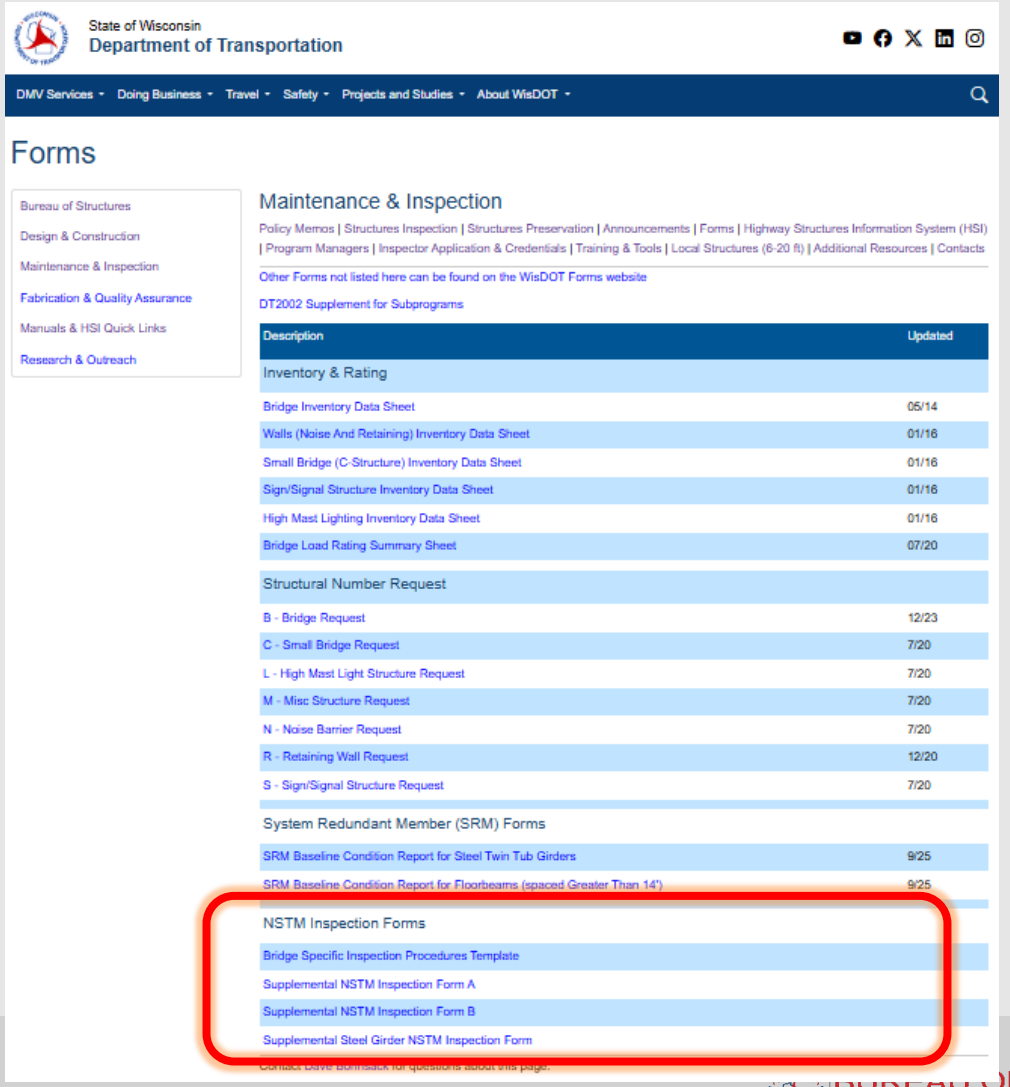
Forms on WisDOT website:

Search **WisDOT BOS**

>>Bureau of Structures>>Maintenance & Inspection>>Forms

Forms:

- NSTM Bridge Specific Inspection Procedures Template
- Supplemental NSTM Inspection Form A
- Supplemental NSTM Inspection Form B
- Supplemental Steel Girder NSTM Inspection Form



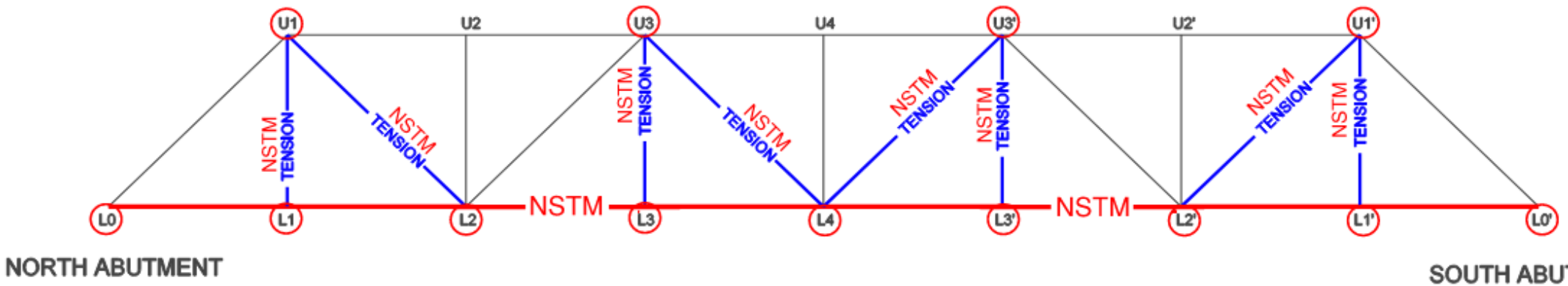
NSTM Bridge Inspections

Example NSTM Diagrams

NSTM:

- Bottom Chord - L0 to L01'
- Gusset plates at the following panel points
  - + Lower - L0, L1, L2, L3, L4, L3', L2', L1', and L0'
  - + Upper - U1, U3, U3', and U1'
- All floorbeams

B-22-20



N

NSTM Bridge Inspections

NSTM Inspection Intervals (SIM 1.3.5.3)

- **NSTM Regular Interval** — **24 months**
- **Reduced Interval – NSTM Inspection Condition ≤ 4** — **12 months**

NEW

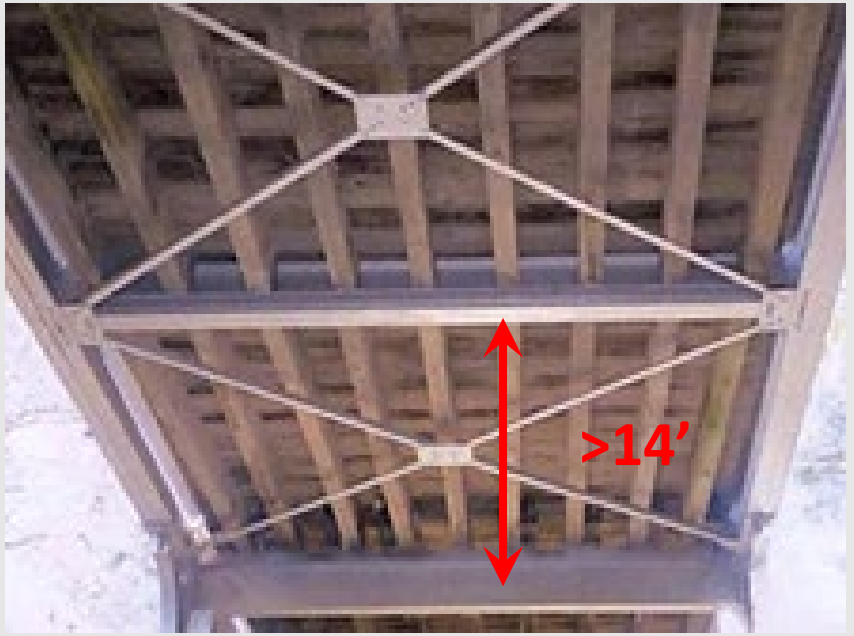
- **PM may reduce the NSTM inspection interval** — **< 12 months**
  - Factors such as structure type, design, materials, age, condition, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies
- **NSTM with an un-arrested crack**
  - **Tension area -** critical finding procedure in SIM 1.7 — **Critical Finding**
  - **Compression area -** monitor using hands-on inspection as a Special inspection. Repair as soon as practical. — **≤ 6 months**

R

NSTM Bridge Inspections

Floorbeams Spacing > 14’

- **Requires a hands-on inspection** for the entire tension portion of the floorbeam.
- Applies to connections located in tension zones, such as the floorbeam connection to the primary load carrying member and connections to secondary members.
- Note in the **bridge specific inspection procedures** and show or note on **NSTM diagram**.
- Complete during NSTM inspection.
- Qualified NSTM inspector.



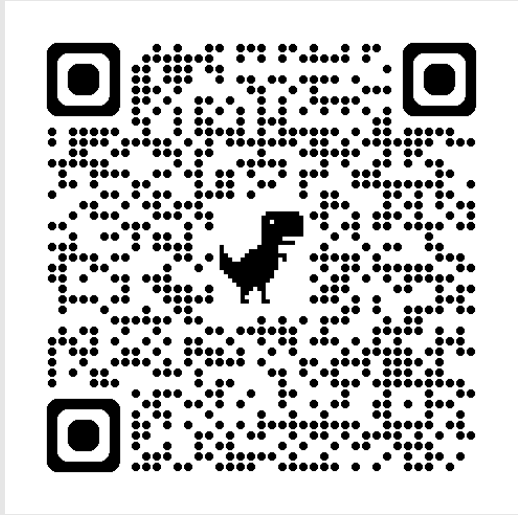
R

Fatigue-Prone Detail Inspection Manual

Reference Manual Develop by WisDOT

- Link to manual on BOS website

Fatigue-Prone Detail Manual



- Fatigue-Prone Detail
  - Steel details susceptible to fatigue cracking due to repeated loads
- Bridge Specific Inspection Procedures
  - Must note fatigue prone details
- SNBI item B.IR.02 Fatigue Details
  - Requires reporting if category E or E’ details exist (Y or N).

Fatigue-Prone Detail Inspection Manual

Manual Provides

- General name/description
- Fatigue-Prone Category
- Prevalence
- Photos
- Information
- Repair method

1. Welded Cover Plate Termination	
Detail Category: E/E’	
Prevalence: Common	
Note: Coverplates are often used with rolled W-shape girders in the positive and negative moment regions. The top cover plates cannot be inspected as they are covered by deck. If a redeck occurs, these should be inspected. Nature of Crack: Often forms at the toe of the weld at the tip of the coverplate. Repair Method: Grind out crack. If 1/16” or less in depth, no further action needed. Consider weld peening. If greater than 1/16” used bolted splice or similar. Photo Location: B-40-196	

NEXT UP
HSIS Update

Presented by Ryan Bowers, PE
WisDOT Bridge Management Engineer
ryan.bowers@dot.wi.gov

HSIS Update

- Bridge length
  - G.01 NBIS bridge length
  - G.02 Total bridge length

Examples – NBIS Bridge Length

Report measurement A.

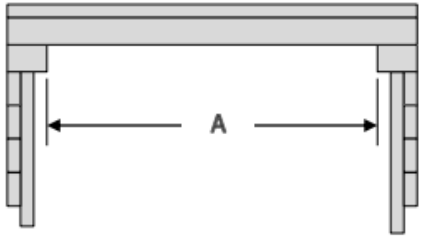


Figure 14. Profile view of a single span bridge with pile bent abutments.

Report measurement A.

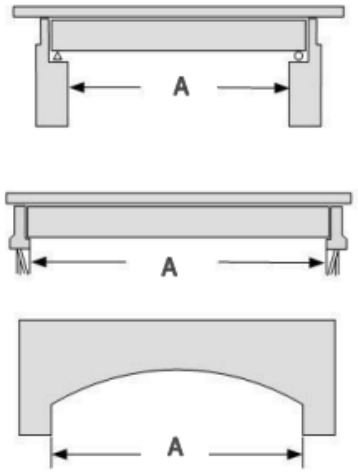


Figure 15. Profile views of various single span bridges.

Report measurement A.

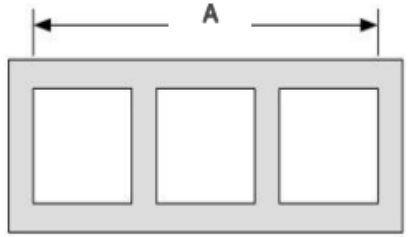


Figure 16. Profile view of a four-sided, multi-cell culvert under fill.

Report measurement A.

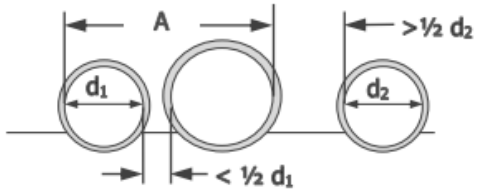


Figure 17. Profile view of a multi-pipe culvert under fill.

HSIS Update

Examples – NBIS Bridge Length

Report measurement A.

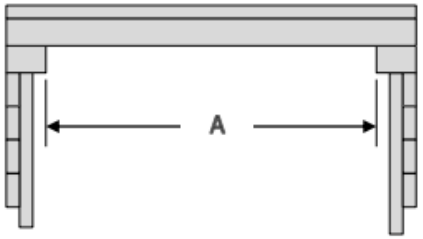


Figure 14. Profile view of a single span bridge with pile bent abutments.

Report measurement A.

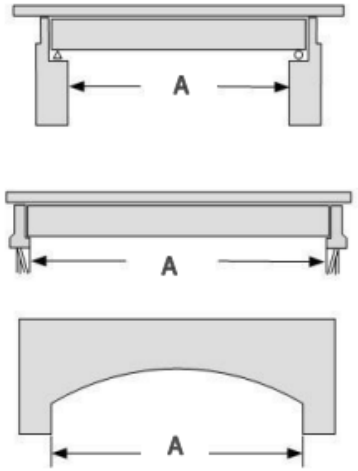


Figure 15. Profile views of various single span bridges.

Report measurement A.

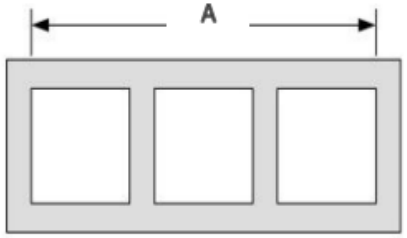


Figure 16. Profile view of a four-sided, multi-cell culvert under fill.

Report measurement A.

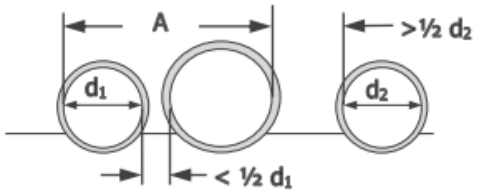


Figure 17. Profile view of a multi-pipe culvert under fill.

Examples – Total Bridge Length

Report measurement A.

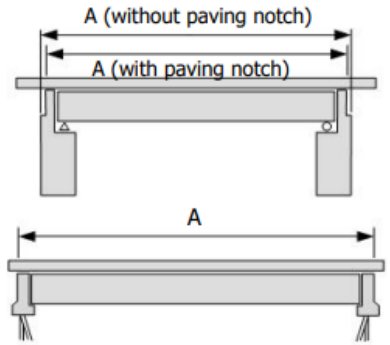
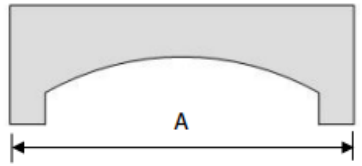
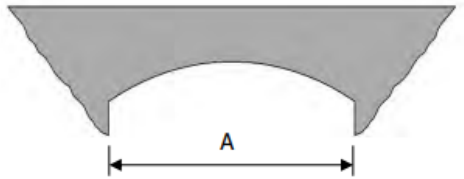


Figure 19. Profile views of various single span bridges.

Report measurement A.



Defined backwall or paving notch



No defined backwall or paving notch

Figure 20. Profile views of various spandrel arches.

Report measurement A.

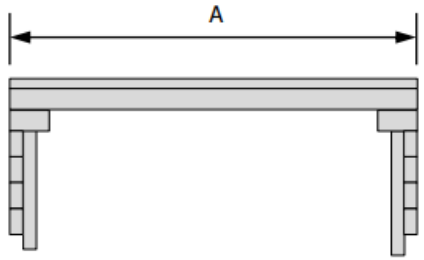
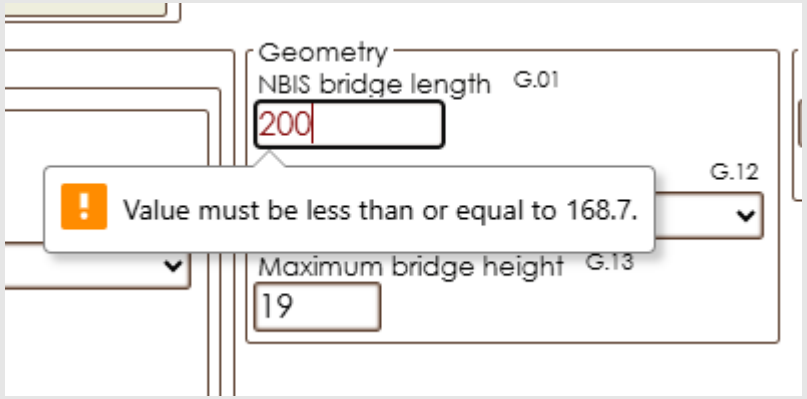
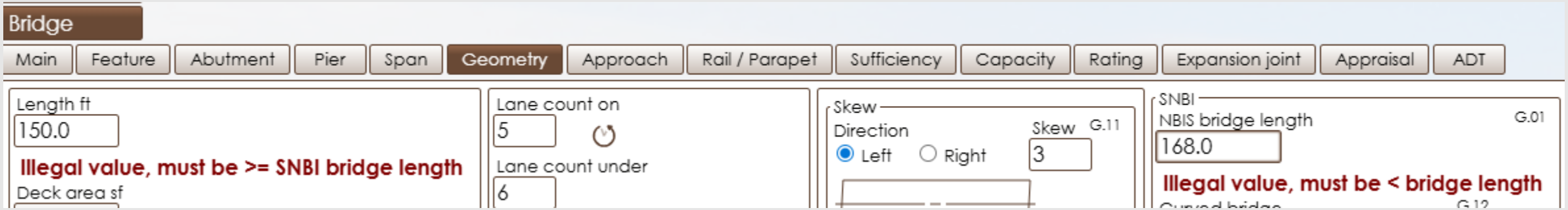


Figure 21. Profile view of a single span bridge with pile bent abutments.

HSIS Update

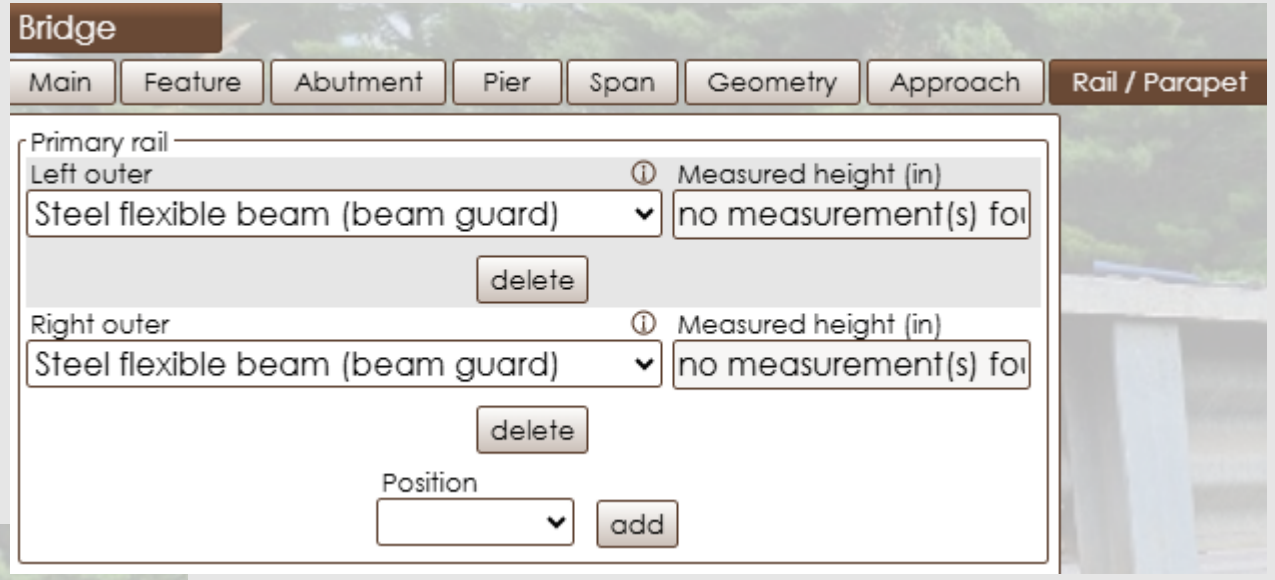
- Bridge length

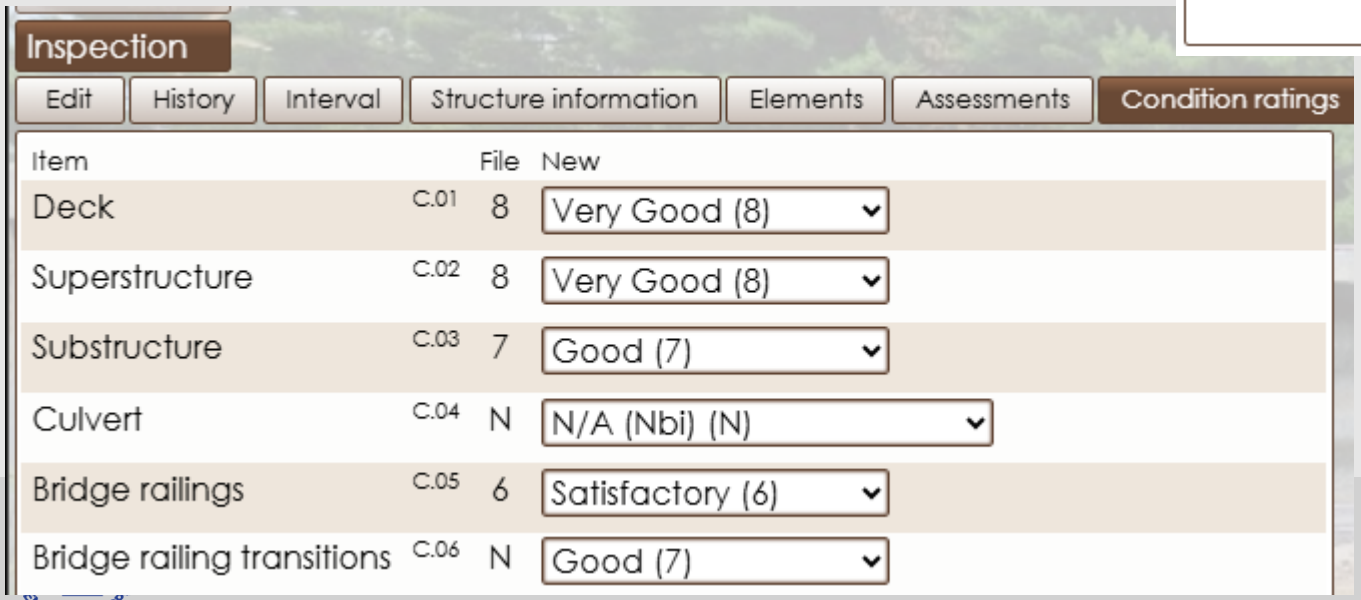




HSIS Update

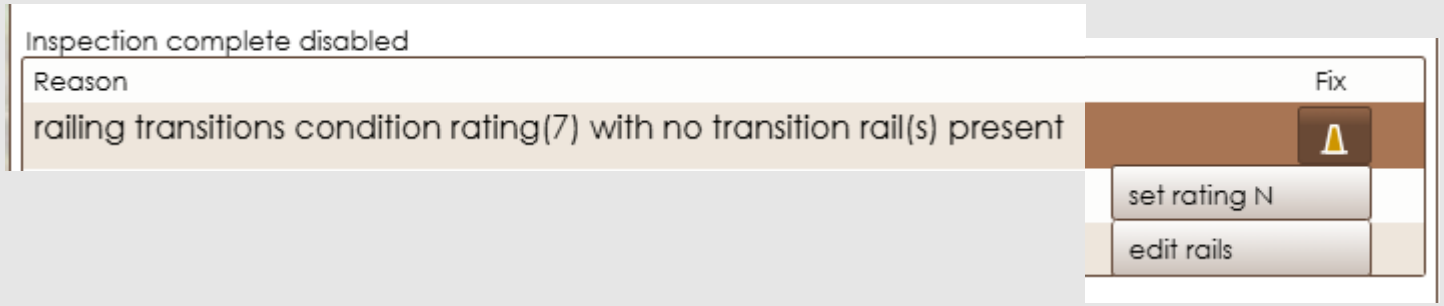
- Railings

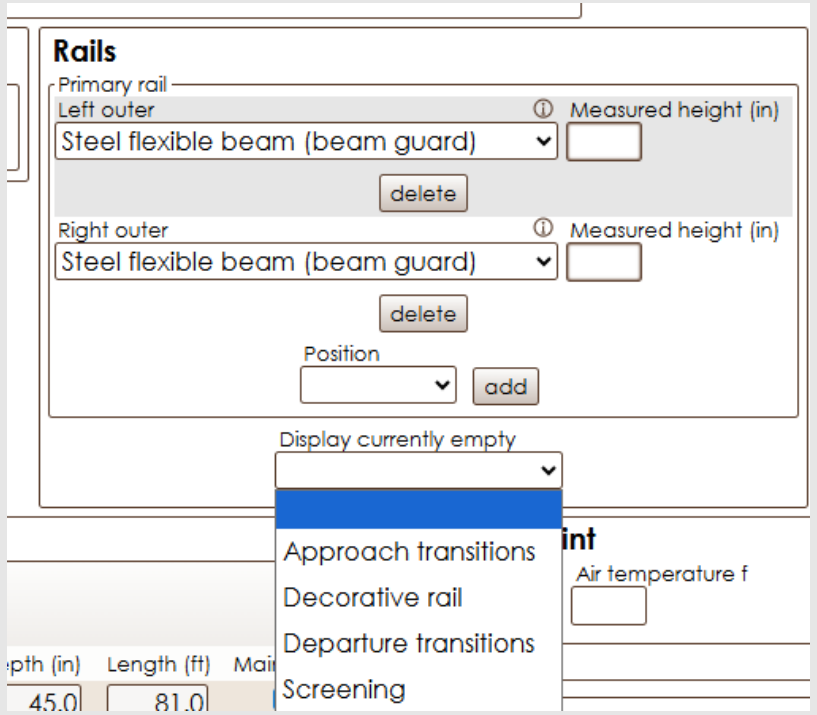




HSIS Update

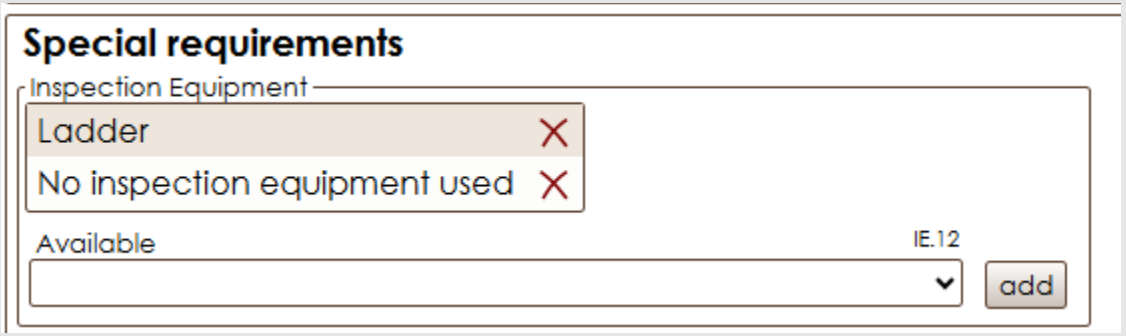
- Railings





HSIS Update

- Equipment
  - On Notes / requirements tab



NEXT UP
SNBI Update

Presented by Dave Bohnsack, PE
State Inspection Program Manager
david.bohnsack@dot.wi.gov

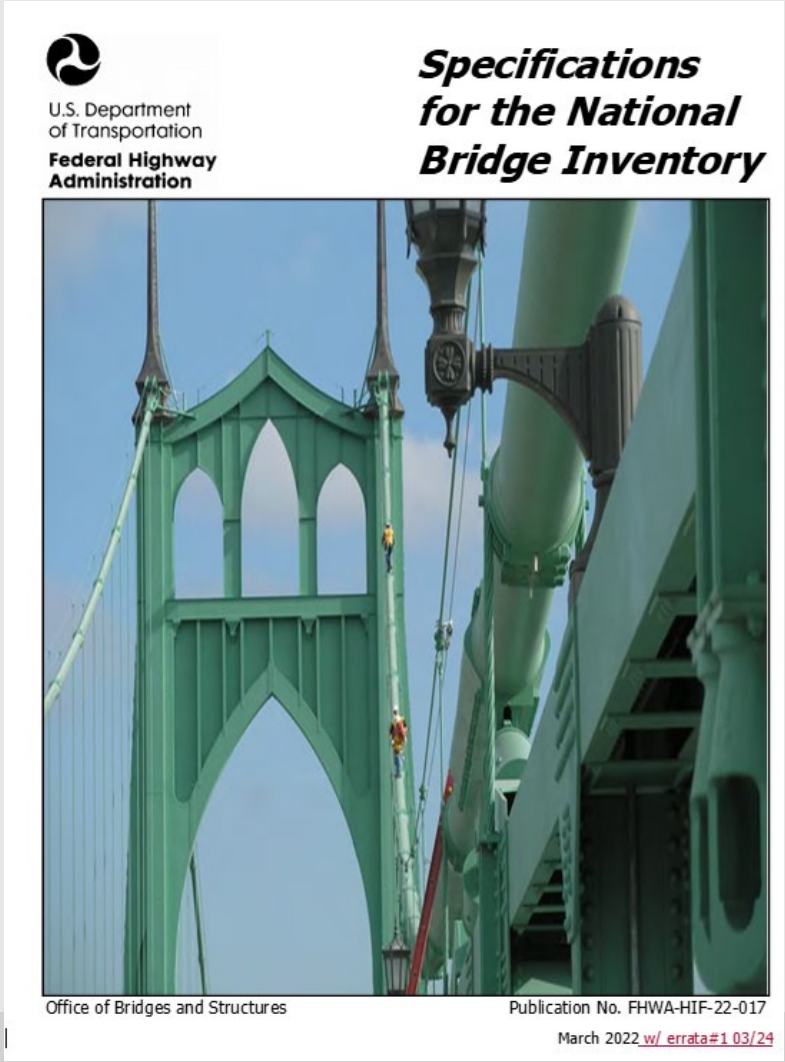
N

SNBI

Specifications for the National Bridge Inventory

All SNBI items will be required to be entered to complete the inspection report in HSIS.

All required SNBI items have been reviewed as part of annual refresher training and the multiple SNBI trainings in the past 3 years.



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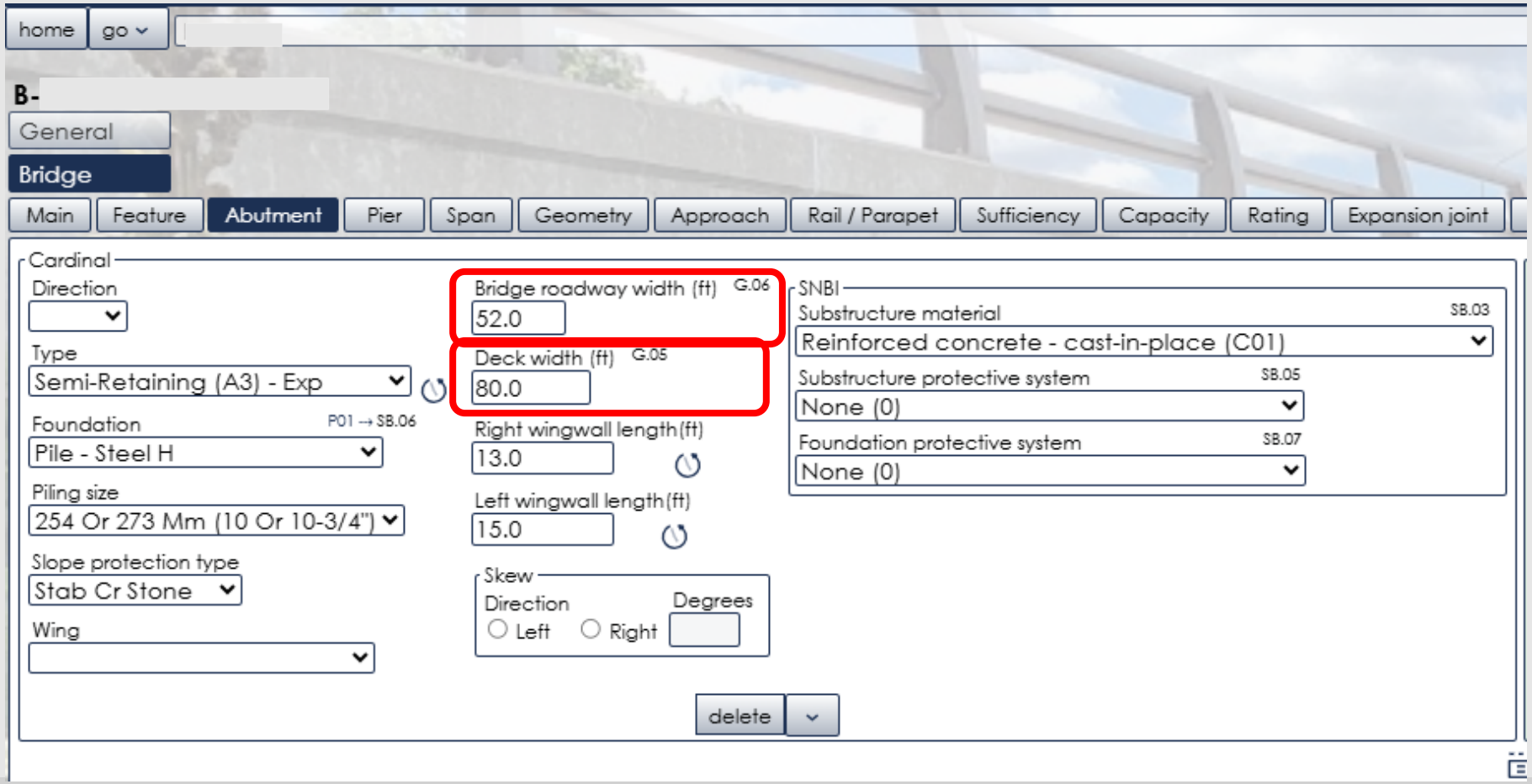
SNBI

Deck Width Out to Out (B.G.05) & Curb to Curb (B.G.06)

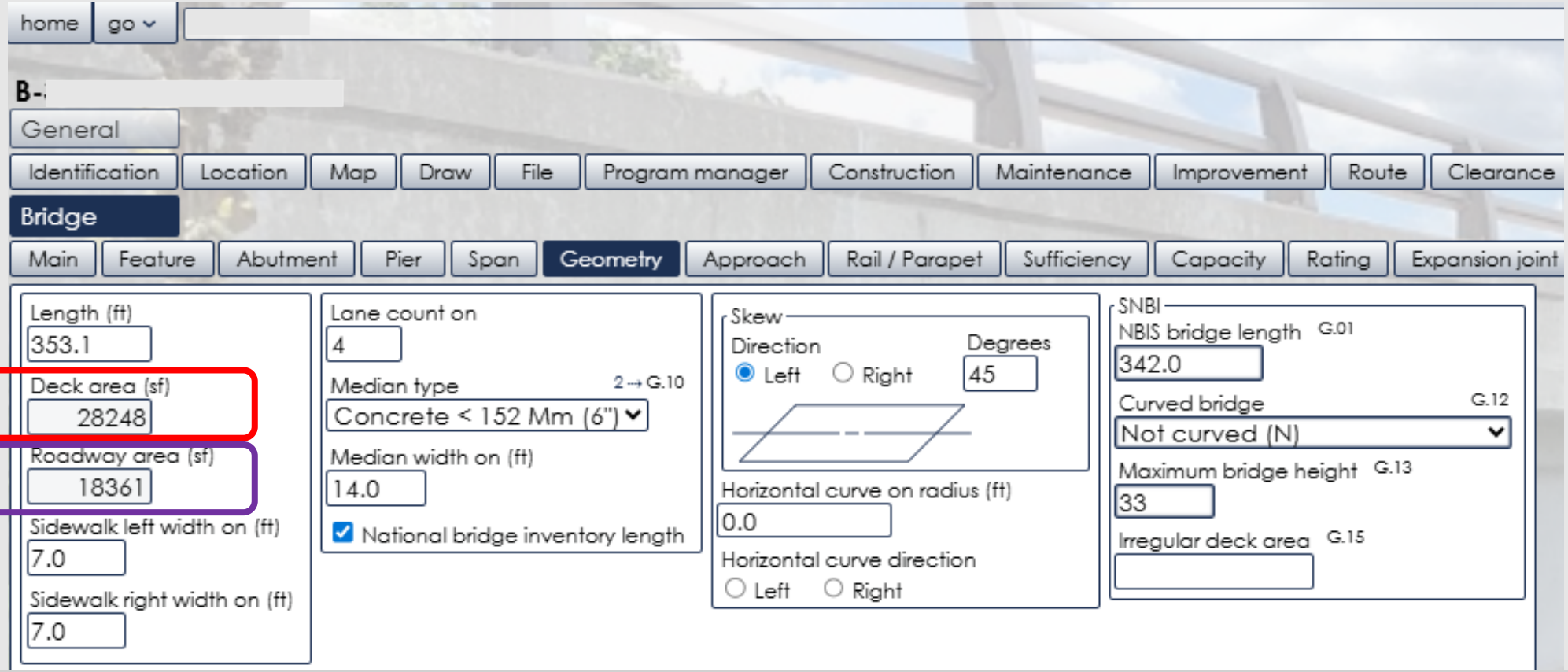
Abutment tab – field verify the bridge deck width and bridge roadway width



SNBI

Bridge Deck Area and Bridge Roadway Area

Compare deck area & roadway area on the HSIS Geometry tab to the deck element and wearing surface quantities in the inspection report



SNBI

Deck/Slab Element and Wearing Surface Quantity

Compare Geometry tab deck area to deck element quantity of the inspection report

Compare Geometry tab roadway area to the wearing surface quantity of the inspection report

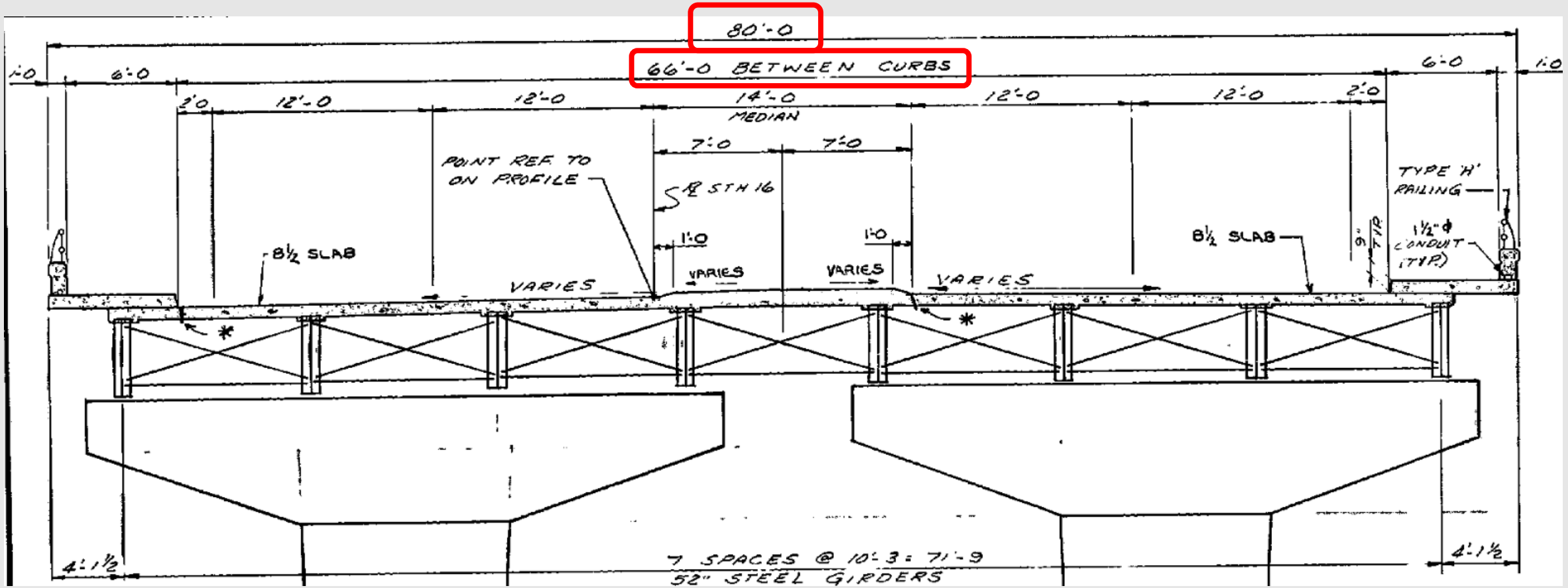
Elements

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State 1	2	3	4
X	12		**Reinforced Concrete Deck**	SF	25,423	25,130	277	16	0
			Spans 1-3 from south to north.						
		1080	Delamination - Spall - Patched Area	SF		0	16	7	0
			Span 1: spall in SE corner (CS3=1 SF) **spall is at corner of deck with no exposed rebar. Can see daylight due to expansion joint extrusion ending before skew in deck.** Span2: [21] Area of segregation with rust staining in west soffit @P1. (CS 3=2). **Spall at G1 top flange haunch detail over Pier 2 (2 SF CS3)** Span 3: **Delaminations and 1 spall around drain pipe between G5/6 (9 SF CS2, 1 SF CS3).** Deamination between G7/8 at north abutment (CS 2=7 SF). **Small spall at NE deck corner at joint (1 SF CS3)**						
		1130	Cracking (RC)	SF		0	261	9	0
			Span 1: [21] Cracking in the underdeck 20 ft from SA between G4-5 area of segregation with cracking w/ rust staining. (CS 3=3SF), **moderate** cracks with rust staining at the south abutment between G1/2 (CS 3=3 SF), **insig/moderate** transverse cracks most with efflorescence in the deck and soffit (CS 2=57 SF) Span 2: **insig/moderate** transverse cracks with efflorescence in the deck and soffit (CS 2=181 SF) Span 3: **insig/moderate** transverse cracks with efflorescence and some with rust staining in the deck and soffit (CS 2=23 SF, CS 3=3 SF)						
		8904	Discoloration	SF		0	0	0	0
			Light staining/discoloration throughout deck underside. Soot buildup directly over railroad tracks from exhaust.						
	8209		Sidewalk	SF	4,256	3,691	470	95	0
			Both sides. 6'x354.7' x 2 sides = 4256 SF						
		3210	Debonding/Spall/Patched Area/Pothole	SF		0	212	40	0
			2023 IR Deck report indicates 136 SF CS2 2025: Hammer sounded wide cracks for delaminations. East: Two large areas of curb is spalled with exposed rebar near pier 2 (25 SF CS3, 12 SF CS3). Shallow surface spall in top face at same location (3 SF CS3). Large areas of delamination along curb throughout (95 SF CS2). West: shallow spalls from plows along top of curb in span 3 (12 SF CS2). Large areas of delamination along curb throughout. (105 SF CS2).						
		3220	Crack (Wearing Surface)	SF		0	258	55	0
			East: 24 full-width (or equivalent length) transverse cracks throughout. All epoxy sealed. South joint plate is bent. (24 x 6' = 144 SF CS2). Wide horizontal cracks in curb face (not delaminated) (55 SF CS3). West: 19 full-width (or equivalent length) transverse cracks throughout. All epoxy sealed. (19 x 6' = 114 SF CS2). Wide horizontal cracks present in both at delam areas						
	8514		Concrete Overlay	SF	23,281	21,976	1,305	0	0
		3210	Debonding/Spall/Patched Area/Pothole	SF		0	1,305	0	0
			[18] Vehicle IR Scan: 5.6% de-bonding **(1305 SF) 2023 IR Deck report indicates 745 SF CS2 debonding.**						
		3220	Crack (Wearing Surface)	SF		0	0	0	0
			Epoxy sealed transverse **insignificant** and **moderate** width cracks exist throughout. **CS1 Diagonal cracks at deck ends. Moderate transverse at piers. NB: map cracking in span 3, 2 and over p1. Multiple Longit cracks. SB: scattered trans in span 2. Short longit and trans cracks scattered. Map cracking at p1.**						

B-32-998 21-Aug-2025 Inspection as of 27-Jan-2026

Bridge Width (B.G.05 & 06)

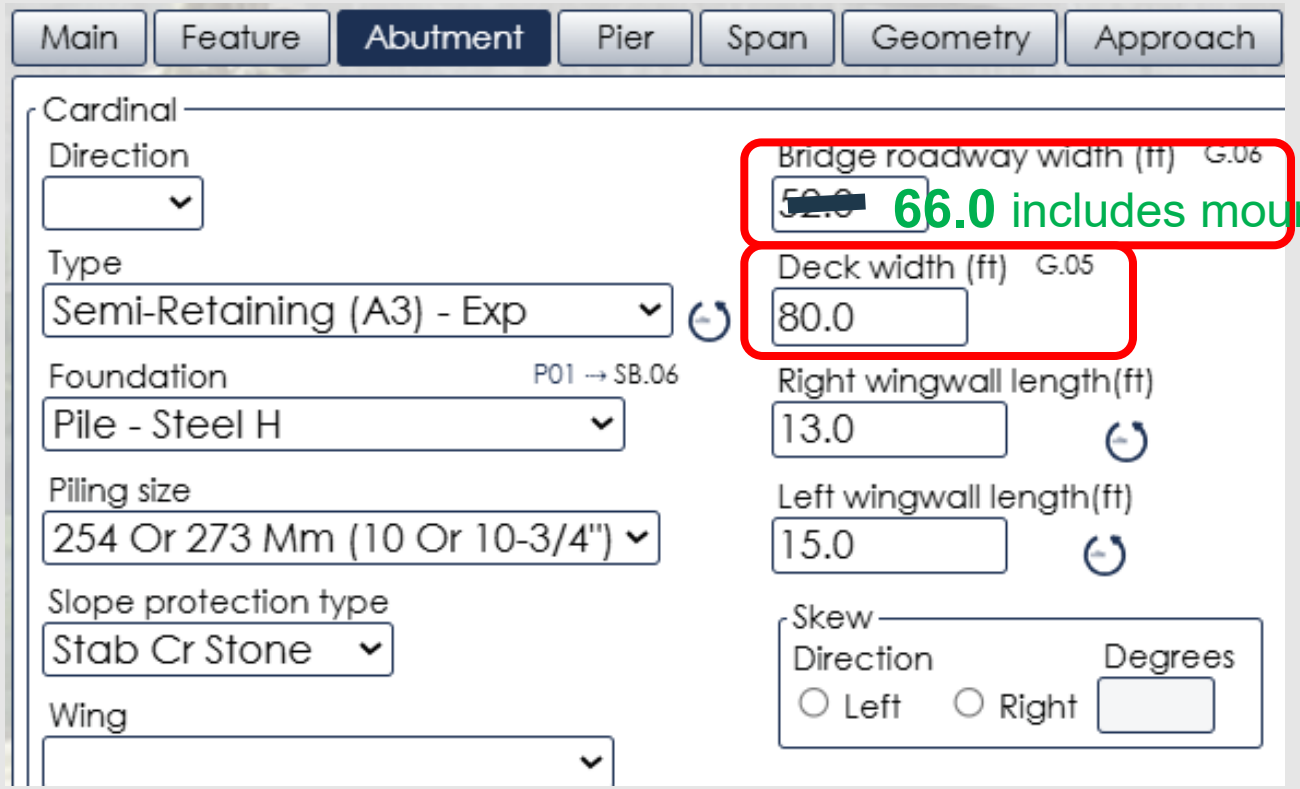
Example



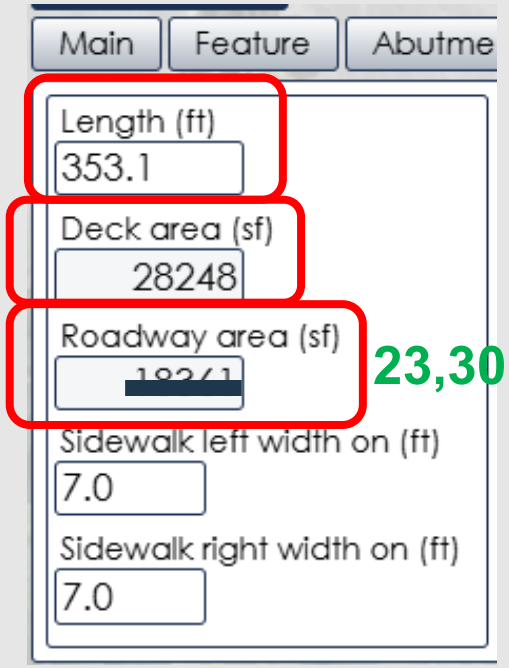
Bridge Width (B.G.05 & 06)

Example

Abutment Tab



Geometry Tab

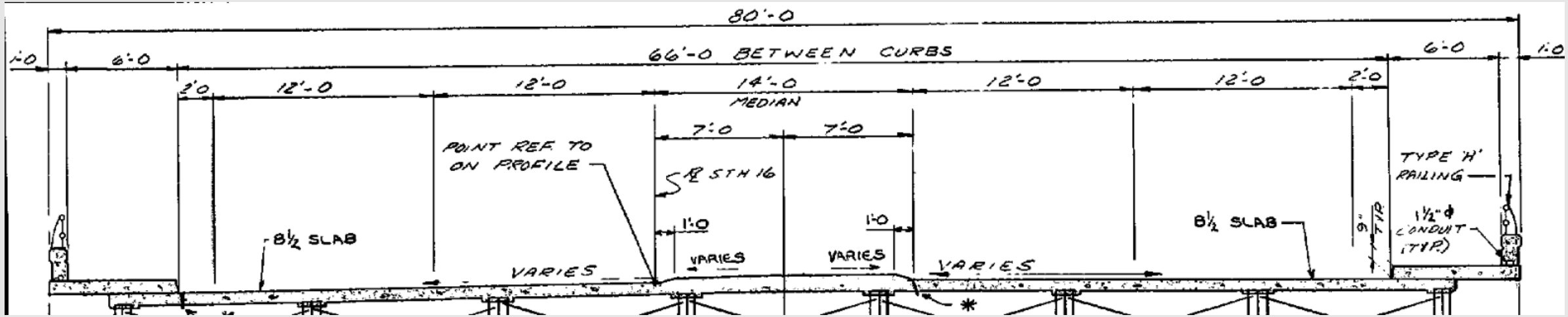


Deck Area and Roadway Area calculated by HSIS

Deck/Wearing Surface Element Quantities

Example

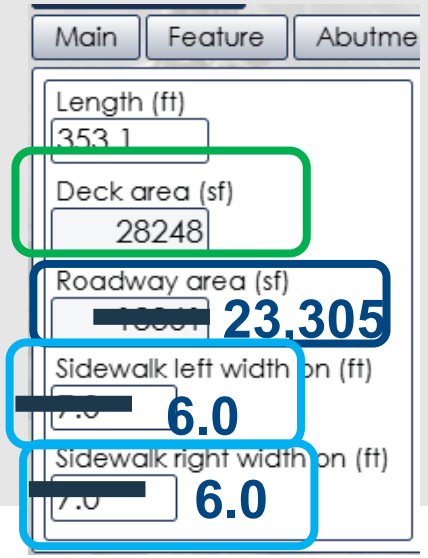
- Element Quantities
  - Deck/Slab Element – 80’ x 353.1’ = 28,248 SF
  - Wearing Surface – 66’ between curbs – 14’ median = 52’ x 353.1’ = 18,361 SF
  - Median (mountable and non-mountable) = 14’ x 353.1 = 4,943 SF
  - Sidewalk (raised) 12’ x 353.1 = 4,237 SF



Deck/Wearing Surface Element Quantities

Example

- Deck element area = deck area from Geometry tab
- Wearing surface + Mountable median = Roadway area from Geometry tab
- Sidewalk – Left and Right



Elements

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State 1	2	3	4
X	12		Reinforced Concrete Deck Spans 1-3 from south to north.	SF	28,248	25,130	277	16	0
	8514		Concrete Overlay	SF	18,361	21,976	1,305	0	0
	8207		Median	SF	4943	4814	129	0	0

R

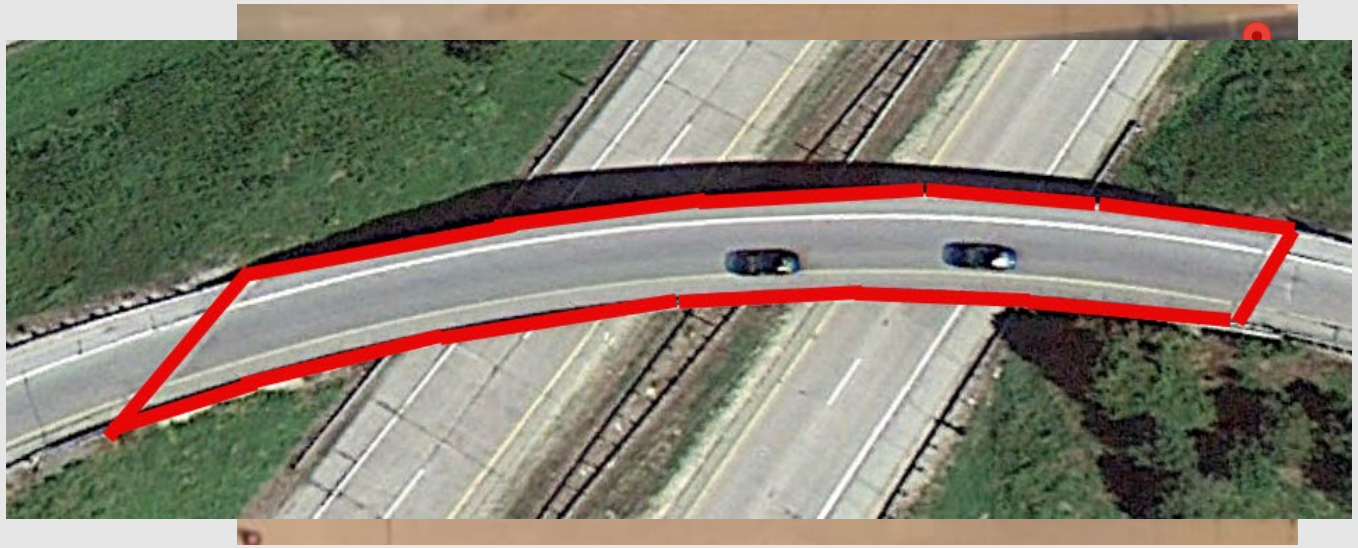
Bridges with Irregular Widths

HSIS

- Check the accuracy of the deck area (FHWA Metric +/-10%)
- HSIS automatically calculates the deck area and roadway area
  - Uses widths from the Abutment tab (cardinal/non-cardinal) and lengths from the Geometry tab
  - Bridges with different widths at the abutments will likely be calculated correctly if the change is uniform along the length of the bridge.
- Irregular decks - deck area may require manual calculation and entry into HSIS.

Examples:

- Bridges with tapers that start mid-span or mid-bridge
- Bridges having abutments with different skews.

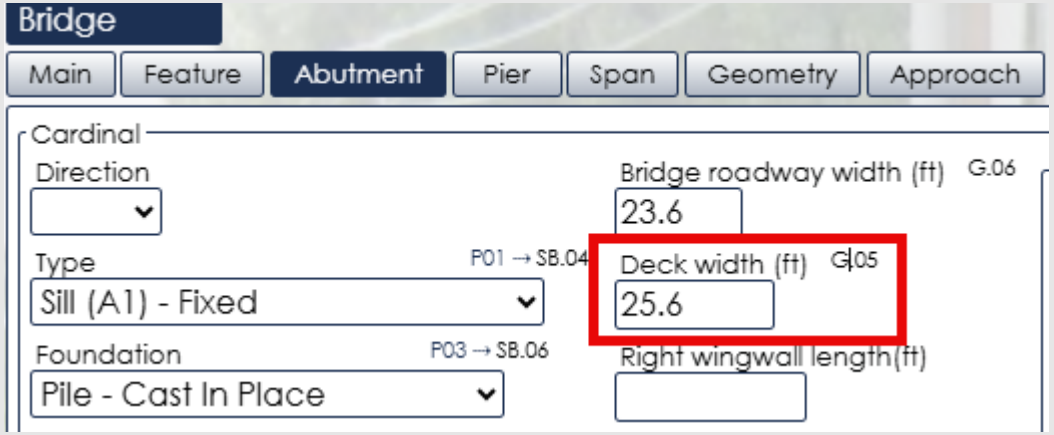


Bridge Width Out to Out (B.G.05)

Deck Width in HSIS

Bridges with railing or sidewalks that overhang deck…

- **SNBI deck width is measured to the back of railing and isn't simply the width of deck/slab.**
- **The value is likely larger than the deck width dimension.**



Format	Frequency	Item ID
N (4,1)	I	B.G.05

Specification	Commentary
Report the minimum out-to-out width measured perpendicular to the centerline of the roadway to the nearest tenth of a foot. For multiple (double) deck bridges that are inventoried as one bridge, measure all levels, and report the sum of the measurements to account for the total width carried on the bridge. For bridges under fill, measure the width from out-to-out of the headwalls or barrel ends. For sidehill bridges, measure the out-to-out structure width. For bridges that carry multiple types of service, for example highway, pedestrian, and railroad, measure the out-to-out width that encompasses all service types.	For bridges under fill, the reported value can be limited to the width of the roadway section over the bridge for unusual situations where the bridge continues far beyond the roadway cross-section, and a lesser width would likely be constructed for a replacement project. For bridges under fill, in which the features that define the out-to-out width are not parallel, report the minimum out-to-out width.

Bridge Width Out to Out (B.G.05)

Deck Width in HSIS

Report measurement A.

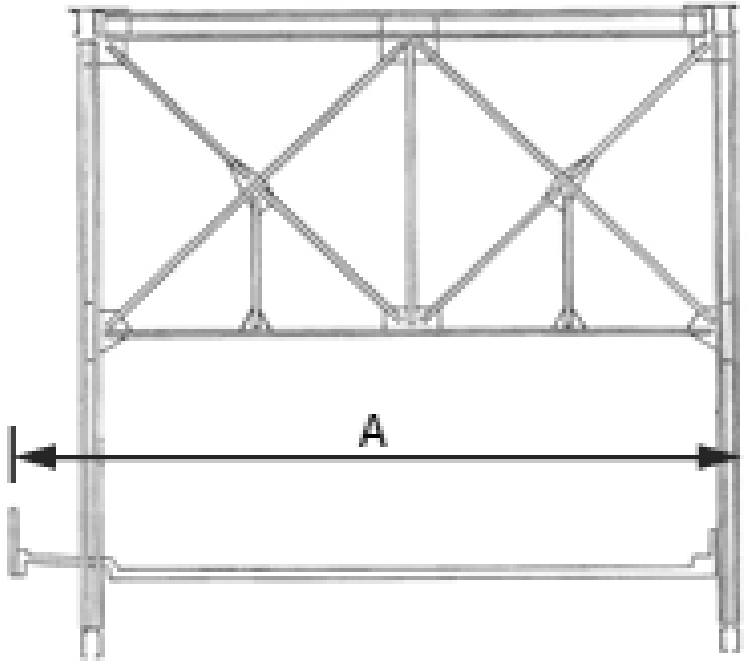


Figure 34. Cross-section view of a through truss bridge.

Report measurement A.

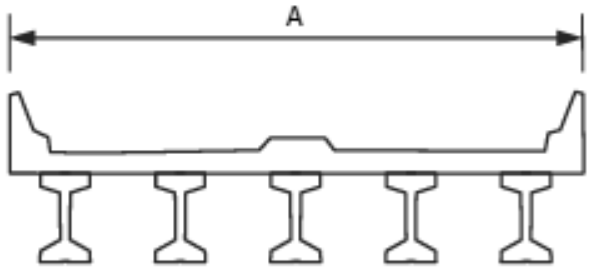


Figure 36. Cross-section view of a multi-girder bridge.

Report measurement A.

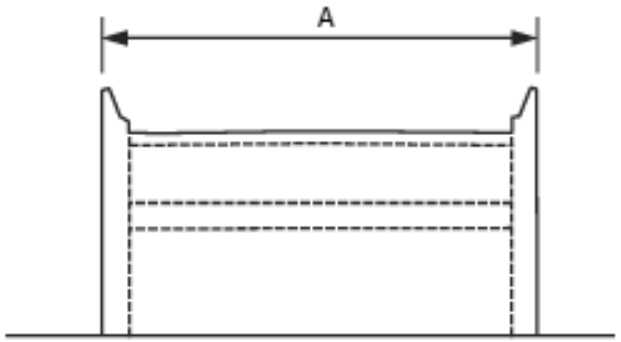


Figure 37. Cross-section view of a filled arch bridge or culvert under fill with headwalls.

Bridge Width Out to Out (B.G.05)

Deck Width in HSIS

Report measurement A.

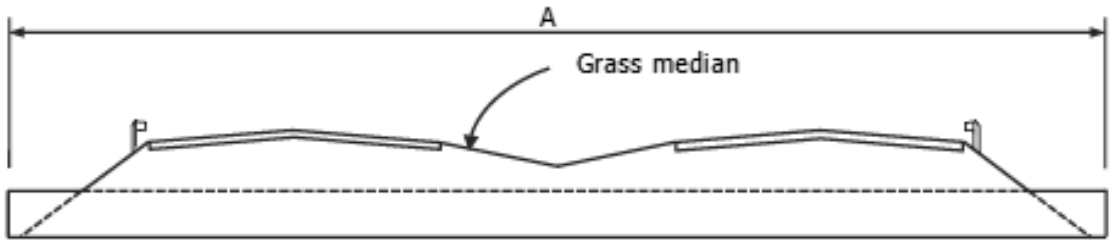


Figure 38. Cross-section view of a pipe culvert under fill.

Report measurement A.

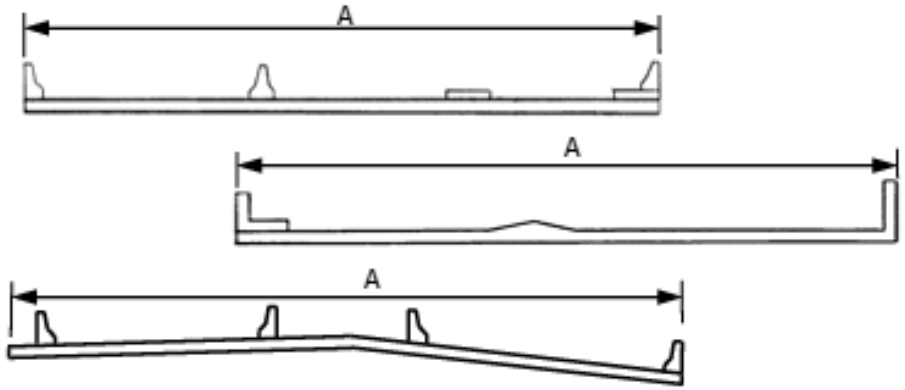


Figure 39. Cross-section views of various bridge decks with medians.

Report measurement A.

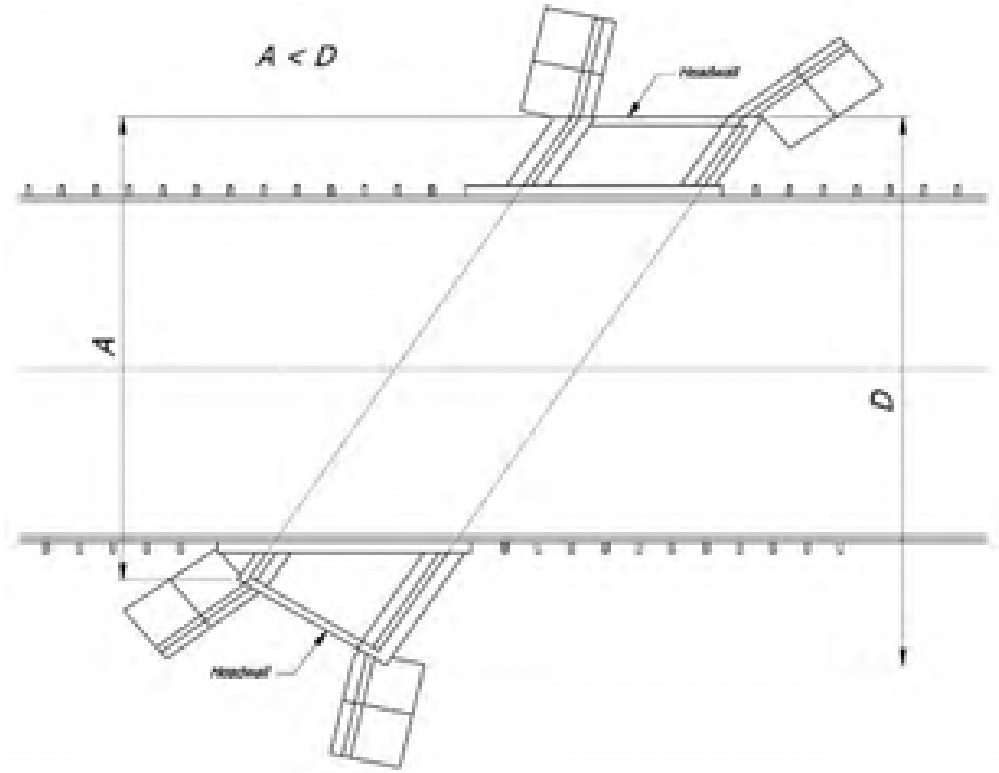


Figure 40. Plan view of a bridge with non-parallel fascias.

R

Bridge Width Out to Out (B.G.05)

Deck Width in HSIS

Report measurement A.

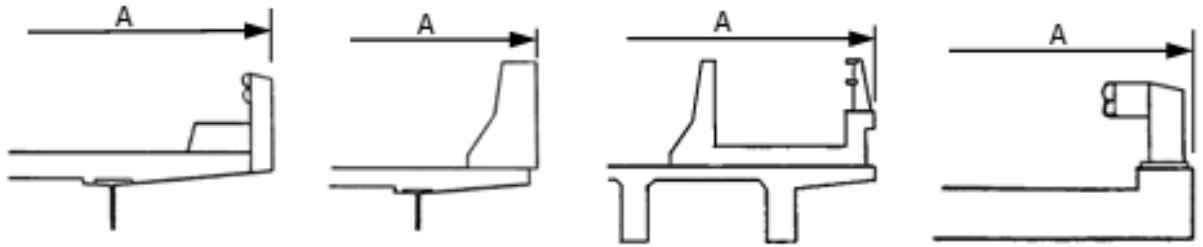


Figure 41. Partial cross-section views of various bridge decks with railings.

Report measurement A.

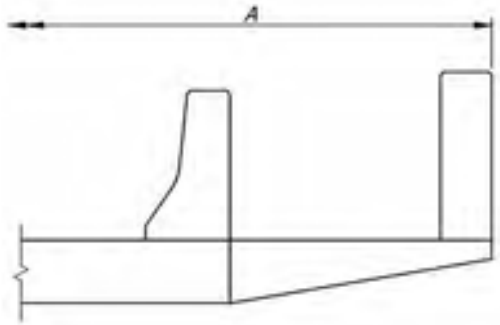


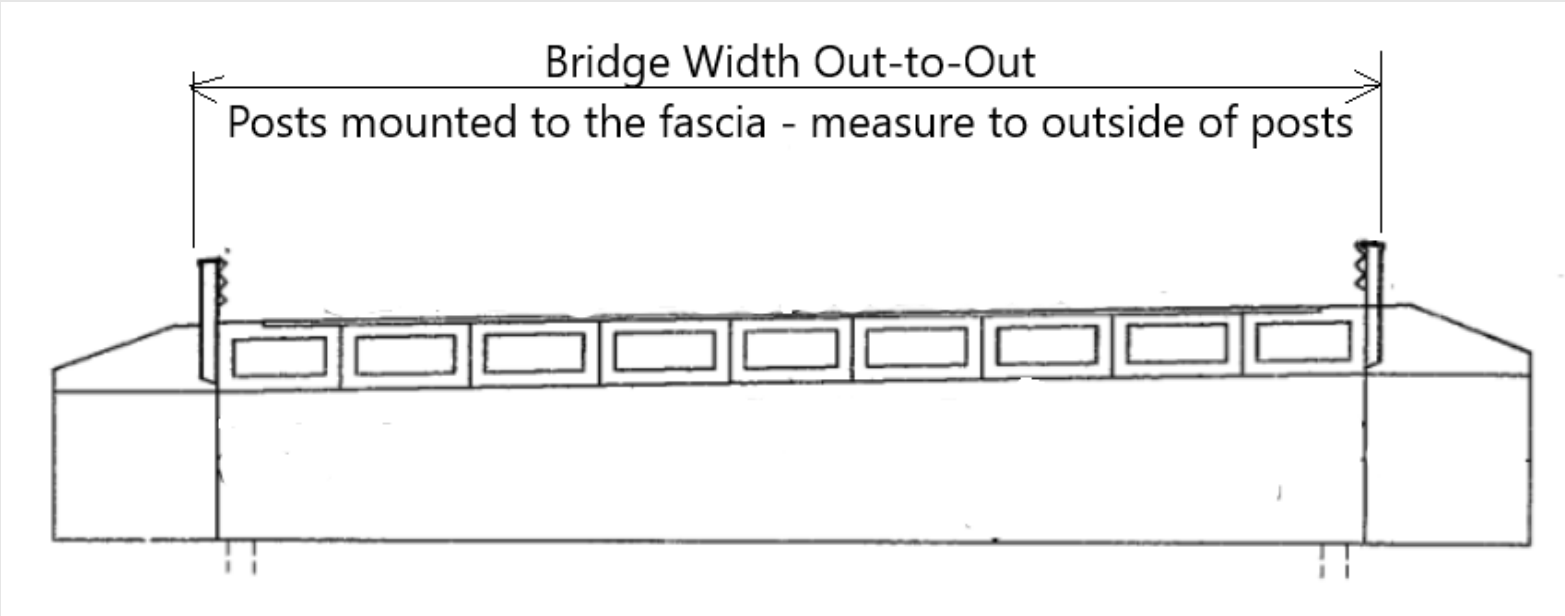
Figure 42. Cross-section view of a sidewalk retrofit.

R

Bridge Width Out to Out (B.G.05)

Bridges with fascia mounted railing

Measure to the outside of posts for fascia mounted rail.



R

Bridge Width Curb to Curb (B.G.06)

Format	Frequency	Item ID
N (4,1)	I	B.G.06

Specification	Commentary
Report the sum of the most restrictive minimum usable distances for all roadways carried by the bridge. Measure the distance on the bridge perpendicular to the centerline of the roadway between curbs or rails to the nearest tenth of a foot. Exclude from the usable distance measurement medians, sidewalks, structurally inadequate shoulders, and other non-mountable areas.	Usable roadway width includes the width of traffic lanes and the widths of shoulders. Shoulders must be contiguous with the traveled way and must be structurally adequate for all weather and traffic conditions consistent with the facility carried. Unstabilized grass or dirt, with no base course, flush with and beside the traffic lane is not to be considered a shoulder for this item. Refer to agency policy for when and where stabilized shoulders are used. When it is not readily known if stabilized construction details were used, the presence of rutting, heaving, water retention, or other distress may be used as indicators that the shoulder is not stabilized. For bridges under fill, the usable roadway width crossing the bridge is commonly the same value reported for Item B.G.09 *(Approach Roadway Width)*. A barrier or curb greater than 6 inches high may be considered non-mountable for these specifications.

Sum of the most restrictive minimum usable distance of all roadways, measured perpendicular to the C/L of the roadway – **exclude non-mountable medians, sidewalks, structurally inadequate shoulders.**

Bridge Width Curb to Curb (B.G.06)

Report measurement A.

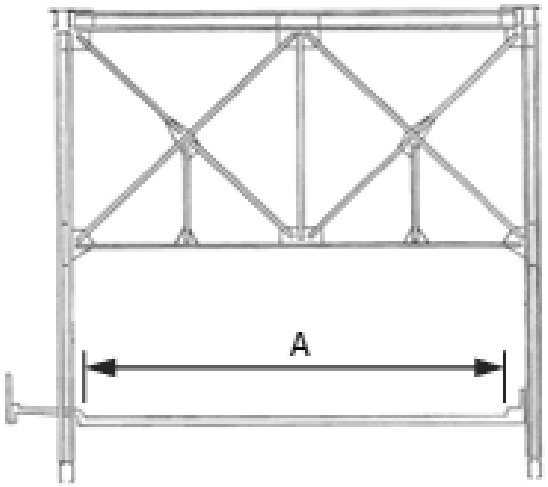


Figure 44. Cross-section view of a through truss bridge.

Report measurement A.

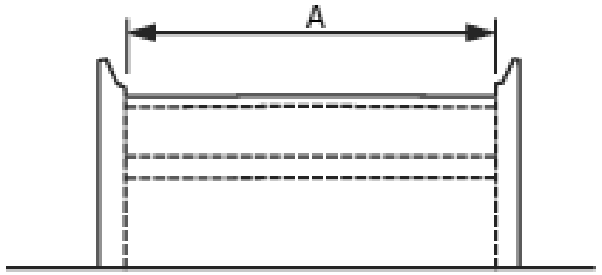


Figure 45. Cross-section view of a filled arch bridge or culvert under fill with headwalls.

Report measurement A.

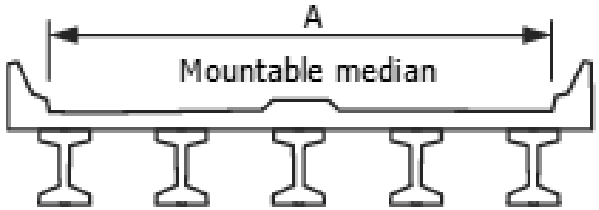


Figure 46. Cross-section view of a multi-girder bridge.

Report the sum of A+B.

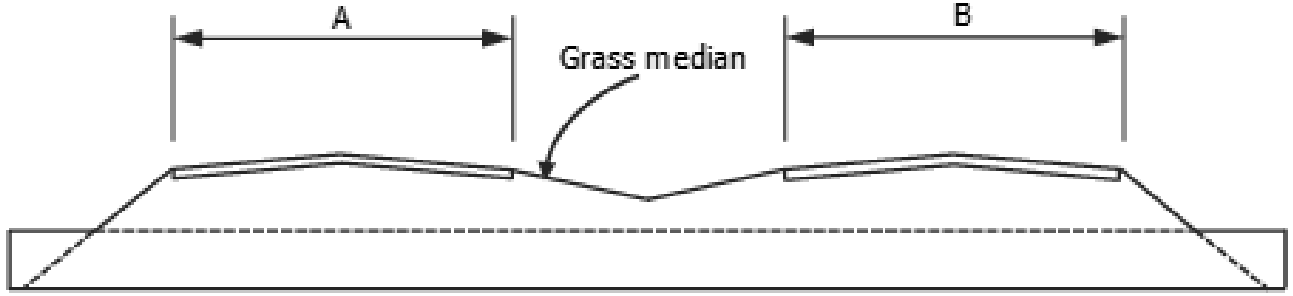


Figure 47. Cross-section view of a pipe culvert under fill.

Bridge Width Curb to Curb (B.G.06)

Report measurement A.

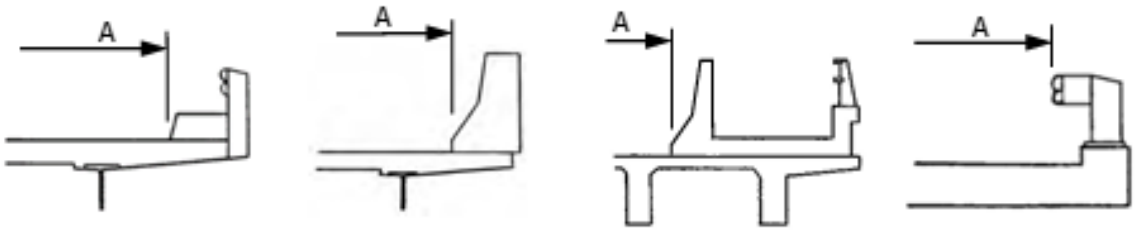


Figure 48. Partial cross-section views of various bridge decks with railings.

Report measurement A.

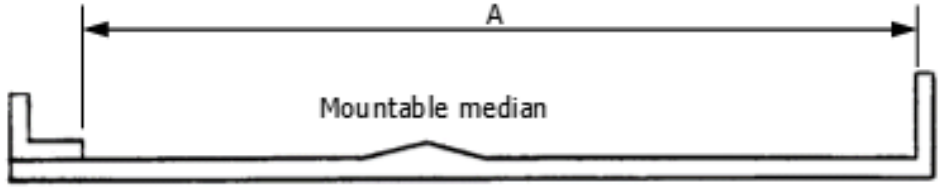


Figure 49. Cross-section view of a bridge deck with mountable median.

Report the sum of A+B+C.

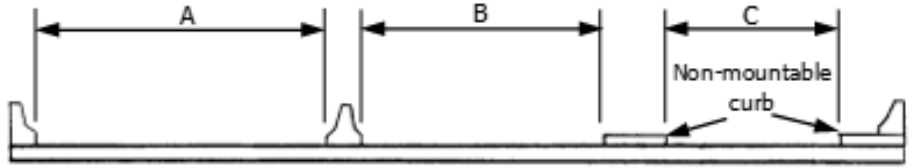


Figure 50. Cross-section view of a bridge deck with non-mountable curb and median barrier.

Report the sum of A+B.

Figure 51. Cross-section view of a bridge deck with multiple median barriers.

R

SNBI Items

B.SB.03 Substructure Material & B.SB.07 Foundation Protective System

- **B.SB.03 Substructure Material**
  - Where the substructure unit(s) have a combination of materials, use the code for the predominant material that transfers load to the foundation (B.SB.06).

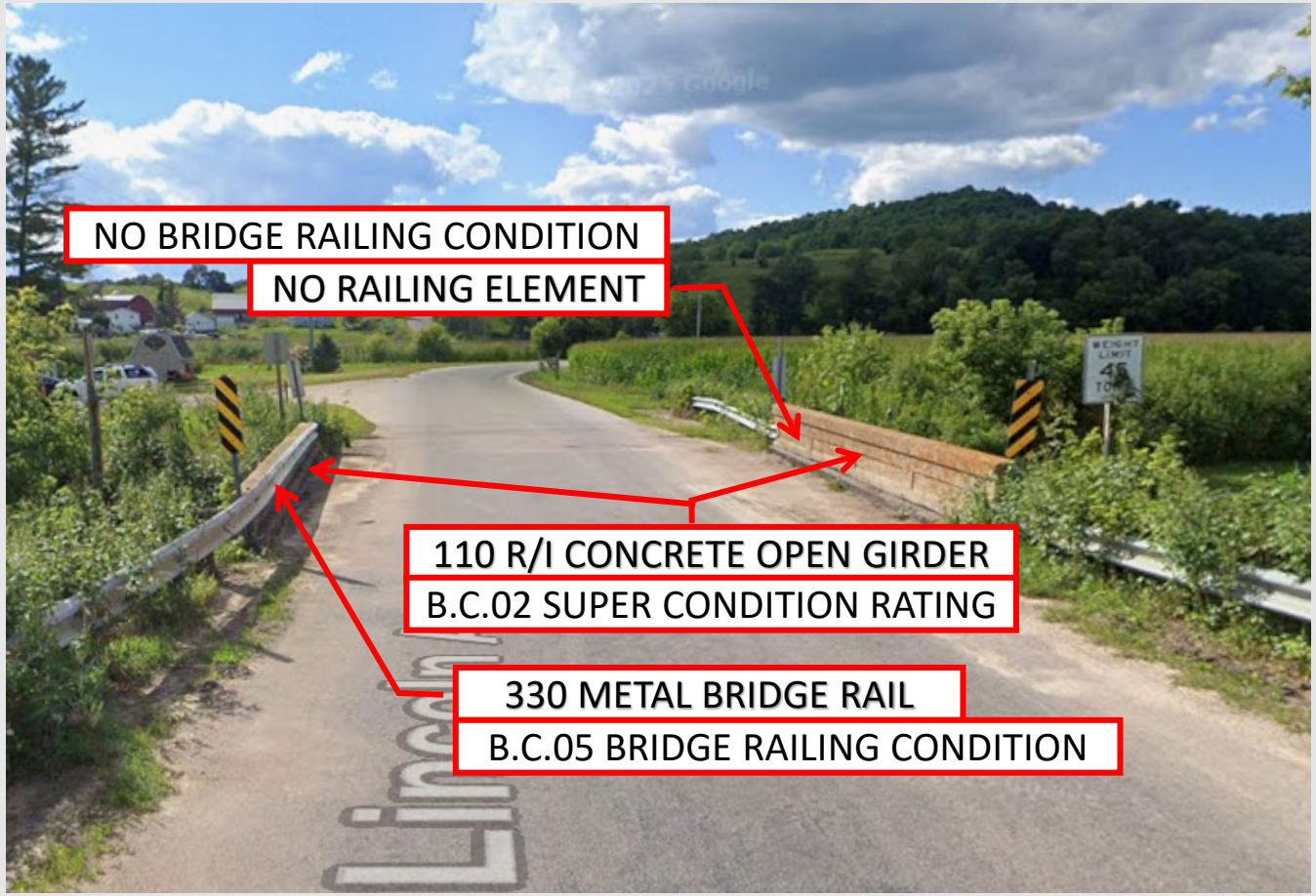
  Example *- a pile bent with CIP piles or steel H piles with a reinforced concrete cap, the substructure material should be coded C01(RC - Cast in Place) for the reinforced concrete cap since the piles are the foundation.*

- **B.SB.07 Foundation Protective System**
  - *For CIP Piles with steel shells - do not code the steel shell as a protective system, code 0 (none). If the steel shell is painted, code C01(Coating – Paint).*

Thru Girder – Elements & SNBI

- Element level inspection -
  - Inventory and rate the girder as the appropriate girder element.
  - Do not inventory and rate the thru/T-girder as a railing element.
  - Girder with attached railing components - inventory and rate all railing related components based on the primary material for the railing element.
- SNBI –
  - Superstructure Condition Rating (B.C.02)
    - Include the condition of the through girders.
  - Bridge Railings Condition (B.C.05)
    - Include condition of bridge railing elements for this item; do not include condition of girders.

Girders Above Deck – Elements & SNBI



Example: Exterior concrete girders above deck

Elements:

330 Metal Bridge Rail –

Steel beam guard rail on left side only.
No railing element on the right side

110 R/I Concrete Open Girder –

Include concrete girders above and below

SNBI:

Bridge Railings Condition Rating (B.C.05)

Consider condition of beam guard on left side only.

Superstructure Condition Rating (B.C.02)

Include condition of girders above the deck when rating; do not consider railing elements.

Thru Girder – Elements & SNBI

Example: Steel Thru Girder

Elements:

107 Steel Open Girder – both girders

330 Metal Bridge Rail –

Steel beam guard rail, posts, and block outs on both sides.

SNBI:

Bridge Railings Condition (B.C.05)

Only the condition of the railing elements for this item.

Superstructure Condition Rating (B.C.02)

Only the girders when rating; do not consider railing elements.

R

Thru Girder – Elements & SNBI

No railing SNBI or elements

SNBI: Superstructure Condition Rating (B.C.02) – girders
Bridge Railings Condition (B.C.05) – N

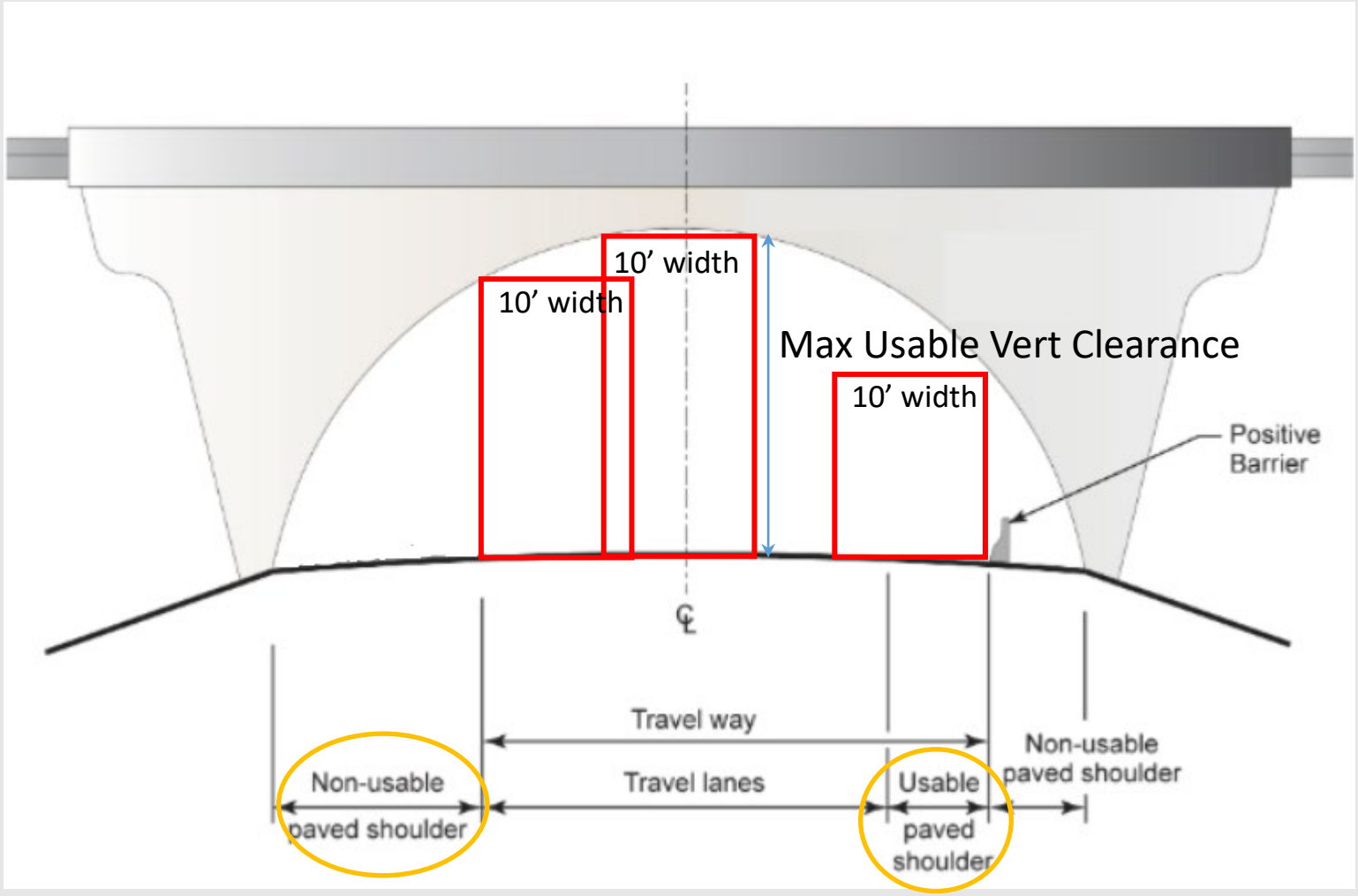
Railing Elements: None

U

SNBI

B.H.12 Highway Maximum Usable Vertical Clearance

- *Minimum vertical clearance for a 10’ wide envelop of the traveled part of highway*
- *Shoulders are included when they are structurally adequate for all weather and traffic conditions.*
- ***Optional* for highway features below that <u>do not carry NHS Routes</u>.**



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Buried Bridges – Structures Under Fill

SNBI Item B.SP.09 thru 13

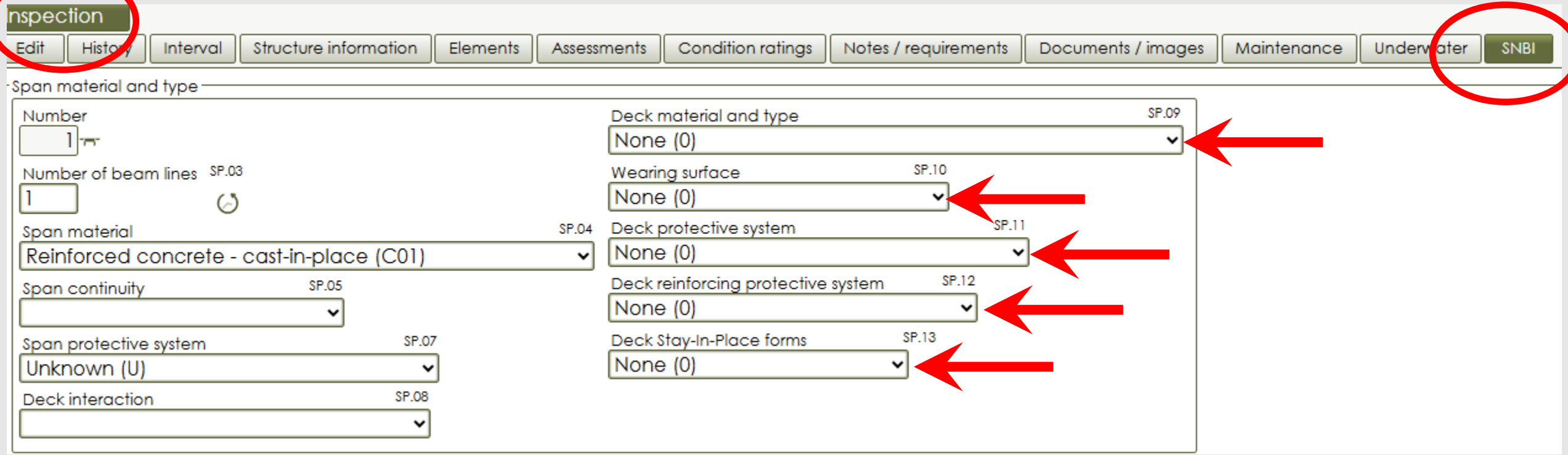
- Culverts
- 3 & 4 sided rigid frames
- Closed spandrel arches
- Arches w/o spandrels

Code **NONE (0)** for structures under fill for the following:

- **B.SP.09 Deck Material and Type**
- **B.SP.10 Wearing Surface**
- **B.SP.11 Deck Protective System**
- **B.SP.12 Deck Reinforcing Protective System**
- **B.SP.13 Deck Stay-in-Place Forms**

Buried Bridges – Structures Under Fill

SNBI Item B.SP.09 thru 13



Knowledge Check

True of False statement? For* B.SB.07 Foundation Protective System, *Cast-in-place (CIP) Piles with steel shells - do not code the steel shell as a protective system, code 0 (none).

True

U

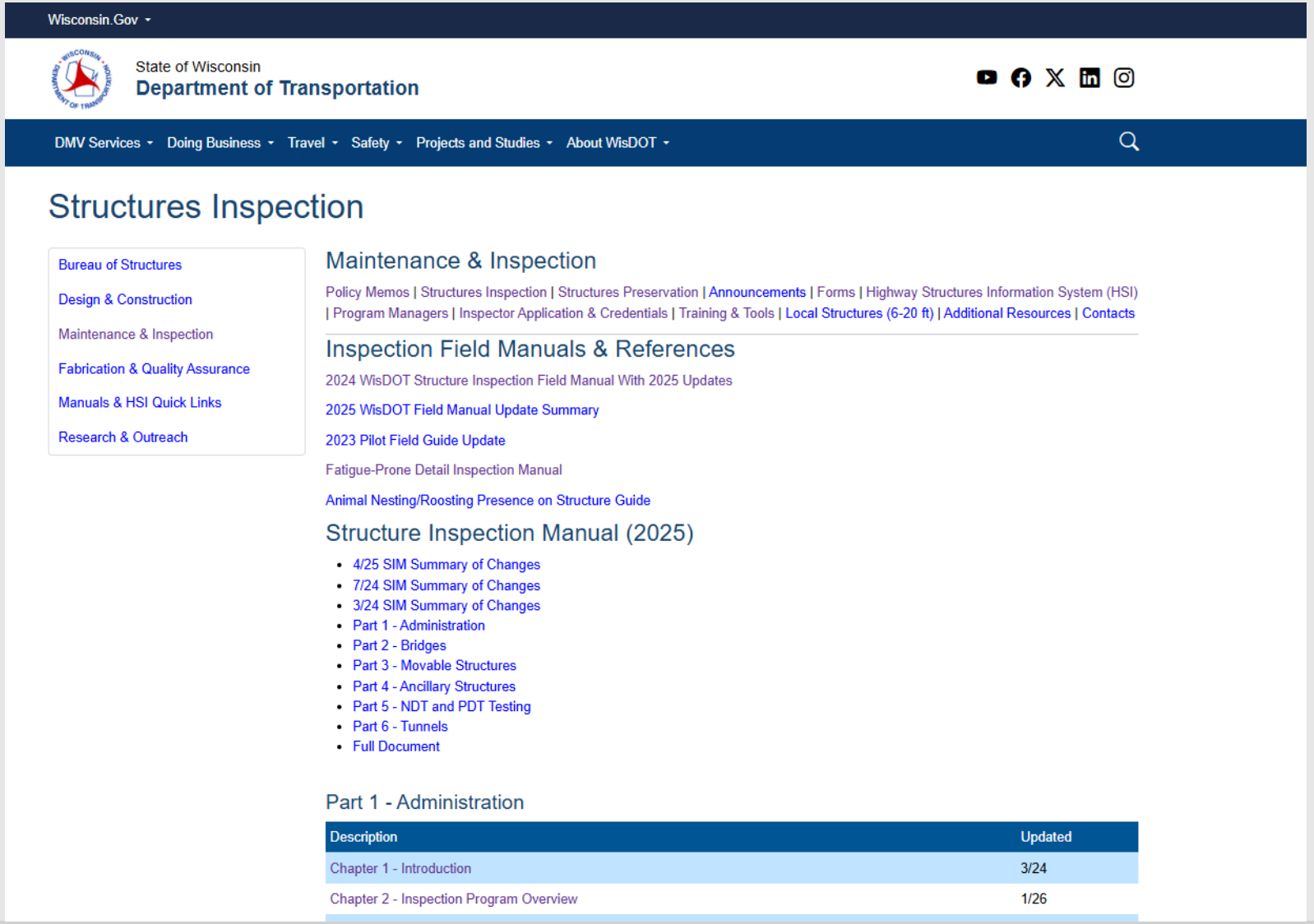
NEXT UP

2026 SIM Updates

Presented by Matt Coupar, PE
State Assistant Inspection Program Manager
matthew.coupar@dot.wi.gov

2026 SIM Updates

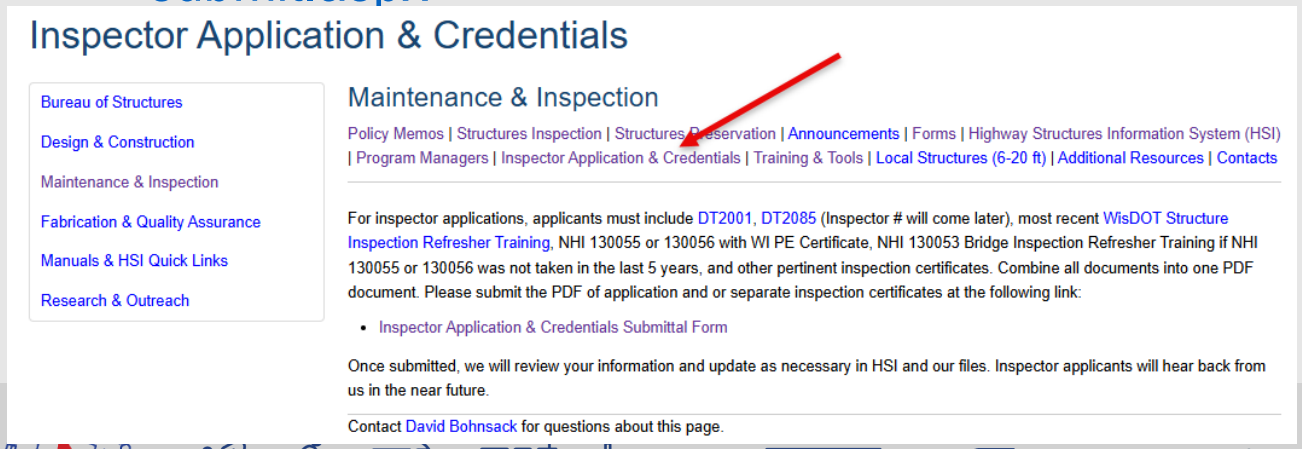
- 2026 SIM Release coming soon
- https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/inspection-manual.aspx



2026 SIM Updates

SIM 1.2.3.1 Management Qualifications

- To become a qualified Program Manger:
- Need most recent annual WisDOT Structure Inspection Refresher Training when applying.
- Reminder submit applications and credentials here: https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/insp-submit.aspx



Inspector Application & Credentials

Bureau of Structures
Design & Construction
Maintenance & Inspection
Fabrication & Quality Assurance
Manuals & HSI Quick Links
Research & Outreach

Maintenance & Inspection

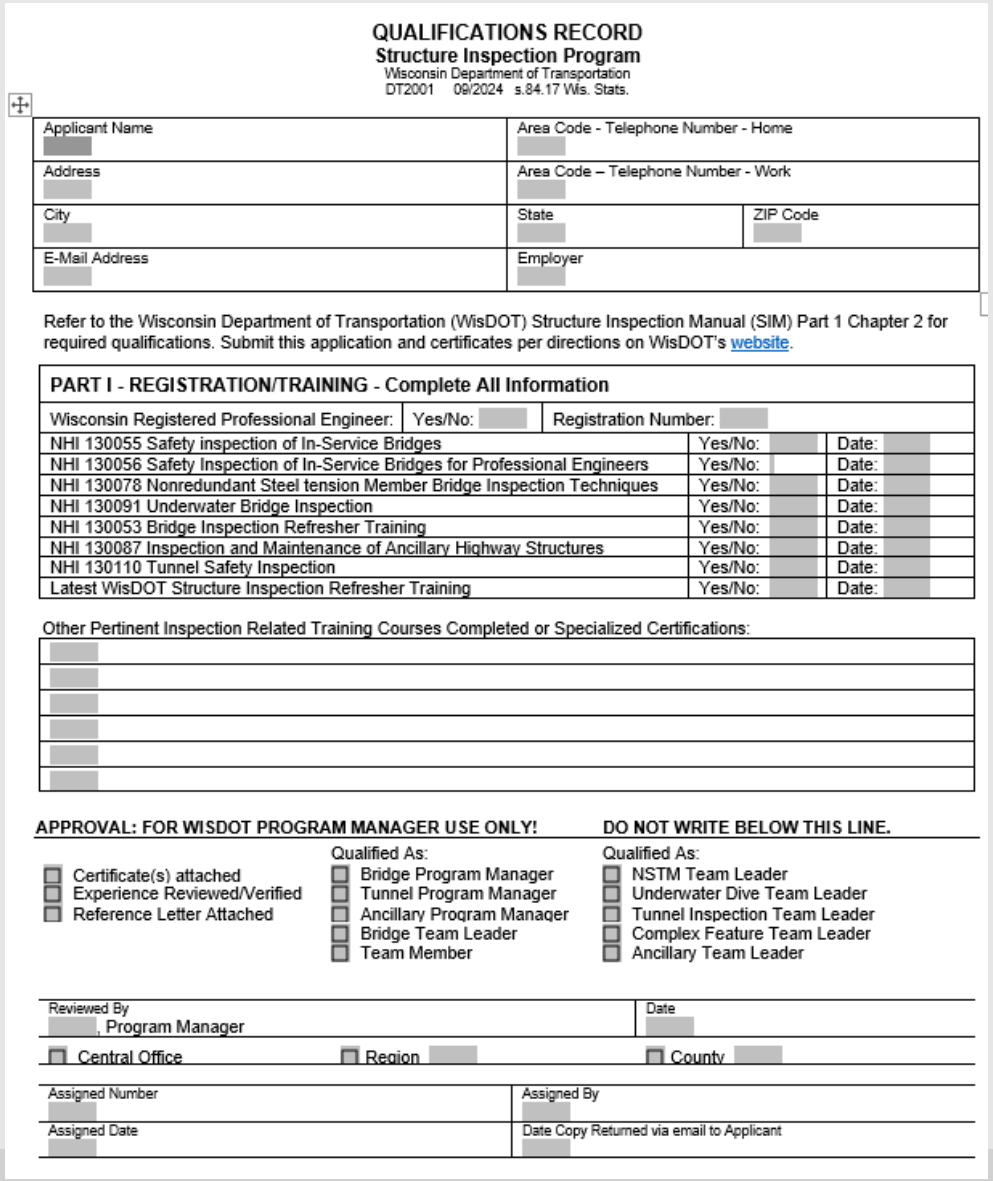
Policy Memos | Structures Inspection | Structures Preservation | Announcements | Forms | Highway Structures Information System (HSI) | Program Managers | Inspector Application & Credentials | Training & Tools | Local Structures (6-20 ft) | Additional Resources | Contacts

For inspector applications, applicants must include DT2001, DT2085 (Inspector # will come later), most recent WisDOT Structure Inspection Refresher Training, NHI 130055 or 130056 with WI PE Certificate, NHI 130053 Bridge Inspection Refresher Training if NHI 130055 or 130056 was not taken in the last 5 years, and other pertinent inspection certificates. Combine all documents into one PDF document. Please submit the PDF of application and or separate inspection certificates at the following link:

- Inspector Application & Credentials Submittal Form

Once submitted, we will review your information and update as necessary in HSI and our files. Inspector applicants will hear back from us in the near future.

Contact David Bohnsack for questions about this page.



QUALIFICATIONS RECORD
Structure Inspection Program
Wisconsin Department of Transportation
DT2001 09/2024 s.84.17 Wis. Stats.

Applicant Name	Area Code - Telephone Number - Home	
Address	Area Code – Telephone Number - Work	
City	State	ZIP Code
E-Mail Address	Employer	

Refer to the Wisconsin Department of Transportation (WisDOT) Structure Inspection Manual (SIM) Part 1 Chapter 2 for required qualifications. Submit this application and certificates per directions on WisDOT's website.

PART I - REGISTRATION/TRAINING - Complete All Information

Wisconsin Registered Professional Engineer:	Yes/No:	Registration Number:
NHI 130055 Safety inspection of In-Service Bridges	Yes/No:	Date:
NHI 130056 Safety Inspection of In-Service Bridges for Professional Engineers	Yes/No:	Date:
NHI 130078 Nonredundant Steel tension Member Bridge Inspection Techniques	Yes/No:	Date:
NHI 130091 Underwater Bridge Inspection	Yes/No:	Date:
NHI 130053 Bridge Inspection Refresher Training	Yes/No:	Date:
NHI 130087 Inspection and Maintenance of Ancillary Highway Structures	Yes/No:	Date:
NHI 130110 Tunnel Safety Inspection	Yes/No:	Date:
Latest WisDOT Structure Inspection Refresher Training	Yes/No:	Date:

Other Pertinent Inspection Related Training Courses Completed or Specialized Certifications:

APPROVAL: FOR WISDOT PROGRAM MANAGER USE ONLY!

☐ Certificate(s) attached
☐ Experience Reviewed/Verified
☐ Reference Letter Attached

Qualified As:
☐ Bridge Program Manager
☐ Tunnel Program Manager
☐ Ancillary Program Manager
☐ Bridge Team Leader
☐ Team Member

DO NOT WRITE BELOW THIS LINE.

Qualified As:
☐ NSTM Team Leader
☐ Underwater Dive Team Leader
☐ Tunnel Inspection Team Leader
☐ Complex Feature Team Leader
☐ Ancillary Team Leader

Reviewed By , Program Manager	Date
☐ Central Office ☐ Region ☐ County	
Assigned Number	Assigned By
Assigned Date	Date Copy Returned via email to Applicant

2026 SIM Updates

SIM 1.2.3.2 Underwater Bridge Inspection Diver Qualifications

- An underwater bridge inspection dive team leader **must meet** the Inspection Team Leader qualifications as identified earlier in this section and successfully complete an FHWA approved underwater bridge inspection diver training course as described in 23 CFR Part 650 NBIS Section 650.309 (e).

2026 SIM Updates

SIM 1.2.4 Official Bridge Files

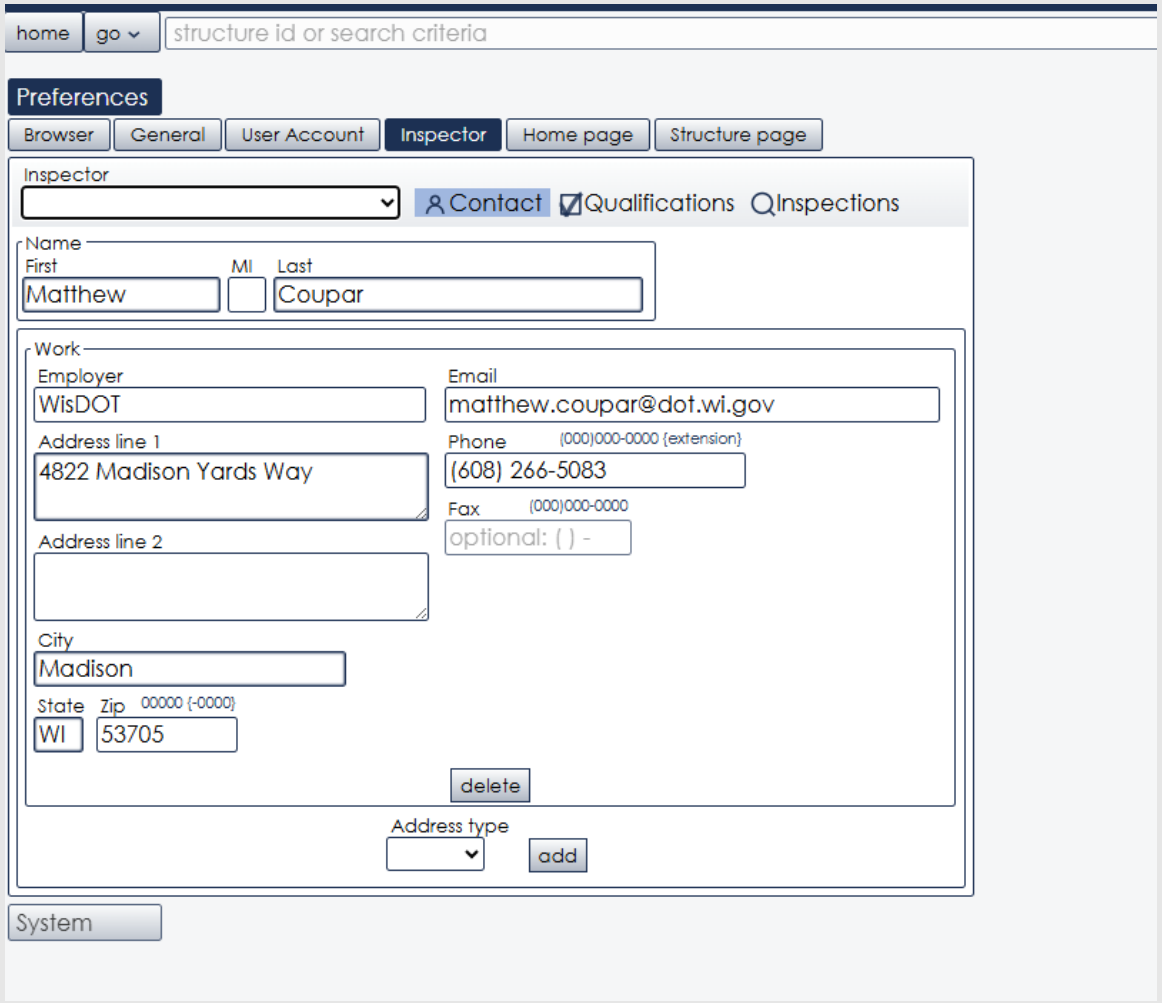
- For premanufactured culvert type structures, include all the following that are available in HSIS:
- As-built plans
  - Plan/profile sheets
  - Construction detail sheets
- Special provisions that apply to the structure
- Manufacturers product data sheets
- Shop drawings
- Calculations

2026 SIM Updates

SIM 1.2.5.4 Inspector Registry

- Contact information needs to be up to date
- In HSI under go>>tools>>preferences>>inspector>>contact
- An annual email will be sent out by the SPM to all certified inspectors to review and update inspector contact information in HSIS.

Inspectors won't be able to complete an inspection without filling out contact information

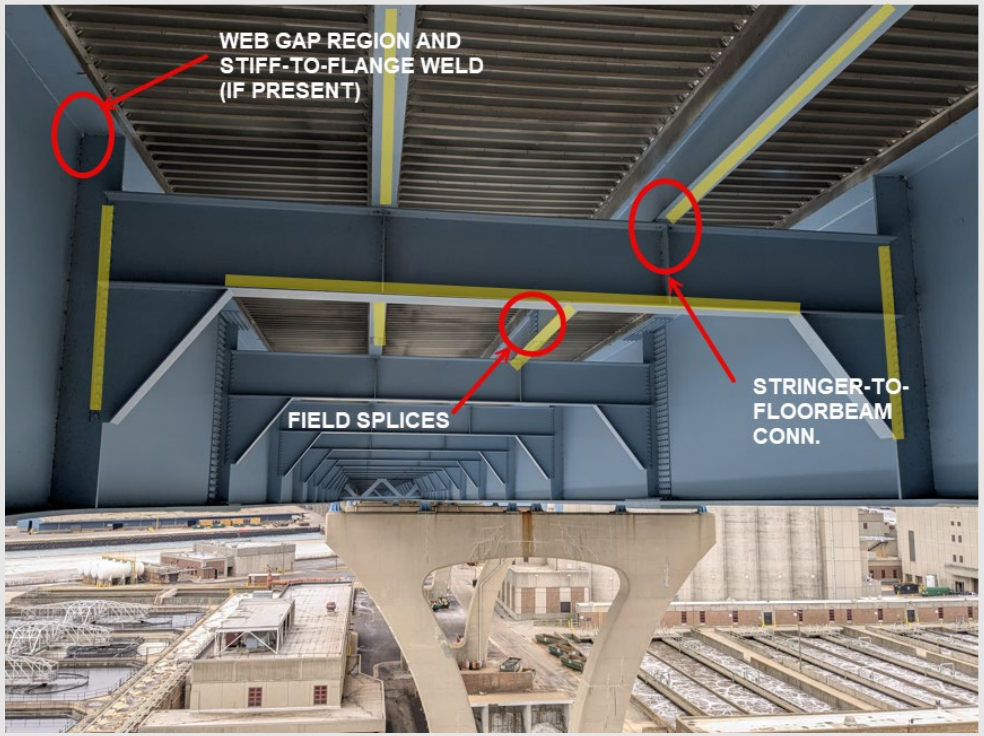


2026 SIM Updates

SIM 1.3.4 In-Depth Inspection

Identify the member/details requiring hands-on access

- Floorbeam system:
  - Floorbeam bottom flange
  - Connections to girders especially web gap region and bolts
  - Stringer field splices and connections to floorbeams
  - Areas adjacent or below joints or floorbeams
  - Any other area that the inspector or PM deems necessary



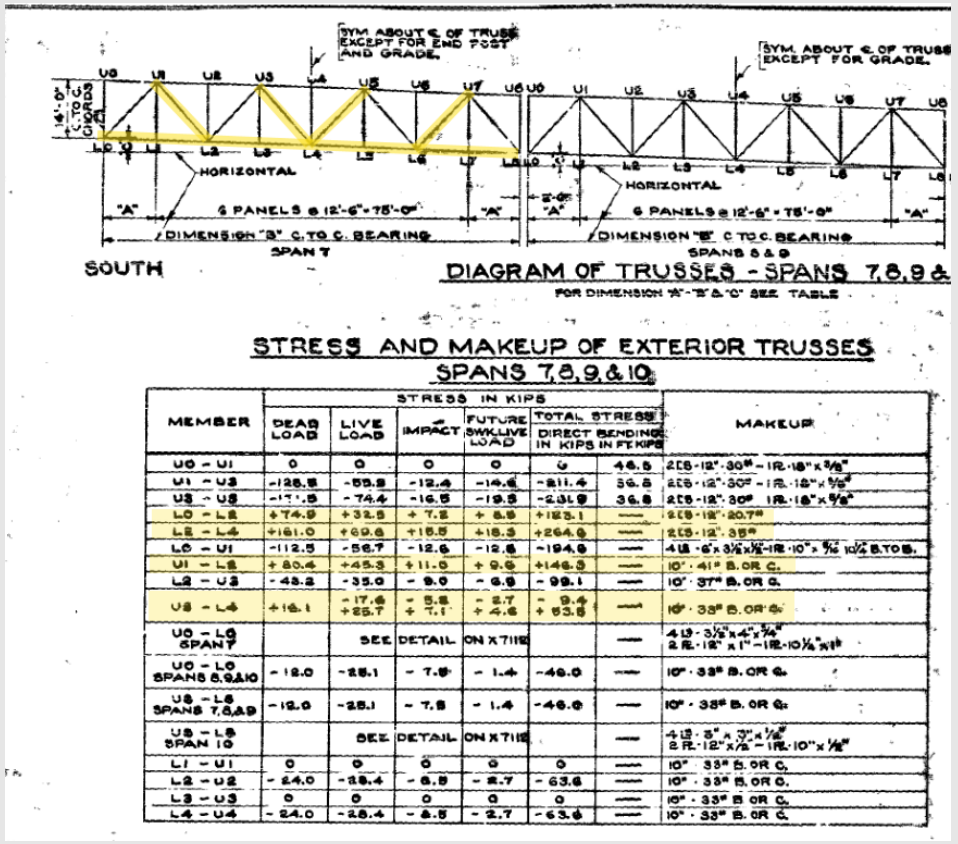
2026 SIM Updates

SIM 1.3.4 In-Depth Inspection

Identify the member/details requiring hands-on access

- 3 or 4 chord truss bridge:
  - Truss tension member
  - All vertical gusset plates
  - Any steel superstructure element in CS4
  - Any member/details found similar to the floorbeam system bridge
  - Any other area that the inspector or PM deems necessary

NOTE: Compression and secondary members should receive a cursory review for obvious signs of distortion – does not need to be hands-on.



STRESS AND MAKEUP OF EXTERIOR TRUSSES
SPANS 7,8,9 & 10

MEMBER	STRESS IN KIPS: DEAD LOAD	LIVE LOAD	IMPACT	FUTURE SW&LIVE LOAD	TOTAL STRESS: DIRECT	TOTAL STRESS: BENDING IN KIPS	TOTAL STRESS: BENDING IN FT-KIPS	MAKEUP
U0 – U1	0	0	0	0	0		46.5	2 ℄ 12" · 30# – 1 PL 18" × 3/8"
U1 – U3	-128.8	-59.8	-12.4	-14.6	-211.4		56.8	2 ℄ 12" · 30# – 1 PL 18" × 5/8"
U3 – U5	-171.5	-74.4	-16.5	-19.5	-281.9		36.8	2 ℄ 12" · 30# 1 PL 18" × 5/8"
L0 – L2	+74.9	+32.5	+ 7.2	+ 8.5	+123.1	—		2 ℄ 12" · 20.7#
L2 – L4	+161.0	+69.8	+15.5	+18.3	+264.6	—		2 ℄ 12" · 35#
L0 – U1	-112.5	-58.7	-12.6	-12.8	-194.6	—		4 L 6" × 3½" × ½" – 1 PL 10" × 5/16" 10½ B.T.O.B.
U1 – L2	+ 80.4	+45.3	+11.5	+ 9.6	+146.3	—		10" · 41# B. OR C.
L2 – U3	- 48.2	-35.0	- 9.0	- 6.9	- 99.1	—		10" · 37# B. OR C.
U3 – L4	+16.1	- 17.6 +25.7	- 5.8 + 7.1	- 2.7 + 4.6	- 9.4 + 53.8	—		10" · 33# B. OR C.
U0 – L0 SPAN 7		SEE	DETAIL	ON X7112		—		4 L 3½" × 4" × 5/16" 2 PL 12" x 1" – 1 PL 10½" x 1/2"
U0 – L0 SPANS 8,9&10	- 18.0	-25.1	- 7.5	- 1.4	-46.0	—		10" · 33# B. OR C.
U3 – L3 SPANS 7,8&9	-12.0	-25.1	- 7.5	- 1.4	-46.0	—		10" · 33# B. OR C.
U3 – L3 SPAN 10		SEE	DETAIL	ON X7112		—		4 L 3" × 3" × 1/2" 2 PL 12" x 1/2" – 1 PL 10" x 1/2"
L1 – U1	0	0	0	0	0	—		10" · 33# B. OR C.
L2 – U2	- 24.0	-18.4	- 6.5	- 2.7	- 53.6	—		10" · 33# B. OR C.
L3 – U3	0	0	0	0	0	—		10" · 33# B. OR C.
L4 – U4	- 24.0	-18.4	- 6.5	- 2.7	- 53.6	—		10" · 33# B. OR C.

2026 SIM Updates

SIM 1.3.5.7 Redundant Members

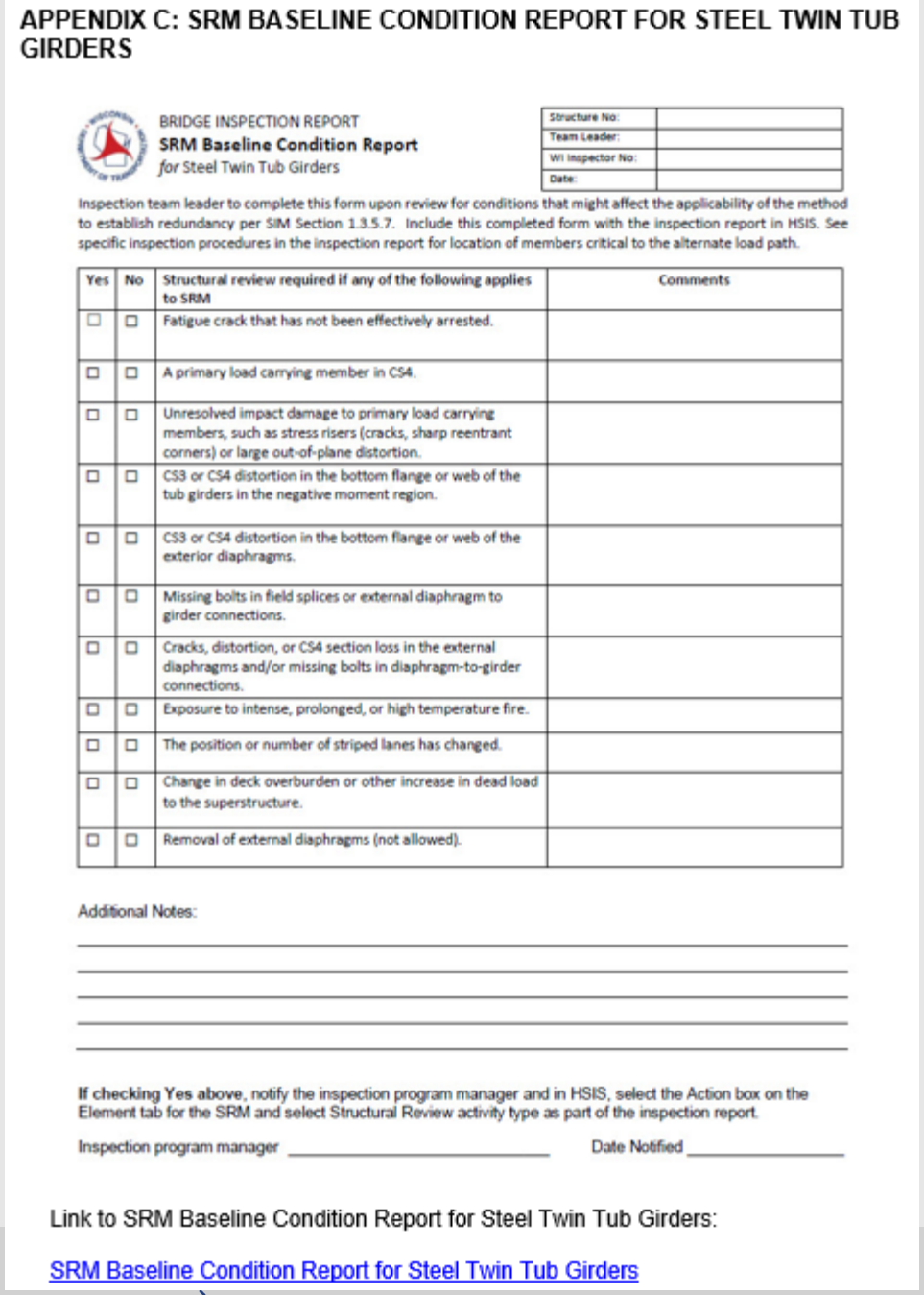
- Section was rewritten for FHWA approval
- Updated language for Steel Tub and Floorbeams - Applicability, Reevaluation Criteria, Design and Construction Details, Etc.
- FHWA Memorandum
- Currently only exists on state bridges
- NC, NE and SE Regions

2026 SIM Updates

SIM Appendix C

SRM Baseline Condition Report for Steel Twin Tub Girders

- Complete this form upon review of conditions that might affect the applicability of the method to establish redundancy per SIM 1.3.5.7.
- Include with the inspection report in HSI.
- Currently only exists on state bridges
- NC, NE and SE Regions



APPENDIX C: SRM BASELINE CONDITION REPORT FOR STEEL TWIN TUB GIRDERS

BRIDGE INSPECTION REPORT
SRM Baseline Condition Report
for Steel Twin Tub Girders

Structure No:	
Team Leader:	
WI Inspector No:	
Date:	

Inspection team leader to complete this form upon review for conditions that might affect the applicability of the method to establish redundancy per SIM Section 1.3.5.7. Include this completed form with the inspection report in HSIS. See specific inspection procedures in the inspection report for location of members critical to the alternate load path.

Yes	No	Structural review required if any of the following applies to SRM	Comments
☐	☐	Fatigue crack that has not been effectively arrested.	
☐	☐	A primary load carrying member in CS4.	
☐	☐	Unresolved impact damage to primary load carrying members, such as stress risers (cracks, sharp reentrant corners) or large out-of-plane distortion.	
☐	☐	CS3 or CS4 distortion in the bottom flange or web of the tub girders in the negative moment region.	
☐	☐	CS3 or CS4 distortion in the bottom flange or web of the exterior diaphragms.	
☐	☐	Missing bolts in field splices or external diaphragm to girder connections.	
☐	☐	Cracks, distortion, or CS4 section loss in the external diaphragms and/or missing bolts in diaphragm-to-girder connections.	
☐	☐	Exposure to intense, prolonged, or high temperature fire.	
☐	☐	The position or number of striped lanes has changed.	
☐	☐	Change in deck overburden or other increase in dead load to the superstructure.	
☐	☐	Removal of external diaphragms (not allowed).	

Additional Notes:

If checking Yes above, notify the inspection program manager and in HSIS, select the Action box on the Element tab for the SRM and select Structural Review activity type as part of the inspection report.

Inspection program manager _____ Date Notified _____

Link to SRM Baseline Condition Report for Steel Twin Tub Girders:

SRM Baseline Condition Report for Steel Twin Tub Girders

WISCONSIN DEPARTMENT OF TRANSPORTATION

BUREAU OF STRUCTURES

2026 SIM Updates

SIM Appendix D

SRM Baseline Condition Report for Steel Floorbeams (spaced greater than 14')

- Complete this form upon review of conditions that might affect the applicability of the method to establish redundancy per SIM 1.3.5.7.
- Include with the inspection report in HSI.

APPENDIX D: SRM BASELINE CONDITION REPORT FOR FLOORBEAMS (SPACED GREATER THAN 14')

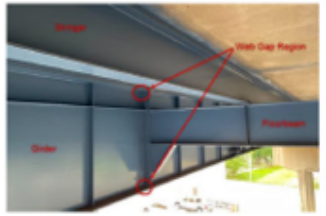
BRIDGE INSPECTION REPORT
SRM Baseline Condition Report
for FLOORBEAMS (spaced greater than 14')

Structure No:	
Team Leader:	
WI Inspector No:	
Date:	

Inspection team leader to complete this form upon review for conditions that might affect the applicability of the method to establish redundancy per SIM Section 1.3.5.7. Include this completed form with the inspection report in HSIS. See specific inspection procedures in the inspection report for location of members critical to the alternate load path.

Yes	No	Structural Review required if any of the following applies to SRM	Comments
Complete the section below for In-Depth inspections requiring hands-on access.			
☐	☐ ☐ N/A	Out-of-plane distortion induced crack in the web gap region exists but has not been effectively mitigated.	
☐	☐ ☐ N/A	Fatigue cracks in the floorbeam, floorbeam connection to girder, or stringer have been identified but not effectively mitigated.	
Complete the section below for all inspections involving floorbeams and stringers			
☐	☐	Floorbeam in CS4.	
☐	☐	Stringer(s) within adjacent longitudinal bays in CS4.	
☐	☐	Deck within adjacent longitudinal bays in CS4.	
☐	☐	Stringer or floorbeam distortion is CS3 or CS4.	
☐	☐	Missing bolts/rivets in stringer or floorbeam field splices.	
☐	☐	The position or number of striped lanes has changed.	
☐	☐	Change in deck overburden or other increase in dead load to the superstructure.	

Selection of "Yes" to any item above applies to the floorbeam in question (or the nearest floorbeam when selected "Yes" for stringer) as well as the immediately longitudinally adjacent floorbeams.



If checking Yes above, notify the inspection program manager and in HSIS, select the Action box on the Element tab for the SRM and select Structural Review activity type as part of the inspection report.

Inspection program manager _____ Date Notified _____

Link to SRM Baseline Condition Report for Floorbeams (spaced Greater Than 14'):

SRM Baseline Condition Report for Floorbeams (spaced Greater Than 14')

2026 SIM Updates

SIM 1.4.3.2 Inspecting at Railroad Crossings

- Work with region railroad coordinator for RR contacts or issues
- WisDOT staff must **not** take any railroad company offered safety training.

Entering RR Property with Equipment

- State statue allows WisDOT employees to enter private lands for inspections.
- Consultants and county staff will need to have RR permission to enter RR property.
- Stay at least 4’ from tracks. Cross perpendicular if needing to cross.
- Motorized or mechanical equipment must be 25’ away from the tracks unless a RR flagger is present.
- If a flagger is needed work with the regions RR coordinator to get a contact.
- Some county highway personal may know the local RR roadmaster so sometimes you can get a RR flagger working through them.
- Make sure to follow safety protocols for PPE

2026 SIM Updates

SIM 1.4.3.2 Inspecting at Railroad Crossings

Additional Advice

- Provide advanced notice to RR, Railroad Notification Letter Sample on BOS website soon.
- When on RR property, get in, and get out. Do not loiter, do paperwork, or have long discussions that could be completed off RR property.
- Do not argue with RR company employees. Leave the property if they insist or threaten you with arrest.
- Be alert when on the RR property
  - At some locations, trains are operated remotely, there may not be an engineer in the engine.
  - Look both ways before crossing - trains come from either direction.
  - Train locomotives may be quieter than you realize.
- Never step on the rail – RR staff get upset when they see someone step directly on the rail. Just don't do it, no need to stir up more problems.

2026 SIM Updates

SIM 2.6.6 Strengthening or Repair Systems

2.6.6.1 FRP (Element 8800)

Each FRP wrap is evaluated individually. Patched areas under FRP wraps shall be CS 2 or worse, depending on the element condition prior to FRP wrap installation. ~~The underlying concrete of a FRP wrap is considered to be repaired prior to the proper installation of the wrap. The condition state of the underlying concrete is increased to a condition state 1 due to this repair prior to FRP installation.~~ If an element is partially FRP wrapped, the FRP and concrete would be coded separately with the various associated units (SF, LF, EA). ~~Patched concrete not covered by an FRP repair is coded as condition state 2.~~

NEXT UP
Critical Finding Guidance

Presented by Dave Bohnsack, PE
State Inspection Program Manager
david.bohnsack@dot.wi.gov

R

Critical Findings Guidance

Critical Finding - a structural or safety deficiency that requires immediate action to ensure public safety.

What is meant by immediate?

- Inspector/PM/owner decides to place a temporary load posting until a load rating (structural review) can be completed. The result of the SR may change that temporary posting.
- The inspector decides to wait for the results of the SR, not a CF. However, the SR may determine an immediate posting is required.
- A finding must be addressed by the end of the day, week, month, year…

Timelines Related to Critical Findings

- **Timeline to Resolve a CF –** immediate safety concern to the public must be resolved *as soon as possible but no later than 30 days* of the finding.
- **Document in HSIS -** as soon as possible but within 30 days of the CF
- **CF resolved -** does not mean the deficiency has been corrected; it means an action has been taken to address the immediate safety concern.
- **Load posting or change of an existing load posting (Action)** - signage must be installed *as soon as possible, but no later than 30 days* after the determination of the need for the posting; including advanced warning signs installed.
- **Increased monitoring alone** - not sufficient to completely resolve a CF.
- **Temporary repairs alone** - not sufficient to completely resolve a CF.
- **Increased monitoring and temporary repair** – may be sufficient to resolve a CF.

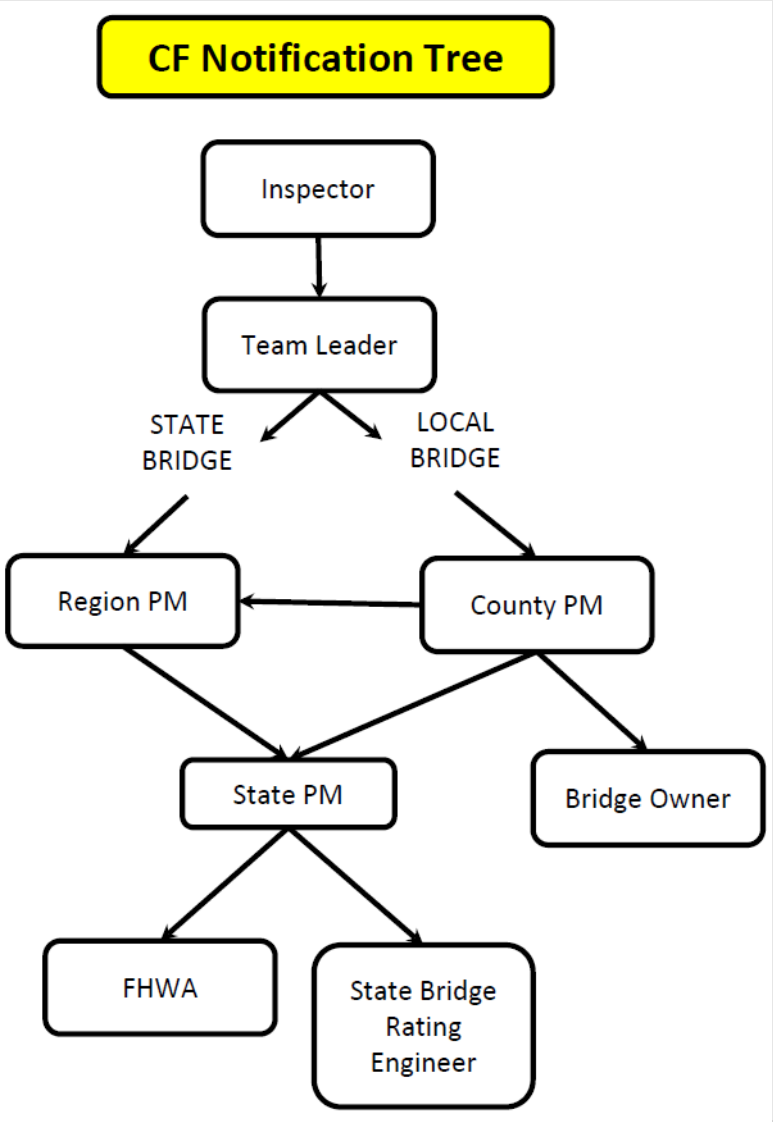
Critical Findings Criteria

- Structural Conditions or Deficiencies that pose immediate threat to public safety.
- Deck (BC01), Super (BC02), Sub (BC03), or Culvert condition (BC04) (NBI) ≤ 2
- Channel (BC09) condition ≤ 2
- Scour (BC11) condition ≤ 2
- NSTM (BC14) condition ≤ 3
- Immediate load posting (temporary)

  Instead of a partial or full closure, the inspector, with consultation with the PM, bridge owner, or load rating engineer, decides to immediately post the bridge before an official review or rating is completed.
- Immediate repair - requires action ASAP to ensure public safety.
- **NEW** Crack (un-arrested) found in the tension zone of an NSTM.

Notifications for Critical Finding

- **Notification Tree**
  - TL notifies the bridge's PM (County or WisDOT region).
    - PM notifies the PMs up the line
      - County PM >> Region PM and State PM
      - Region PM >> State PM
      - County PM >> local bridge owner.
  - The State PM will notify FHWA and state rating engineer.
- **Notification through direct communication via telephone within 24 hours of CF with an email follow-up is required.**
- TL, PM, owner, and others (as necessary) must determine actions going forward.
- Document the notifications in HSIS on the Critical Findings tab.

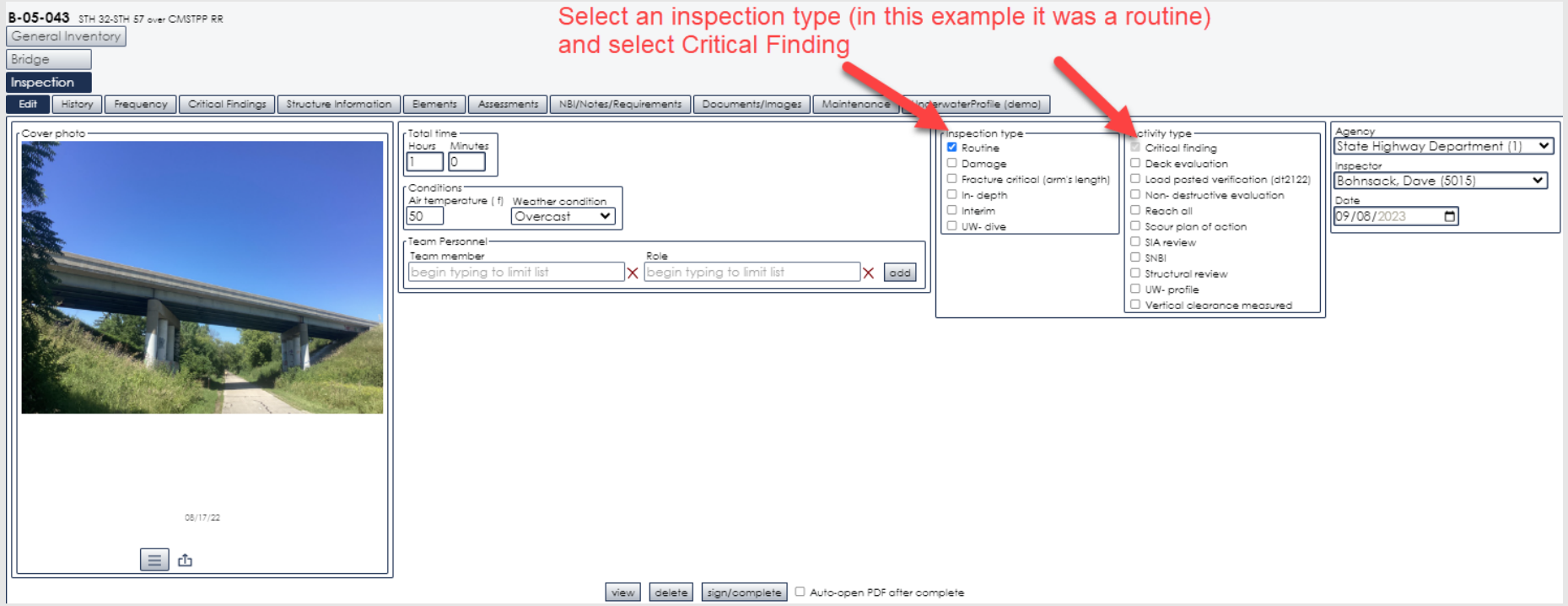


Critical Finding Action Definitions

- **Temporary** – action taken to eliminate the immediate safety concern. Examples include restricting traffic using temporarily traffic control, temporary repair, or blocking a lane with a vehicle.
- **Underway** – describe actions that are in progress.
- **Planned** – could include additional inspections, reduced inspection interval, or repairs being planned/designed.
- **Other** – describes any action that does not fit into the Temporary, Underway, or Planned action.
- **Final-Immediate** – The result of the immediate action. Complete once the immediate safety concern has been resolved and the scene is secure- the traffic restriction or bridge closure is in place, the posting signage is installed, and/or a temporary repair has been completed.
  - If the Final-Immediate action is a permanent repair, it must also be entered as the Final–Long Term action only after the PM has completed the review of the Final-Immediate.
- **Program Manager Review –** the responsible PM must review the actions taken to resolve the Final-Immediate action. Include the name of the reviewing PM in the action summary.
- **Final-Long Term** – Select to identify the final long-term plan. This will generally be a permanent repair, a future bridge rehabilitation, or bridge replacement.

HSIS - CF Tab Example

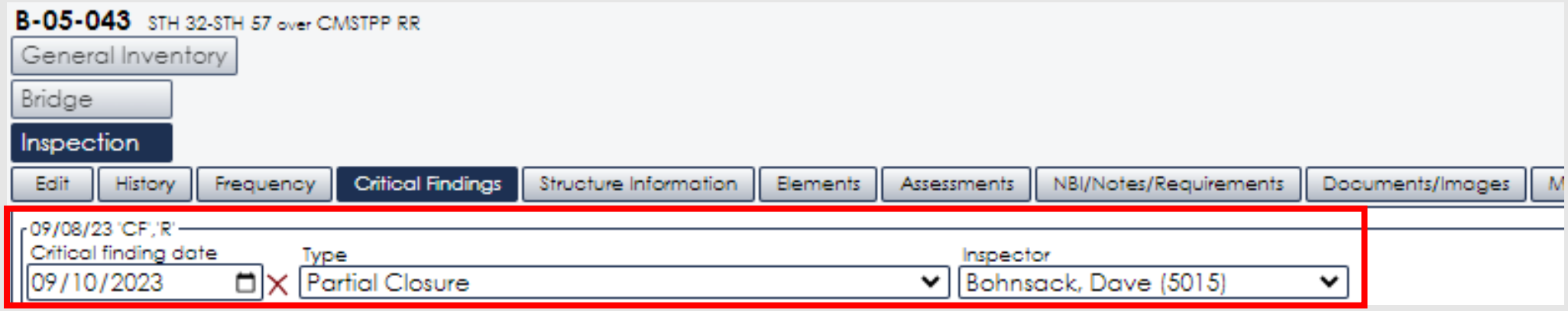
- **Under the Inspection tab, select the Create tab**
- **Fill in the information needed to start an inspection report**
- **Select the inspection type –** inspection which found the CF
- **Select the activity type** – select Critical Finding
- **Select Create**



Screen shot of example CF tab entry in HSIS

HSIS – CF Tab Example

- **Critical Finding Date** – enter the date or select from the calendar
- **Type** – select from the dropdown the criteria met to initiate a CF activity
- **Inspector** – inspector name will be prepopulated from the inspection report

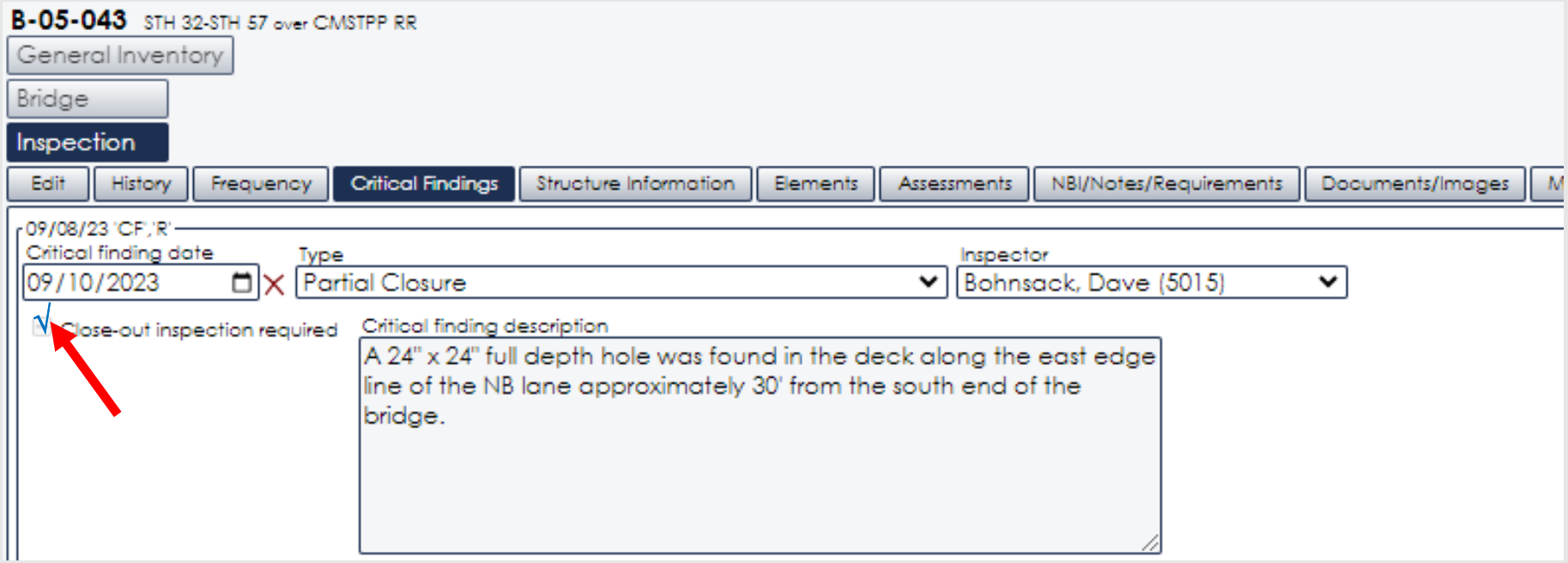


Screen shot of example CF tab entry in HSIS

R

HSIS – CF Tab Example

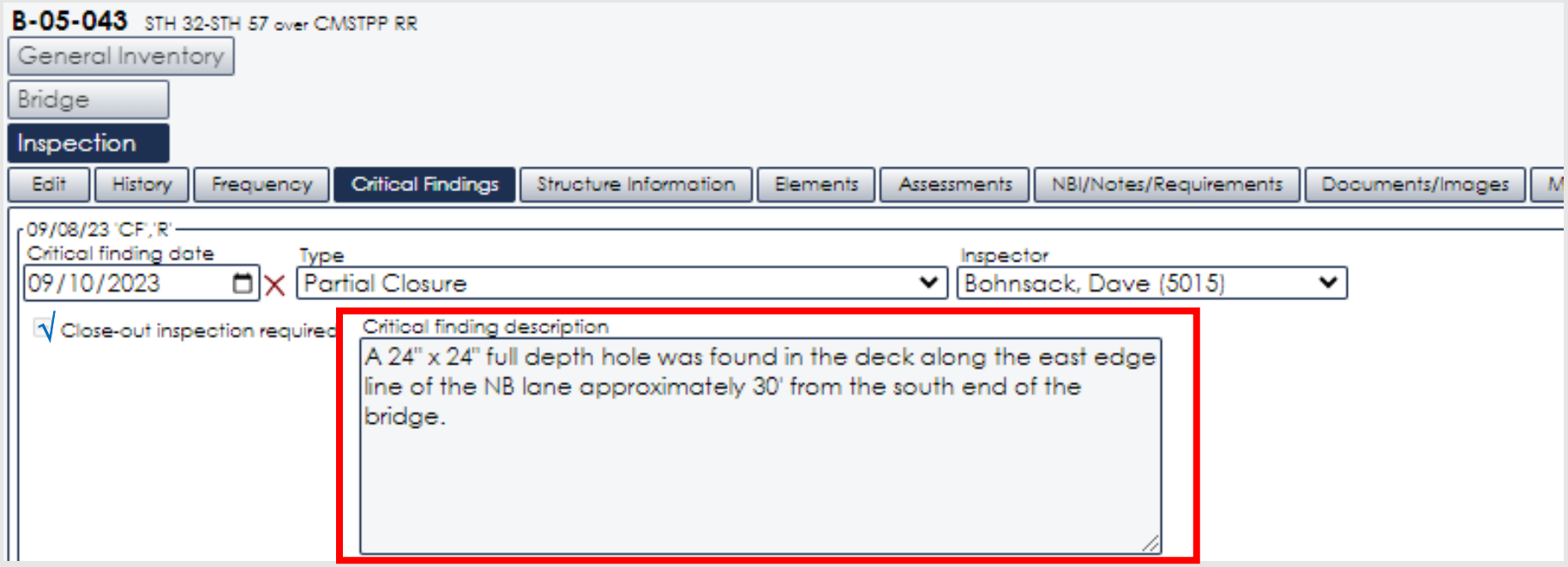
- **Close-out inspection** - select when it is necessary to document a permanent repair or permanent traffic control in a future inspection report other than the report that initiated the CF.



Screen shot of example CF tab entry in HSIS

HSIS – CF Tab Example

- **Critical finding description** – provide a summary description of the CF
  - Location, size, and severity of the structural deficiencies
  - Information on how the CF was discovered
  - If known, reason for the CF



Screen shot of example CF tab entry in HSIS

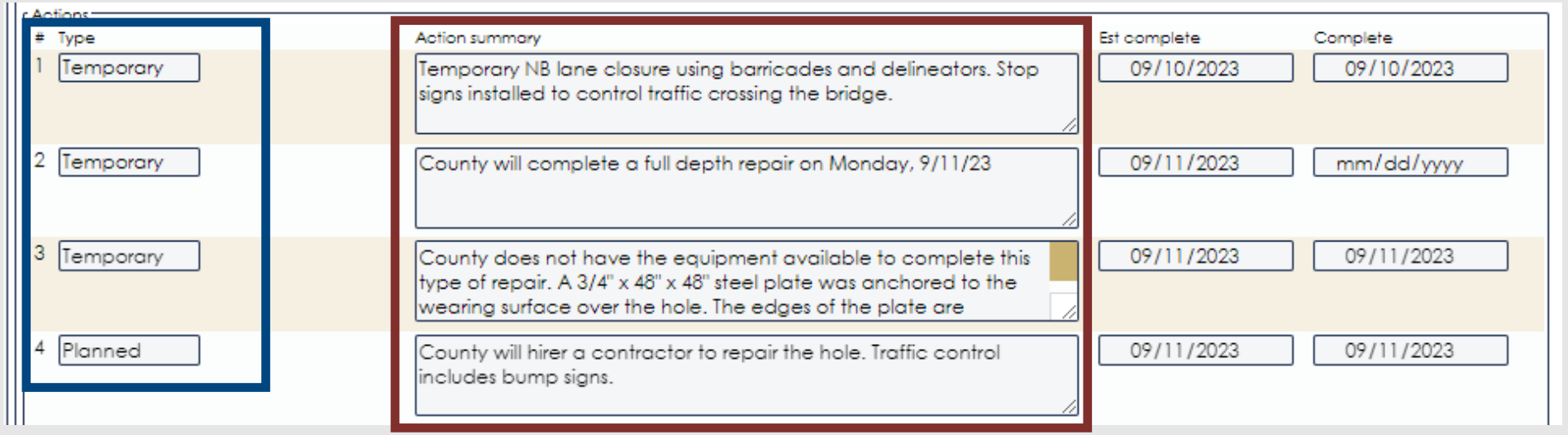
HSIS – CF Tab Example

Critical Findings tab:

Add Actions from dropdown menu

- Temporary
- Underway
- Planned
- Other
- Final-Immediate
- Program Manger Review
- Final–Long Term

Provide a summary of the action.

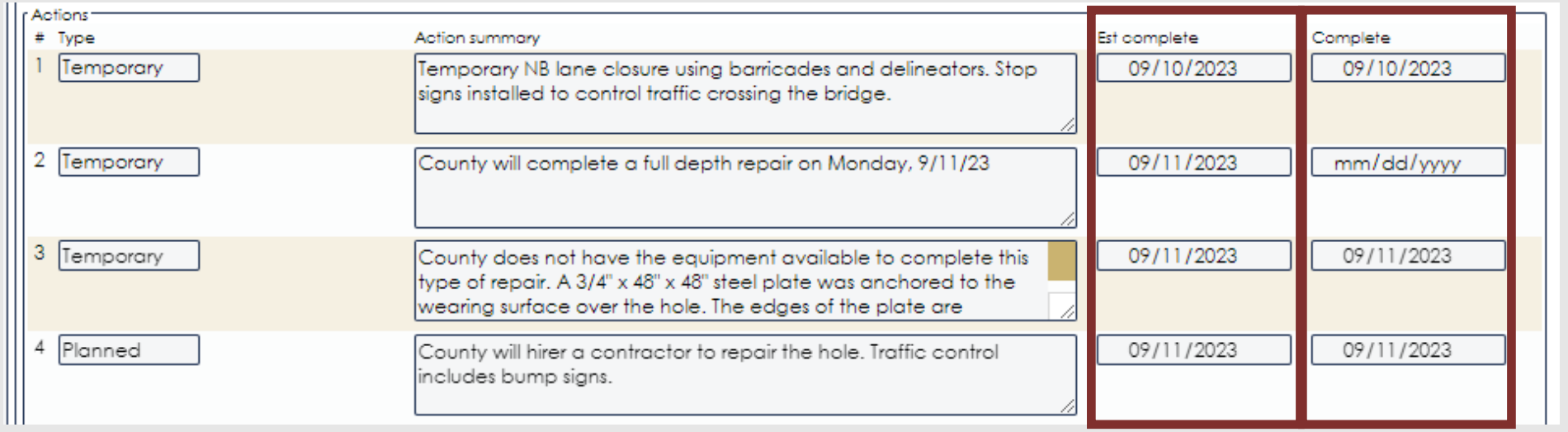


Screen shot of example CF tab entry in HSIS

HSIS – CF Tab Example

Critical Findings tab: Action Dates

- **Est Complete** – enter an estimated completion date for the action.
- **Complete** – enter the date an action is completed.



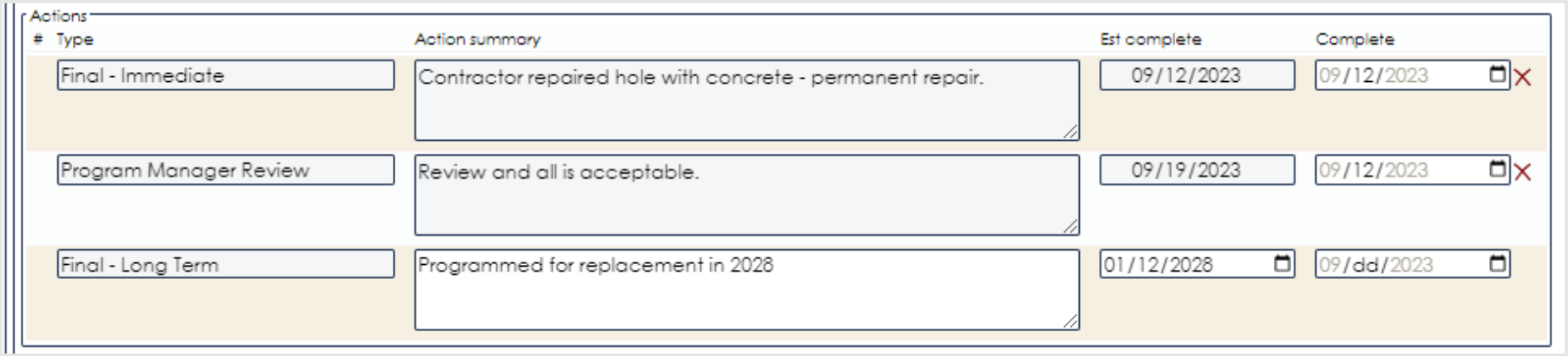
Actions

#	Type	Action summary	Est complete	Complete
1	Temporary	Temporary NB lane closure using barricades and delineators. Stop signs installed to control traffic crossing the bridge.	09/10/2023	09/10/2023
2	Temporary	County will complete a full depth repair on Monday, 9/11/23	09/11/2023	mm/dd/yyyy
3	Temporary	County does not have the equipment available to complete this type of repair. A 3/4" x 48" x 48" steel plate was anchored to the wearing surface over the hole. The edges of the plate are	09/11/2023	09/11/2023
4	Planned	County will hirer a contractor to repair the hole. Traffic control includes bump signs.	09/11/2023	09/11/2023

Screen shot of example CF tab entry in HSIS

HSIS – CF Tab Example

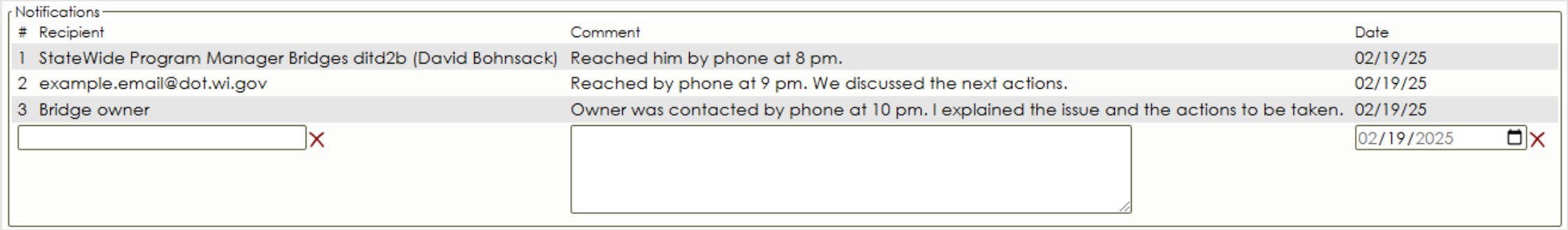
- **Final–Immediate**
  - Must have a completed date before Program Manager Review can be selected.
- **Program Manager Review**
  - Must be reviewed and a completed date before Final-Long Term can be entered
- **Final–Long Term**
  - Long Term and Immediate may be the same if final action is completed as part of the Final-Immediate action



Screen shot of example CF tab entry in HSIS

HSIS – CF Tab Example

- **Notifications** – Document those notified of the CF. HSI will automatically send an email to the individuals in a dropdown list and allows entry of additional email addresses.
- **Recipient** – the PM of record will automatically populate the drop down of the Notifications. **Must add a comment and tab or click another area of the box for the Send button to appear.** Additional recipient lines will appear after Send is selected.
  - A recipient's email address can be added into the box if it does not appear in the dropdown menu. .



Notifications

#	Recipient	Comment	Date
1	StateWide Program Manager Bridges ditd2b (David Bohnsack)	Reached him by phone at 8 pm.	02/19/25
2	example.email@dot.wi.gov	Reached by phone at 9 pm. We discussed the next actions.	02/19/25
3	Bridge owner	Owner was contacted by phone at 10 pm. I explained the issue and the actions to be taken.	02/19/25
			02/19/2025

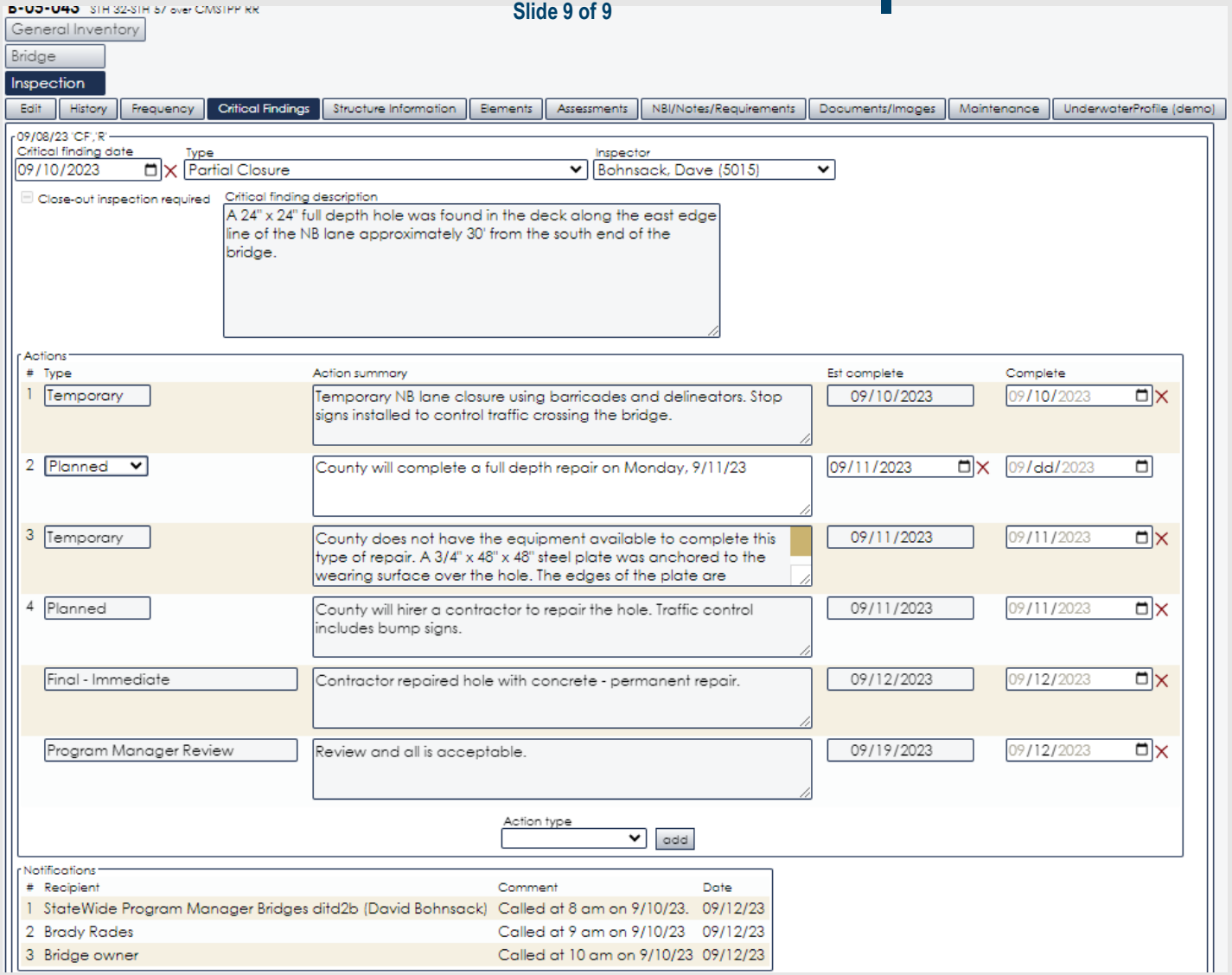
Screen shot of example CF tab entry in HSIS

- **Direct Communication Responsibility notice** – warning will appear notifying that direct communication with the recipient is required.

Message notifying requirement of direct communications.

HSIS – CF Tab Example

Completed Critical Findings tab in HSIS



Screen shot of example CF tab entry in HSIS

Knowledge Check

True or False statement? Critical Finding – Is a structural or safety deficiency that requires gradual action to ensure public safety.

False

Immediate Action

True or False statement? Critical Finding – must be resolved *as soon as possible but no later than 60 days* of the finding.

False

30 days

NEXT UP
QA/QC Program

Presented by Scott Reay, PE
Structure Inspection & Maintenance Supervisor
scott.reay@dot.wi.gov

QA/QC Program

- Review Program Intent
- Review 2025 Findings
- Proposed 2026 Reviews

QA/QC Program

QC - Local program manager completes and organizes. Documented on DT2002.

Local QA – WisDOT (Supervisor and Region PM) performs yearly reviews of county programs.

Each county is reviewed on a 4 to 5 year cycle.
Includes random selected bridges for a field review.
Includes office visit to review bridge files and discuss inspection program.

State QA – 1-2 Regions reviewed each year.

FHWA QA – Led by FHWA – reviews one region per year. Includes local and state bridges randomly selected. Includes office visit to review bridges files and discuss inspection program.

Quality Assurance Reviews 2025 and 2026

- 2025 County QA's: 18 counties; State: NWR; FHWA: NCR
  - Clark, Columbia, Crawford, Door, Eau Claire, Green, Juneau, Kewaunee, Marathon, Milwaukee, Oneida, Ozaukee, Polk, Price, Rock, Taylor, Waukesha, Winnebago, Wood
- 2026 County QA's 19 counties; State: SWR; FHWA: ???
  - Fond Du Lac, Marinette, Outagamie, Kenosha, Racine, Dane, Dodge, Grant, Richland, Green Lake, Waushara, Forest, Vilas, Iron, Barron, Bayfield, Buffalo, Jackson, Trempealeau

QA Points of Interest 2025

- Bridge File Documentation
  - Goal: Complete documentation for all counties within 4 years.
- Underwater Profiles and Dives
  - New QA review procedures implemented
- NSTM
  - Increased scrutiny of inspections, access, and procedures
- Lift Bridges
  - Beginning program for QA of lift bridge inspections

FAQ: What should be in the Bridge File?

- See Policy dated 4/29/22
- The *bridge file* must contain documentation applicable to bridge inspection, maintenance, rehabilitation, agreements, etc. An inexhaustive list of applicable bridge file components is below:

• **inspection reports** • **Maintenance records** • **Channel cross-section** • **Waterway information – channel cross-sections, soundings, stream profiles** • **Special inspection procedures or requirements** • **Load rating documentation, including load testing results** • **Posting documentation** • **Critical findings and actions taken**	• **Scour assessment** • **Scour Plan of Action (POA) (for scour critical bridges and those with unknown foundations)** • **Inventory and evaluation data and collection/verification forms** • **Significant correspondence** • **Agreements** • **Historic information** • **Other pertinent bridge documents** • **OSOW Permit Tracking! More to come.**

Bridge File Documentation Form DT1729

- https://wisconsindot.gov/pages/global-footer/formdocs/default.aspx

BRIDGE FILE DOCUMENTATION
Wisconsin Department of Transportation
DT1729 05/2024

Documents in the Bridge File	Bridge File Component Location: HSIS	Bridge Owner: File Folder	Bridge Owner: Electronic	Other Location	Comments/Location Information
Inspection and inventory records dated on or after April 1, 2016 ①	☐	☐	☐	☐	
Inspection and inventory records dated prior to April 1, 2016 ①	☐	☐	☐	☐	
Large volume inspection reports prior to 2010 ①	☐	☐	☐	☐	
Inspection Plans ②	☐	☐	☐	☐	
Special Inspections Procedures and Equipment ②	☐	☐	☐	☐	
Inventory and Evaluation Data (SI&A)	☐	☐	☐	☐	
Load Rating Records	☐	☐	☐	☐	
Posting Requirements and Calculations	☐	☐	☐	☐	
Critical Findings and Actions Taken	☐	☐	☐	☐	
Waterway Information (channel cross-sections/stream profiles, soundings)	☐	☐	☐	☐	
Hydraulic/Hydrology calculations and information	☐	☐	☐	☐	
Scour Assessment/Evaluation/ Vulnerability	☐	☐	☐	☐	
Scour Plan of Action (POA)	☐	☐	☐	☐	
Maintenance and Repair History	☐	☐	☐	☐	
Paint History	☐	☐	☐	☐	
Correspondence related to inspection, maintenance, and condition	☐	☐	☐	☐	
Structure Design Plans (where available)	☐	☐	☐	☐	

Bridge Inspection Program County:

BRIDGE FILE DOCUMENTATION
Wisconsin Department of Transportation
DT1729 05/2024

Structure Design Calculations (where available)	☐	☐	☐	☐	
Construction As-Builts	☐	☐	☐	☐	
Agreements	☐	☐	☐	☐	
Photos - view of top, elevation, typical span, posting, etc.	☐	☐	☐	☐	
Utilities and Ancillary Attachments	☐	☐	☐	☐	
Operation & Maintenance Manual - moveable bridges	☐	☐	☐	☐	
Maintenance Logs - moveable bridges	☐	☐	☐	☐	

① Includes Routine, Underwater, NSTM, Moveable, Special, and Damage inspections.

② Inspection procedures required for NSTM, UW, and Moveable inspections.

Instructions for Inspection Program Manager completing the Bridge File Documentation form
1. Review the bridge records maintained by the bridge inspection program office - paper and electronic.
2. Check the appropriate box or boxes for the location of the bridge file components the office maintains. This is the typical location of the components in general for the inspection program. For example, for as-built plans, if the office only has a few of the plans stored electronically on a local computer or server and with a majority stored in HSIS, check the box for *Bridge Owner-Electronic* and *HSIS*.
3. Include any additional comments related to location or description of file components that would help bridge inspectors and managers locate bridge file documents.
4. Use the blank lines at the bottom of the form to write in other file documents maintained by the program office.
5. Return completed form to the region program manager or the inspection quality assurance engineer for storage in HSIS.
Bridge File Documentation: This record is used to document the location of items which make up the official bridge file.
Official Bridge File: Records and documents of a wide range of information applicable to the bridge's design, load rating, inspection, maintenance, rehabilitation, correspondence, and other pertinent information.
Bridge Inspection Program: Enter the name of the region or local bridge inspection program.

2025 QA Findings – Areas for improvements (1 of 2)

- Verification of overburden depths
- Updating inventory and SNBI data (ADT, wing lengths, spans)
- Updating POAs for contact information and review dates
- Detailed documentation, cleaning and measurement of CS3 and CS4 deterioration
- NSTM inspection procedure documentation per SIM

2025 QA Findings – Areas for improvements (2 of 2)

- Deck vs. wearing surface quantities
- Protective surface/coating documentation for metallic elements
  - Railings, Bearings
- CS3 vs. CS4 classification
  - use element guidance in field manual - % section loss

Findings/Common Issues

- Overburden not updated after overlays or TPOs
- ADT values not updated
- Wearing surface defects coded under deck elements
- Confusion between delaminations and spalls
- Inconsistent bridge file organization

2025 QA Findings (Noticeable Improvements)

- Improved defect note placement under appropriate defects
- More consistent use of Description, Location, and Quantification (DLQ)
- Improved photo quality and use of date stamps
- Improved CS3 and CS4 documentation and structural review follow-up
- Improved documentation of maintenance actions and priorities
- Improved UW probe form documentation
- Improved usage of SNBI guidance for determination of NBI ratings
- Improved POA trigger documentation

2026 QA Reviews and Focus Areas

- 2026 Focus Areas
  - County QA reviews performed by Unit Supervisor with RPM support
  - Inspectors and Program Managers encouraged to participate
  - NSTM structures reviewed separately
  - NBI ratings assessed under SNBI guidance
- 2026 Points of Emphasis
  - Inspection procedures
  - UW profiles
  - POAs
  - Sub-programs
  - Office files

NEXT UP
Additional QA Topics & More

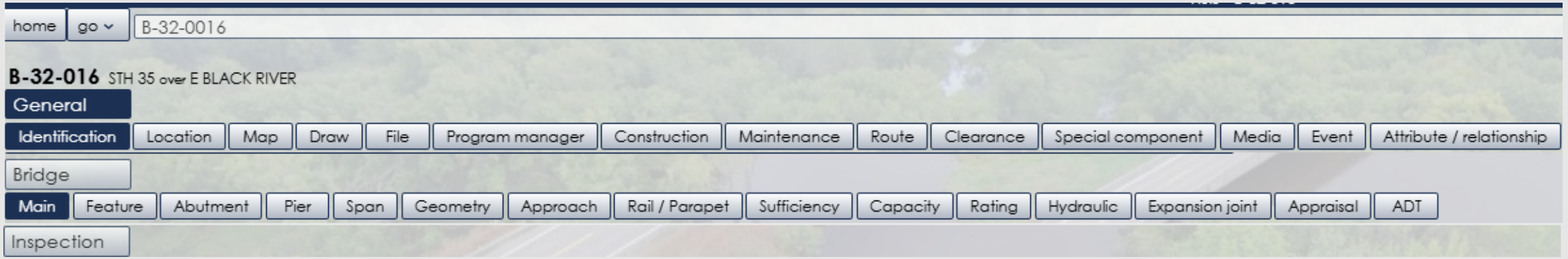
Presented by Dave Bohnsack, PE
State Inspection Program Manager
david.bohnsack@dot.wi.gov

Quality Assurance Field Reviews

- 2 types – field review of quality of inspection and inventory data
  - State QA Review –
    - QA supervisor, region PM, inspector
  - FHWA QA Review - independent of the state QA review
    - FHWA, QA supervisors, Region PM, optional – local PM and inspector
  - Good opportunity for inspector to learn, ask questions, and improve
    - Opportunity to learn and improve - open discussion about the results and explanation of differences
    - Learn and share best practices
    - It is not a gotcha or a test
  - Results – discussed during review and provided to participants
    - Region PM will gather and summarize any necessary inspection or data corrections/updates.
    - Summary will be sent to the appropriate PM for updating in HSIS with either a special inspection, inventory update, or note to include update with next scheduled inspection.
  - Load rating issues - condition based or overburden increase must be updated ASAP.

Quality Assurance Field Reviews

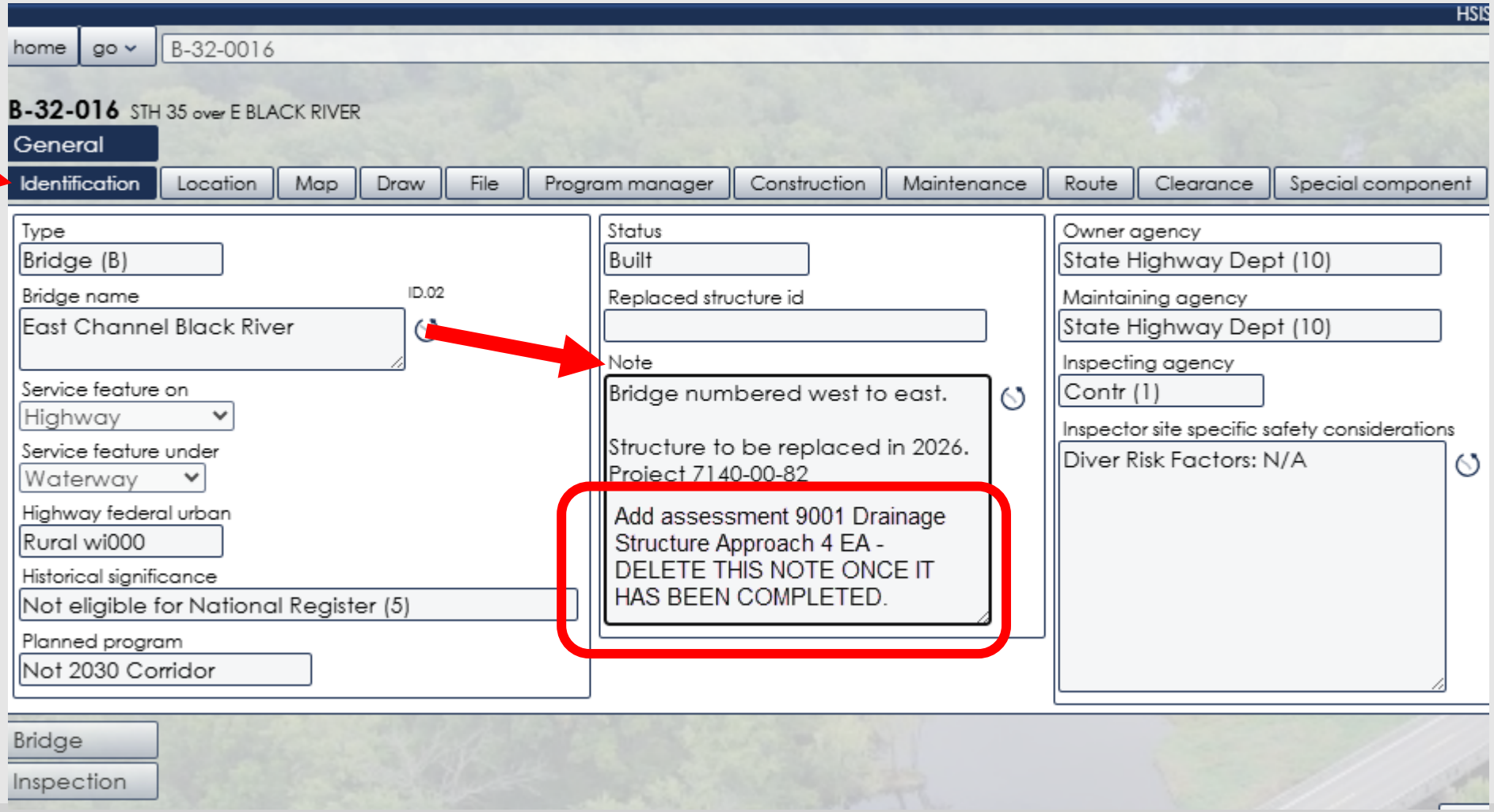
- Inventory data
  - Can be updated in HSIS at anytime – on General or Bridge tabs.



- Inspection data
  - Likely not able to update the inspection report (if past 90 days)
  - Must be updated or corrected during the next inspection
  - Enter in Note section on *Identification* tab
    - Will appear on the next inspection report under Structure Specific Notes
    - Good place to provide needed notes to inform the next inspector.
    - Add DELETE THIS NOTE ONCE IT HAS BEEN READ OR COMPLETED

Quality Assurance Field Reviews

Notes for the next inspection - updates & corrections



Inspection Report Quality Control

Inspection Report Best Practices

- Remove inspection notes and narrative that no longer apply and are not needed for historical reference.
- Correct errors in the inspection reports that will continue forward in your inspection report – notes, narrative, inspection procedures, etc.
  - Spelling errors
  - Directional references
  - Element labels
- Inspectors - notify the bridge owner of safety and condition concerns found
  - Requires additional communication with bridge manager/owner beyond just entering the inspection data into HSIS.

R

Inspection Quality Control

- Do not code conditions based on assumptions on what the inspector believes will develop in the future. Rate what you see!
- Example note found in recent inspection:
  - "Some noticeable insignificant width cracks with 2025 concrete overlay currently present. Assume ~1% of area will develop moderate width crack after further curing.
  - Good the inspector documented their assumptions so that this could be discussed with the inspector and be brought up to others.

R

Accurate Inspections

- Accurate inspection data begins with the inspector.
- Inspectors must provide high quality bridge inspections.
- Asset management principles are used to determine bridge eligibility.
- Requires accurate and thorough inspection information and documentation
  - SNBI condition ratings
  - Element level condition states
  - Quantities
  - Photographs/sketches of CS3 and CS4 defects
  - Descriptive element/defect narrative.
- Used to determine bridge program eligibility and appropriate work actions.

Accurate Inspections

- When is an element defect in CS4?
- The Structure Inspection Field Manual provides guidance for defects considered CS4.
- Each material type has a section titled Condition State 4 (Severe)
  - Provides guidance for common CS4 situations that require a structural review
  - CS4 guidance is located on the pages just prior to the defect table for each material type.
- Example from field manual

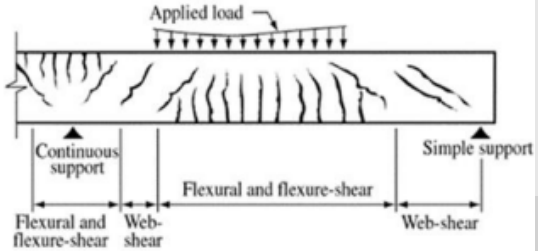
Chapter 3.C – Prestressed Concrete

Condition State 4 (Severe) – Prestressed Concrete

The items listed below are common situations that would **require** a structural review for **primary structural elements**. This list is not exhaustive; there are situations other than what is listed below that may need a review. It is the responsibility of the inspector to elevate these less-common situations, in addition to the conditions listed below, as is deemed necessary.

Primary Superstructure (104 thru 154, 8170) and Substructure (204 thru 233) Elements

- Delamination/Spall/Patched Area/Exposed Prestressing (1080)
  - Impact damage that bends or severs a strand
  - Unsound concrete at or behind prestressing steel (excluding girder ends)
  - Exposed strand with section loss or broken wires
  - Multiple shear stirrup reinforcing bars exposed with greater than 10% loss of section.
  - Girder at bearing has more than 20% loss of concrete section
- Cracking/Efflorescence (1110)
  - Girder or bent cap flexural cracking widths greater than 1/32 Inch near midspan or near/over supports (i.e. visible from ground)
  - Active shear cracks
- Scour (6000)
  - Pile supported footing has multiple piles with more than one foot of exposure.
  - Scour around pile bents has increased the length of exposed piles more than 4 feet.



Accurate Inspections

Example of discrepancies found in bridge inspection report

page 4 Structure No.: [redacted]

X	109		**Prestressed Concrete Open Girder** Rate channel stems only. 4'-8" wide beams.	LF	518	**445**	**29**	44	**0**
		1080	Delamination - Spall - Patched Area Spalls & delams at girder ends: Girder 1 from south: 1-ft spall w/ exposed rebar @ east end (1-ft CS3) Girder 2 from south: 5-ft spall in stem @ east w/ exposed **& failed** prestressing steel (5-ft CS**4**) Girder 3 from south: 5-ft spall at west, 4-ft spall with exposed prestressing steel @ east (9-ft CS3). Girder 4 from south: 5-ft spall in stem @ east w/ exposed **& failed** prestressing steel, 1-ft spall with exposed rebar @ west (6-ft CS3). Girder 5 from south: 5-ft spall in stem @ east w/ exposed **& failed** prestressing steel, 3-ft spall with exposed prestressing steel @ west (8-ft CS3) Girder 6 from south: 3-ft spall and 3-ft delam in stem @ west, 2-ft spall with exposed **& failed** prestressing steel @ east (3-ft CS2, 5-ft CS3) Girder 7 from south: 3-ft spall in stem @ west w/ exposed prestressing steel, 4-ft spall w/ exposed prestressing steel @ east (7-ft CS3) Girder 8 from south: 1-ft spall in stem @ west and east (2-ft CS3) Girder 10 from south: 1-ft small spall in stem (1-ft CS2)	LF		0	4	42	**0**

Condition Ratings

	File	New
Deck condition rating (C.01)	Satisfactory (6)	Fair (5)
Superstructure condition rating (C.02)	Poor (4)	Serious (3)
Substructure condition rating (C.03)	Satisfactory (6)	Satisfactory (6)
Culvert condition rating (C.04)	N/A (Nbi) (N)	N/A (Nbi) (N)
Bridge railings condition rating (C.05)		Satisfactory (6)
Bridge railing transitions condition rating (C.06)		N/A (N)
Bridge bearings condition rating (C.07)		Critical (2)
Bridge joints condition rating (C.08)		Critical (2)
Channel condition rating (C.09)		Satisfactory (6)
Channel protection condition rating (C.10)		Satisfactory (6)
Scour condition rating (C.11)		Some Minor (7)
Underwater inspection condition (C.15)		
Channel	Bank Slumping (6)	Bank Slumping (6)
Waterway	Equal Minimum (6)	Equal Minimum (6)
Approach	Good- No speed reduction (8)	

Accurate Inspections

Example of discrepancies found in bridge inspection report

page 3

Structure No. [redacted]

Elements

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State 1	2	3	4
X	240		Steel Culvert	LF	210	0	0	210	0
		1000	Corrosion south pipe corroded at water line through section loss middle and north pipe silted in corrosion at waterline evident	LF		0	0	210	0
X	330		Metal Bridge Rail	LF	72	0	72	0	0
		1000	Corrosion rail and post corrosion	LF		0	72	0	0

Condition Ratings

	File	New
Deck condition rating (C.01)		N/A (N)
Superstructure condition rating (C.02)		N/A (N)
Substructure condition rating (C.03)		N/A (N)
Culvert condition rating (C.04)		Considerable Damage (4)
Bridge railings condition rating (C.05)		Fair (5)
Bridge railing transitions condition rating (C.06)		Satisfactory (6)
Bridge bearings condition rating (C.07)		N/A (N)
Bridge joints condition rating (C.08)		N/A (N)
Channel condition rating (C.09)		Good (7)
Channel protection condition rating (C.10)		Satisfactory (6)
Scour condition rating (C.11)		Some Minor (7)
Underwater inspection condition (C.15)		
Channel		Protected (8)
Waterway		Equal Desirable (8)
Approach	Good- No speed reduction (8)	

R

Underwater Dive Inspections

Quality Control / Quality Assurance

- WisDOT will continue to complete QA review of UW Dive inspections
- Consultants must have a written QC/QA plan for UW Dive inspections

R

Underwater Dive Inspections

QA Review Comments

- Provide as much detail pertaining to substructure and foundation elevations on UW Profile sheet vs supplemental forms.
- Date stamp on pictures or date comment in picture notes required. This is typically missed on Drone or Underwater photos.

R

Underwater Dive Inspections

QA Review Comments

- Global pictures upstream and downstream. Include bridge rail in photo to capture attack angle of stream.
- Level 2 effort required on 10% of all underwater elements. Marine growth cleaning to be preformed. In general, marine growth also includes other debris and silt to be removed.

R

Underwater Dive Inspections

Reminders / Requirements

- Dive team leader must be on site during the inspection and part take in at least 50% of the diving.
- All divers should have successfully completed an FHWA-approved underwater bridge inspection course in accordance with 23 CFR 650.309(e)
- Backup diver / tender should ensure safety of primary diver by monitoring and responding to hazards during the inspection. It is recommended that the backup diver should also be certified bridge inspector.

Scour Monitoring Activity SIM 1.3.7

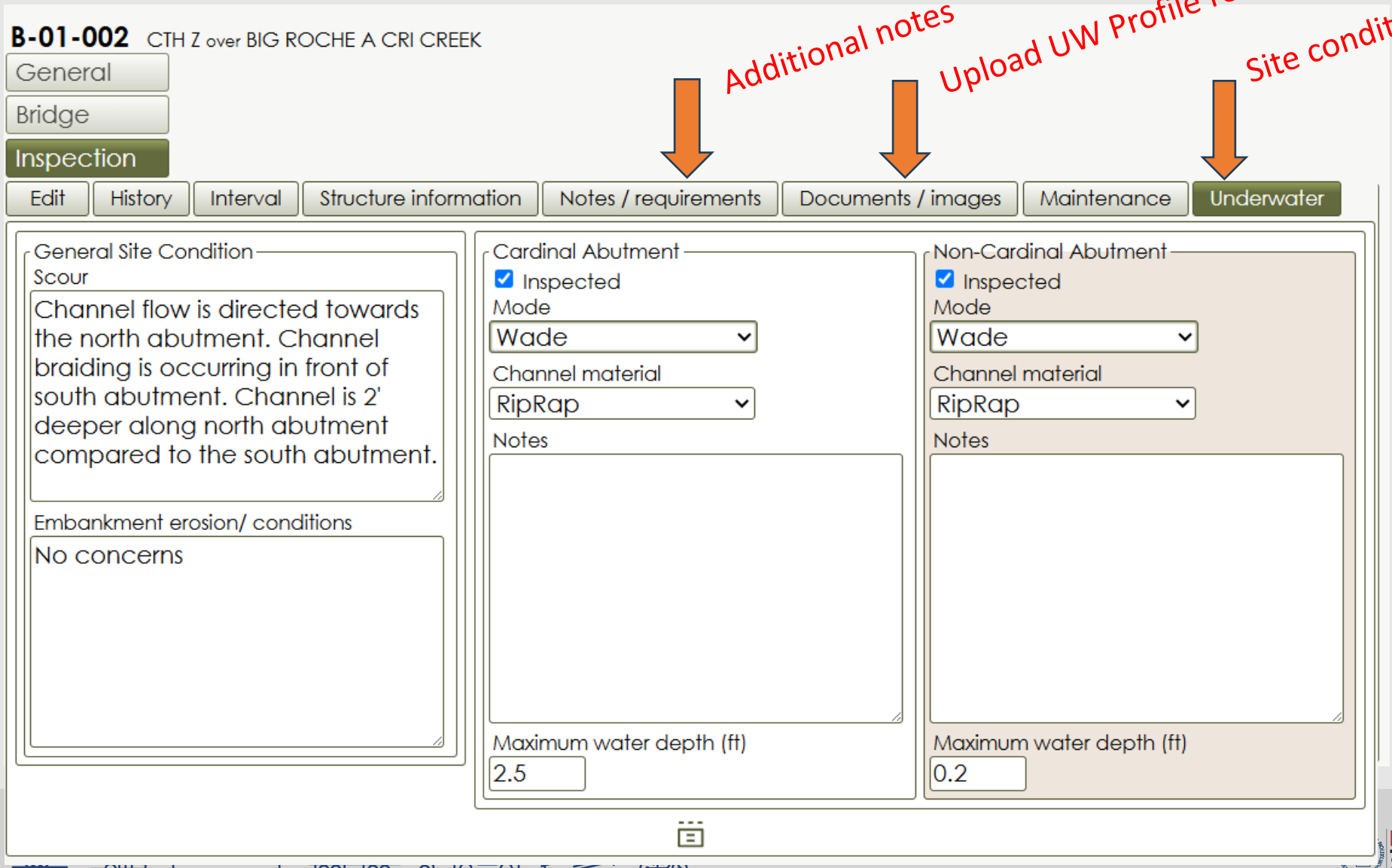
Monitoring during and after a flood event – includes UW Profiles, as needed:

- Scour Critical Bridges - required after a flood trigger event identified in an implemented scour plan of action (POA)
- Required at a flood affected bridge with signs of channel movement, degradation, or aggradation.
- Recommended at bridges when the bridge experiences any of the following:
    1. A flood event when the bridge or the roadway approach is overtopped.
    2. A river system reaches flood stage at a bridge.
    3. The presence of highwater flow velocities which could cause scour.
    4. If determined by the bridge owner or inspection program manager.
- SIM Section 1.3.6 provides additional information on underwater profiles.
- Scour Monitoring Activity can be created in HSIS without selecting an inspection type.

Special or Damage Inspection may be required if impacts to element or condition rating has occurred or to identify maintenance/repair actions.

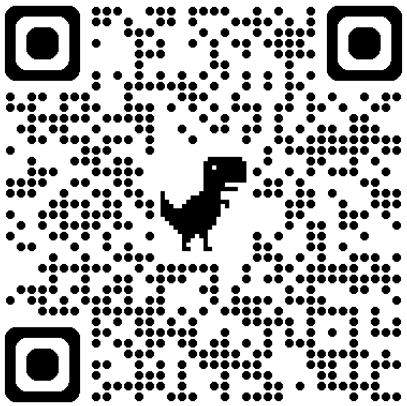
Scour Monitoring Activity SIM 1.3.7

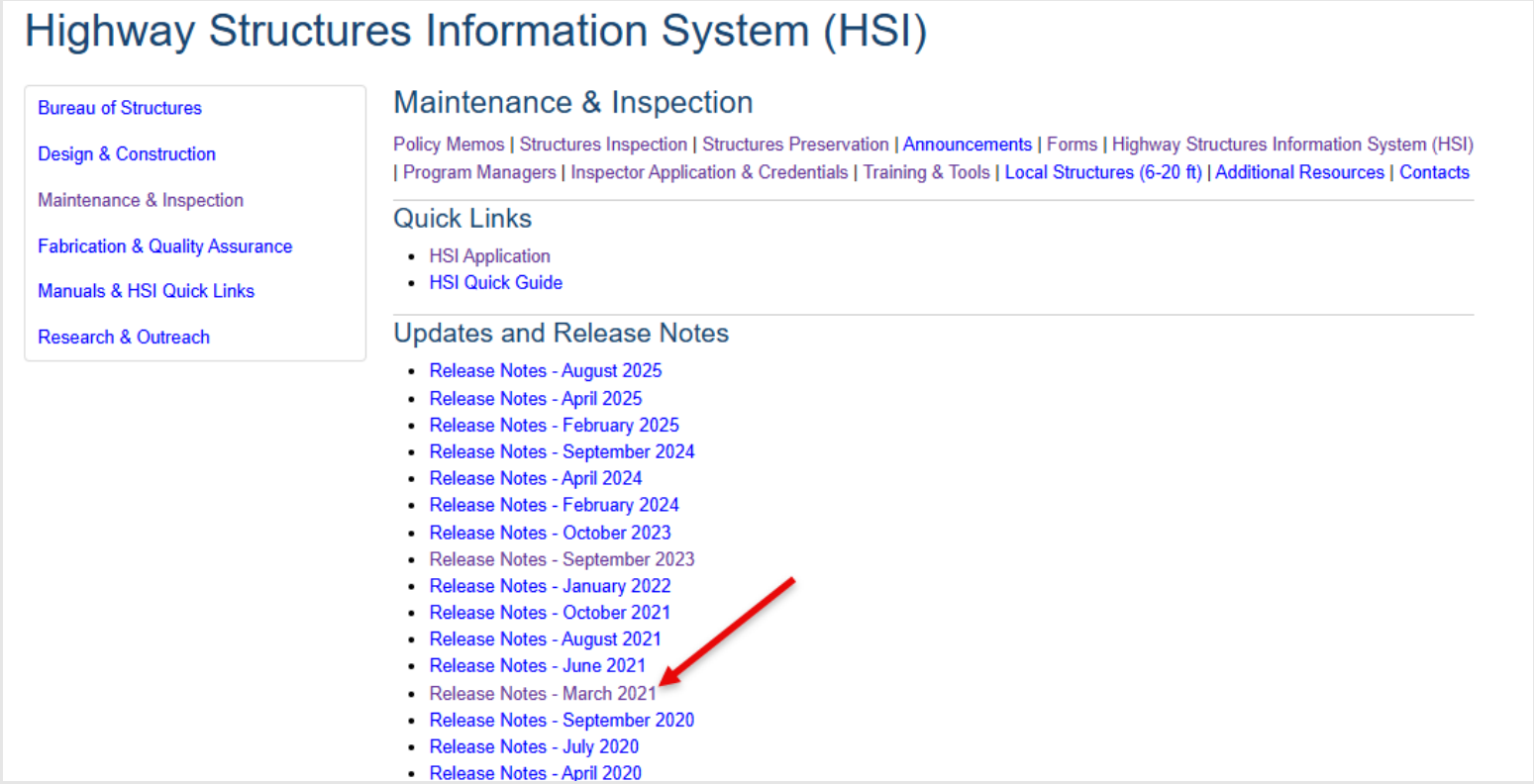
- Scour Monitoring Activity can be created without selecting an inspection in HSIS.



R Eligible Bridges for Extended Intervals

- To see which bridges are eligible for extended Intervals
- HSIS Link on BOS website - Updates and Release Notes March 2021 Edition for instructions on how to generate eligible bridge reports and subscriptions.





https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/hsi.aspx

Inspection Reminder

If elements are not inspected...

- **Uncheck** the element.
- **DO NOT** change quantities as shown in the example.
- Changes to the quantities carries over to future inspections

DO NOT ZERO OUT QUANTITIES

Elements

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State 1	2	3	4
√	12		**Reinforced Concrete Deck**	SF	0	**0**	**0**	0	0
		1080	Delamination - Spall - Patched Area	SF		0	0	0	0
		1130	Cracking (RC)	SF		0	3,062	0	0
			Span 1: Insignificant width transverse cracks with lite efflorescence (CS2 ~ 36 SF). Span 2: Insignificant width transverse cracks with lite efflorescence (CS2 ~ 510 SF). Span 3: Insignificant width transverse cracks with lite efflorescence (CS2 ~ 740 SF). Span 4: Insignificant width transverse cracks with lite efflorescence (CS2 ~ 510 SF). Span 5: Insignificant width transverse cracks with lite efflorescence (CS2 ~ 21 SF). Span 6: Insignificant width transverse cracks with lite efflorescence (CS2 ~ 550 SF). Span 7: Insignificant width transverse cracks with lite efflorescence (CS2 ~ 510 SF). Span 8: Insignificant width transverse cracks with lite efflorescence (CS2 ~ 185 SF).					
		8513	Thin Polymer Overlay (TPO)	SF	49,367	49,367	0	0	0
			New polymer overlay in 2010. [15] Visual inspection. [17] Visual inspection. [19] Visual inspection. [21] Visual inspection. [25] Visual inspection.						
		3210	Debonding/Spall/Patched Area/Pothole	SF		0	0	0	0
		3220	Crack (Wearing Surface)	SF		0	0	0	0
			Insignificant width transverse cracks over some of the piers.						
√	109		**Prestressed Concrete Open Girder**	LF	0	**0**	**0**	**0**	0
			Insignificant width diagonal cracks in first 5 feet of web on all girders at abutments & few at piers.						
			Delamination - Spall - Patched Area	LF		0	5	3	0
			SA: G4 minor end spall (CS2=1'). Span 1: Minor collision spalls (CS2=3')						

Safety

Worker Access/Safety System or Devices

- Inspect the condition of in-place inspector safety/access systems before using.
  - Tie off points
  - Railings
  - Catwalks/Platforms
  - Ladders/Steps
  - Other.
- Safety/access system issues should be noted in the inspection report and as a maintenance action –
  - Replace or remove from service.

Safety

Use Good Judgement

Inspection Information

Special Requirements	Y/N	Comments
Traffic Control		
Access Equipment	use garden hose to repel down behind bldg off 15th street to access portion over bldg	
Other		concrete slope

Inspector Information

Team Leader Name and No. Printed:	Team Member(s) Name(s) Printed:	
DAN JASHINSKY 2010	Matt Peer	
Team Leader Signature:	Inspection Date: 7-20-11	Inspection Agency:
District/Local Manager and No. Printed:	District/Local Manager Signature:	Review Date:

"Use the garden hose to repel down concrete slope behind building off 15th Street to access portion over building."

R Inspection Program Management (SIM 1.2.5.7)

- **Allowable tolerances – applies to all inspection types**
  - **3 months ≥ 24-month interval**
  - **2 months < 24-month interval**

- Inspections must be complete within the **month due + tolerance**
- Inspection **not** expected to be completed within the allowable tolerance -
  - Responsible PM must notify the Statewide Program Manager so inspection options can be considered and **FHWA notified**.
- **FHWA notification = month due - tolerance** = approval only for **rare or unusual circumstances**
  - i.e.. 24-month interval due in June – notice to FHWA prior to March
  - i.e.. 12-month interval due in June – notice to FHWA prior to April
- **To stay in compliance, please notify the region or statewide program manager as soon as you are aware that the inspections will not be completed on time.**

Special Component - HSIS

Special Component tab under the General tab for each bridge.

- Drop down menu of special components.
  - Accelerated bridge construction
  - Special admixtures
  - Aesthetic treatments
  - Protective treatments
  - Paint systems
  - Special overlay types
  - Super, sub, deck specialties
  - Special testing
  - Research project
  - Others
- Used to keep track of bridge with special components.
- Additional special components can be added if tracking is desired – contact BOS Maintenance

Open Inspections Report in HSIS

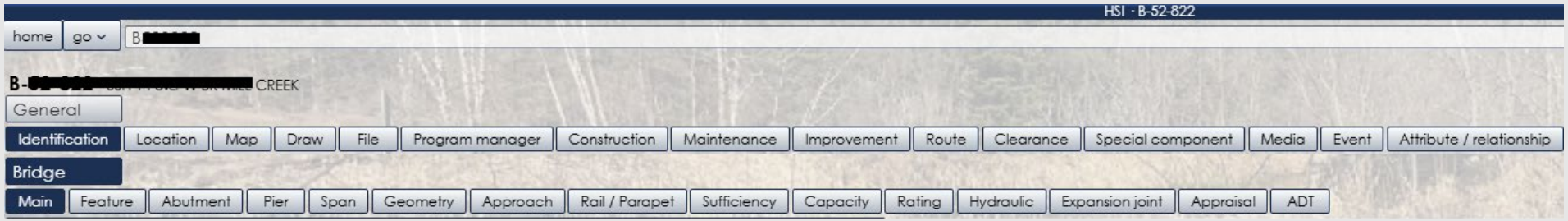
- Start inspection report within 28 days after the month the inspection is completed.
- Complete the inspection report within 3 months after the month the field portion of the inspection is completed (3 months after the month of the End date).
- HSIS report available for notification of open inspections reports
  - PMs and TLs should run this report monthly
    - PMs should follow up with TLs regarding open inspections if open more than 2 months.
    - Time is needed to complete any activities or follow-up actions.
  - HSIS subscription available for the report – **DaysOpenInspectionNotification**

Example timeline to complete inspection reports

Inspection due	June
Completed/end date	June 15
Must start inspection report	by July 28
PM notify TL of open inspection	September 1st
Inspection report must be completed	by October 1st

Opening Completed Inspection Report in HSIS

- SNBI B.IE.10 Inspection Data Update Date
  - Requires data to be updated within 3 months after the month the inspection is completed.
- Previously, region PMs were allowed to open a completed inspection
  - At the request of the inspection team leader to make corrections or address omissions.
- More restrictive opening of a completed inspection report.
  - Inspectors will have 90 days after the month the inspection was completed to update inspection.
- Inventory items can be updated without opening a completed inspection.
  - Enter inventory items on the appropriate HSIS tab.



- After 90 days, contact WisDOT's Ryan Bowers for decision on how any correction or omission should be addressed.

R

Measuring Overburden Depth

Always check Overburden depth on inspection report to verify accuracy.

Accurate overburden measurements are necessary to provide better load rating accuracy.

Bridge safety can depend on the amount of overburden on a bridge.

Recommendation to local PMs –

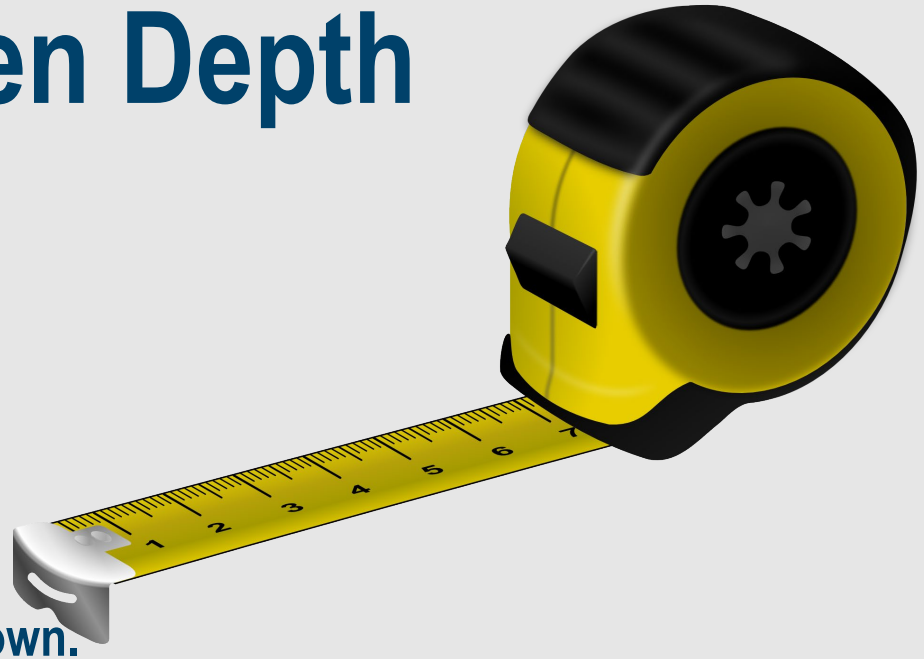
- Prior to inspection season, ask bridge owners about any planned projects that may pave over bridge decks.
- Request that bridge owners notify the inspection PM when a bridge is paved over or additional overburden is added.

Document in the inspection report:

- Wearing Surface Element – include additional notes about the overburden
  - Date the measurement was completed
  - Location the measurement was taken.
  - Any notes clarifying how the overburden was measured or determined.

R

Measuring Overburden Depth



- **Obtain multiple measurements –**
  - Average the overburden measurement.

Methods for finding or determining overburden depth.

- Review as-built plans if available.
- If deck drains are visible, measure inside deck drains
- Measure from top of curb or rail when curb or rail height is known.
- If no plan is available, look for plan for a similar bridge in the area.
- Remove shoulder material just off the end of the bridge to expose a section of the overburden.
- Pound pin in surface (best for base course)
- Drill a small hole with a masonry drill bit/cordless drill and use pin, nail, or rod to check depth. Fill in hole with silicon caulk or roofing tar.
- GPR
- Other

Steel Section Loss

- **NEW** Inspectors are **required** to **take a photo before and after cleaning** when determining the amount of steel section loss.

Before Photo

After Photo

N

Steel Section Loss

- Steel cleaning is required when pack/laminate rust or other debris is present to measure section loss for CS3 or CS4.
- **NEW** If a review finds an inspector did not adequately clean and measure section loss, that inspector will be required to develop and implement a WisDOT approved improvement plan before the inspector will be allowed to complete further inspections. In addition, the employer will be notified.
- The inspector must document findings.

R

Inspection Reminder

Discoloration Defect (8904) Quantities

- Discoloration defect is intended to quantify the area in SF for the underside of the slab or deck element – the defect is the SF quantity in each condition state.
- Ex. Element 12 reinforced concrete deck use Square Feet (SF)
- Some inspectors have rated discoloration as a lump sum instead of the actual quantity found.

Knowledge Check

What is required before and after cleaning a steel member to determine amount of section loss and documented in the inspection report?

A Photo of the area section loss exists

R

Closed Bridge Inspection

- Closed bridges continue to have Routine Inspections.
  - Assess/evaluate for safety of users of under-bridge facilities
- Closed bridges require a closure system – barricades, barrier, and signage.
  - Assessment 9036 Bridge Closure Systems
- Unsafe conditions should be reported to the owner ASAP
- NSTM, Complex, Underwater, etc. inspections not required for a closed bridge.
- Conducted on a 12-month interval.
- SIM 1.3.14

Closed Bridges

- **Bridge closed because of condition – NBI condition rating = 0 or 1**

Table 20. Codes and descriptions for component condition ratings.

Code	Condition	Description
N	NOT APPLICABLE	Component does not exist.
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.

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.

- **Notify the Region PM when a bridge is closed so the STATUS can be updated in HSIS.**
- **Region PM will verify that NBI = 0 or 1 when closed because of condition.**

Closed Bridge Criteria

Full and Partial Closure Criteria

- Structural Integrity
  - Structural damage or deterioration that compromises safety
  - Inspection finding of safety concern
  - Un-arrested active crack in NSTM which has potential to cause member failure
  - SNBI Component Condition Rating (Item B.C.01-07, 11-15) ≤ 1
  - This has occurred during a Critical Finding and inspectors are forgetting to update the NBI condition rating.
  - Results of a Structural Review that recommends closure

- Load Capacity
  - Bridge not capable of carrying a gross live load weight of 3 tons.

9036 Bridge Full Closure Assessment

- **Description** - This assessment defines the barricades, signs, ~~and~~ warning lights, and barriers used to close a bridge from vehicular traffic. Bridge is closed entirely to vehicular traffic and ***Status*** is marked **CLOSED** in HSIS. Quantity is one each per end of the bridge (2 total).

NO *change to existing language in field manual for condition* ***Good, Fair, Poor,*** *or* ***Severe***

N 9037 Bridge Partial Closure Assessment

- **Description -** defines the traffic control devices used to partially restrict or close areas of the bridge from vehicular and/or pedestrian traffic as the result of a Critical Finding. Includes all devices used in partial closure - barriers, barricades, signs, warning lights, and barrels. Quantity is one each per bridge.
- **Good** - Appropriate devices have been used, are in place, functioning properly, and sufficient for the required restriction.
- **Fair** - Appropriate devices used are present, functioning properly, and sufficient for the required restriction - devices have superficial damage, fading, deterioration, minor alignment issues, or other condition or placement issues.
- **Poor** - Appropriate devices used are present but they are deteriorated or compromised to the point that replacement or repair should be considered in the next inspection cycle.
- **Severe** - Items are not present, incorrectly placed, or not functioning - there could be or is a danger to the public. Repair or replacement is required as soon as possible.

Signage (2023 WMUTCD)

Weight Limit Signs

NEW GUIDANCE (Section 2B-64):

- No longer requires “by the order of” on load posting signs place at the bridge.

- Advanced advisory signs are required (2009 version “should be placed”) and does not say nearest intersection

  “…shall be located in advance of the applicable section of highway or structure so that prohibited vehicles can detour or turn around”.

Signage (2023 WMUTCD)

Object Markers

NEW GUIDANCE:

Changed “shall” to “should” and eliminated the requirement of installing when parapet is < 6’ from the driving lane.

Section 2C-70

- *When used for marking obstructions within the roadway…, the minimum mounting height…, **should** be 4 feet.*
- *When object markers… are applied to an obstruction that by its nature requires a lower or higher mounting, **the vertical mounting height may vary according to need**.*

Section 2C-72

- *If a Type 3 object marker is used…, the edge of the object marker that is closest to the road user **should** be installed in line with the closest edge of the obstruction.*

Type 3—a striped marker, 12 x 36 inches, consisting of a vertical rectangle with alternating black and retroreflective yellow stripes sloping downward at an angle of 45 degrees toward the side of the obstruction on which traffic is to pass. The minimum width of the yellow and black stripes shall be 3 inches.

Type 3 Object Markers
(obstructions adjacent to or within the roadway)

Signage (2023 WMUTCD)

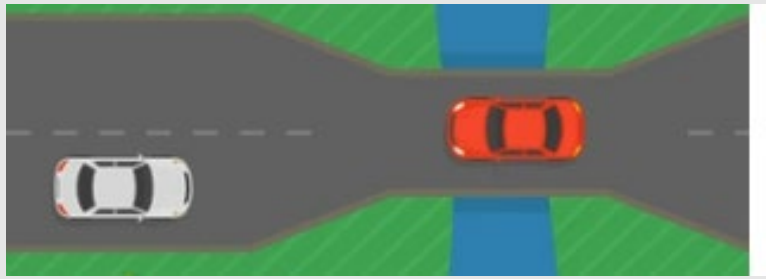
Narrow Bridge

Section 2C.18 Narrow Bridge

NARROW BRIDGE sign should be used in advance of:

- Bridge or culvert having a two-way roadway horizontal clearance of 16’ to18’
- Bridge or culvert having a roadway horizontal clearance less than the width of the approach travel lanes.
- Object markers - recommended.

W5-2



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Signage & Traffic Related

Updates

- 9034 Weight Limit Posting - add sign location of the advanced signage to the assessment narrative.
- 9037 Partial Closure System to be added to the field manual.
- Add Closure and Partial Closure are actions as part of CF - once assessment 9036 and 9037 have been added and signage is installed, mark that action as complete.
- Create a new CF if Assessment 9036 and 9037 is in CS4 - failed or missing closure systems, corrected ASAP, with photo verification needed within 30 days.

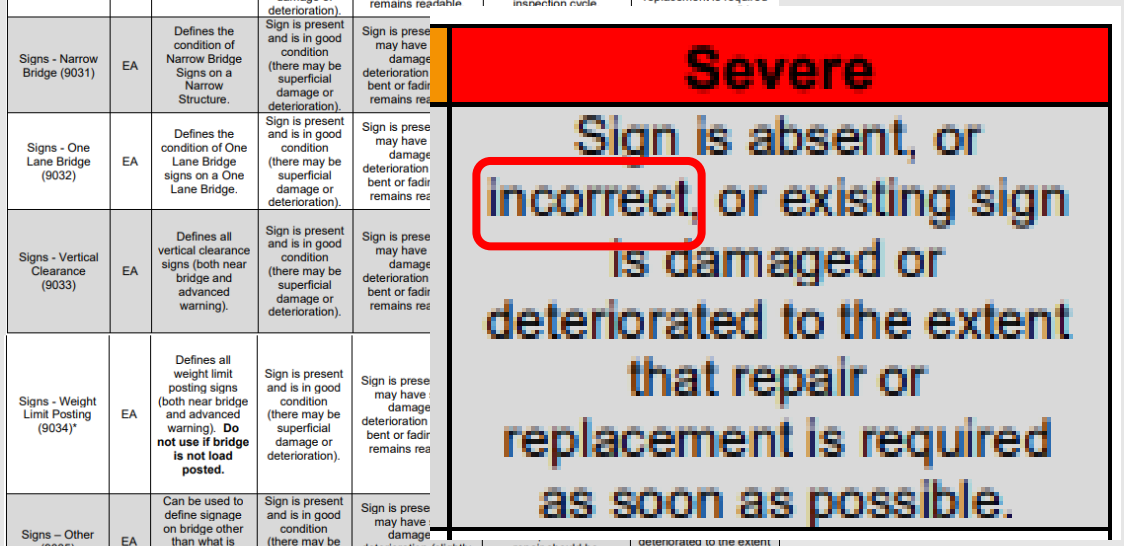
NEXT UP

Load Posting
Load Rating
Structural Review
SNBI Condition Rating

Presented by Alex Pence, PE
State Load Rating Engineer
alex.pence@dot.wi.gov

Signage
Assessment 9034 (Weight Limit Posting)

Assessments	Qty.	Description	Good	Fair	Poor	Severe
Signs - Object Markers (9030)*	EA	Defines the condition of bridge object markers.	Sign is present and is in good condition (there may be superficial damage or deterioration).	Sign is present - sign may have some damage or deterioration (slightly bent or fading), but remains readable	Sign is present, but is deteriorated to the point that replacement or repair should be considered in next inspection cycle	Sign is absent, or incorrect, or existing sign is damaged or deteriorated to the extent that repair or replacement is required
Signs - Narrow Bridge (9031)	EA	Defines the condition of Narrow Bridge Signs on a Narrow Structure.	Sign is present and is in good condition (there may be superficial damage or deterioration).	Sign is prese may have damage deterioration bent or fadi remains rea		
Signs - One Lane Bridge (9032)	EA	Defines the condition of One Lane Bridge signs on a One Lane Bridge.	Sign is present and is in good condition (there may be superficial damage or deterioration).	Sign is prese may have damage deterioration bent or fadi remains rea		
Signs - Vertical Clearance (9033)	EA	Defines all vertical clearance signs (both near bridge and advanced warning).	Sign is present and is in good condition (there may be superficial damage or deterioration).	Sign is prese may have damage deterioration bent or fadi remains rea		
Signs - Weight Limit Posting (9034)*	EA	Defines all weight limit posting signs (both near bridge and advanced warning). **Do not use if bridge is not load posted.**	Sign is present and is in good condition (there may be superficial damage or deterioration).	Sign is prese may have damage deterioration bent or fadi remains rea		
Signs – Other (9035)	EA	Can be used to define signage on bridge other than what is listed in specific sign assessment language.	Sign is present and is in good condition (there may be superficial damage or deterioration).	Sign is prese may have damage deterioration (slightly bent or fading), but remains readable.	repair should be considered in next inspection cycle.	deteriorated to the extent that repair or replacement is required as soon as possible.



“Incorrect”

- Refers to legibility and clarity of the sign.
- Possibly tonnage values being incorrect, but check with Load Rating Engineer if uncertain.
- Not whether the sign meets the WMUTCD formatting standard.

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Signage

Assessment 9034 (Weight Limit Posting)

- 23 CFR 650.313(l)(2)
  - Posting shall be made as soon as possible but not later than 30 days after a load rating determines a need for such posting.
- 23 CFR 650.313(l)(3)
  - **Missing or illegible** posting signs shall be corrected as soon as possible but not later than 30 days after inspection or other notification determines a need.

If signs placed in CS4, replacement with follow-up photos & Posting Verification activity required within 30 days!

Even better – while inspection is still open, then move to CS1

- SNBI Items PS.01 / PS.02 – Logs status and dates of posting changes

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Signage

Assessment 9034 (Weight Limit Posting)

CS4

- Missing
  - Signs removed intentionally are not CS4 as “missing” – instead, remove Assessment 9034
    - Contact owner or PM to find out if signs are missing/stolen or removed intentionally
    - If removed intentionally, also notify BOS to change Posting in HSIS
- Illegible or Incorrect
  - Signs with obvious incorrect size/font, if unreadable at driving speed
  - Incorrect values (mismatched), confusing, obstructed, severely damaged
  - If values do not match HSIS, a new posting may have been required, but not yet documented
  - Contact PM or BOS Load Rating Unit if tonnage doesn’t match HSIS and uncertain what it should be

Sign conditions in CS4 shall be corrected and verified within 30 days

CS3

- Non-standard formatting or placement, but still clear and legible
- Note in the assessment and as a maintenance action

Sign conditions in CS3 should be addressed within next inspection cycle

Helpful to note tonnage and locations in Assessment 9034 notes

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Signage

Assessment 9034 (Weight Limit Posting)

CS3

Non-standard but legible

CS3

Missing mileage but gets the job done

CS4

Too low, obscured by vegetation, should be on its own post

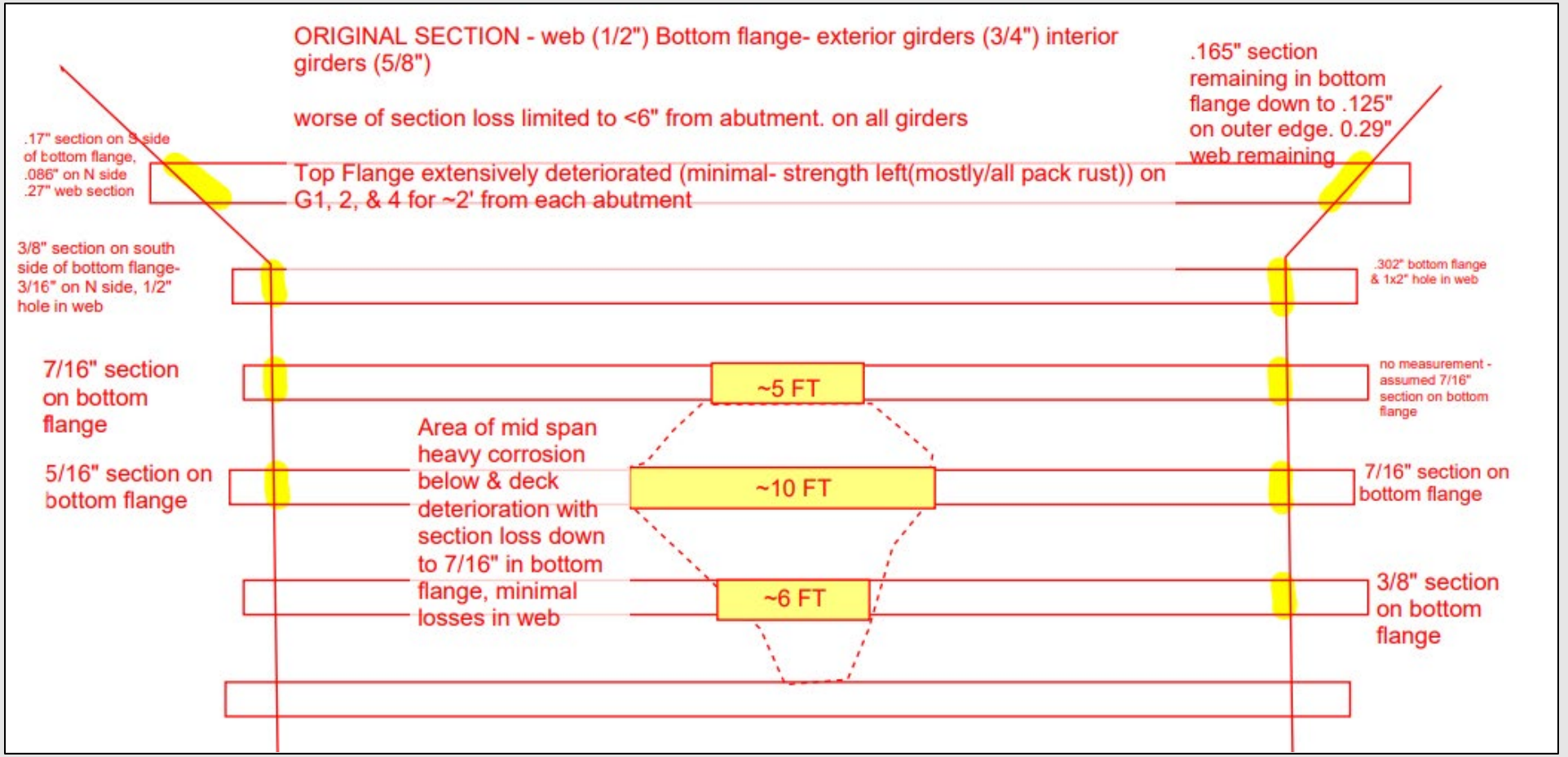
Structural Reviews

Helpful Documentation

- Clean steel, break off loose concrete
- Specify / photograph where measurements were taken
- Include both **maximum** section loss and **average/typical**
- Plan sketches with CS4 locations
- “Zoomed out” photos are helpful
  - Complex connection or geometry locations
  - Girder / floorbeam / stringer systems (sketches really help here too)
  - P-structures without plans on file (include underside / entire width photos)

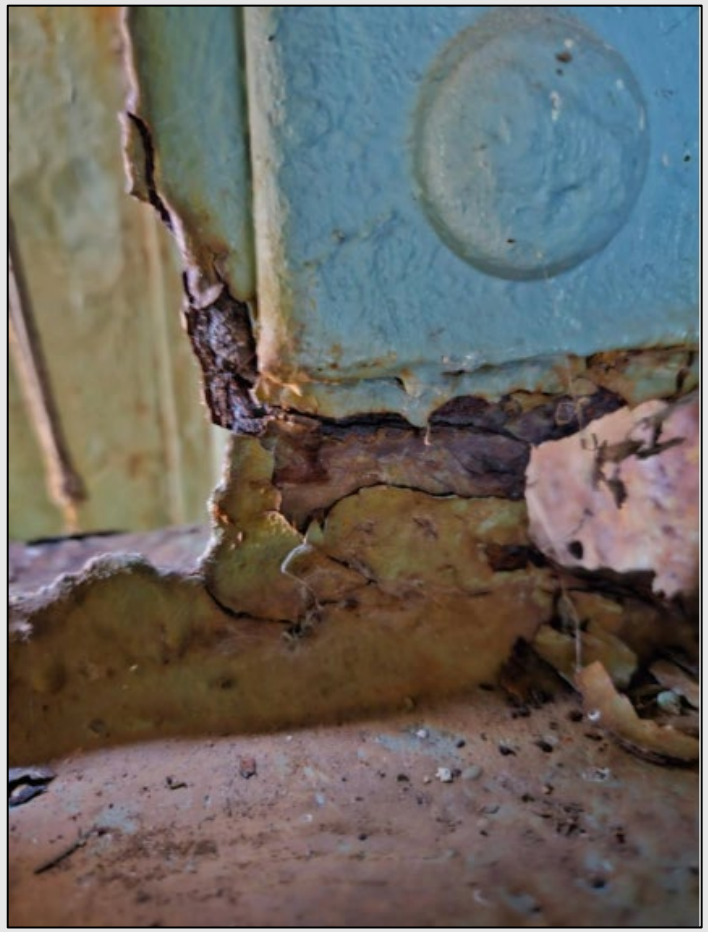
Structural Reviews

Helpful Documentation (Plan Sketch w/ CS4 Notes)



Structural Reviews

Helpful Documentation (Zoomed In / Out)



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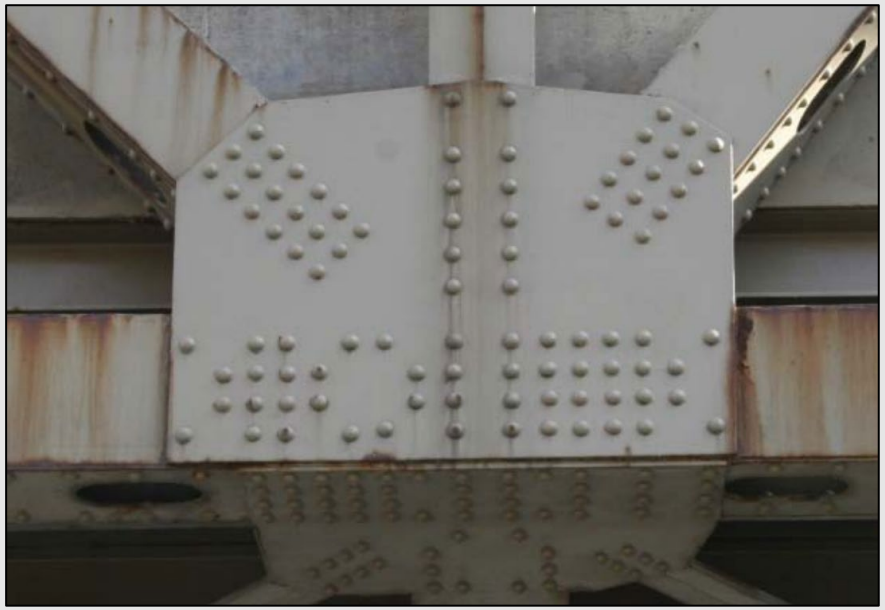
Structural Reviews

Helpful Documentation (Below P-Structure)

Structural Reviews

- Truss Gusset Plates
  - Project underway to load rate more gusset plates
  - Take thickness measurements at next NSTM inspections
    - Especially if P-structures or no shop drawings on file
    - BOS Load Rating Unit may be requesting more data collection w/ next inspection



Structural Reviews

Concrete Slab Edges

- RC Slab CS4 conditions are **not** automatic Structural Reviews
  - Automatic SR requirement for every SF increase would be overkill
  - May be small quantities in scattered / localized areas
- Condition could be related to top wearing surface, not structural defect
- RC Slabs - SNBI Deck Rating = 4 → SNBI Superstructure Rating = 4
  - Even if flexural / shear capacity of slab is unaffected
- If Structural Review is needed:
  - **Inspector needs to manually check box for Structural Review Activity**
  - *So when is it needed?*

Structural Reviews

Concrete Slab Edges

SR not required

- Only one corner bar affected
- ~ 6” width of spalling

Structural Reviews

Concrete Slab Edges

SR required

- Two bars completely debonded
- ~ 12-18” spalling width, entire length

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Structural Reviews

Concrete Slab Edges

SR required

- Multiple rebar disengaged
- 18” to 24” spalling
- SR was not automatic, but inspector requested after
- Shoulder closed in lieu of posting

Structural Reviews

Concrete Slab Edges

SR not required

- Included anyway w/ Engineering Judgment
- Only one bar affected
- ~ 6” sheared off
- Rail repaired

Structural Reviews

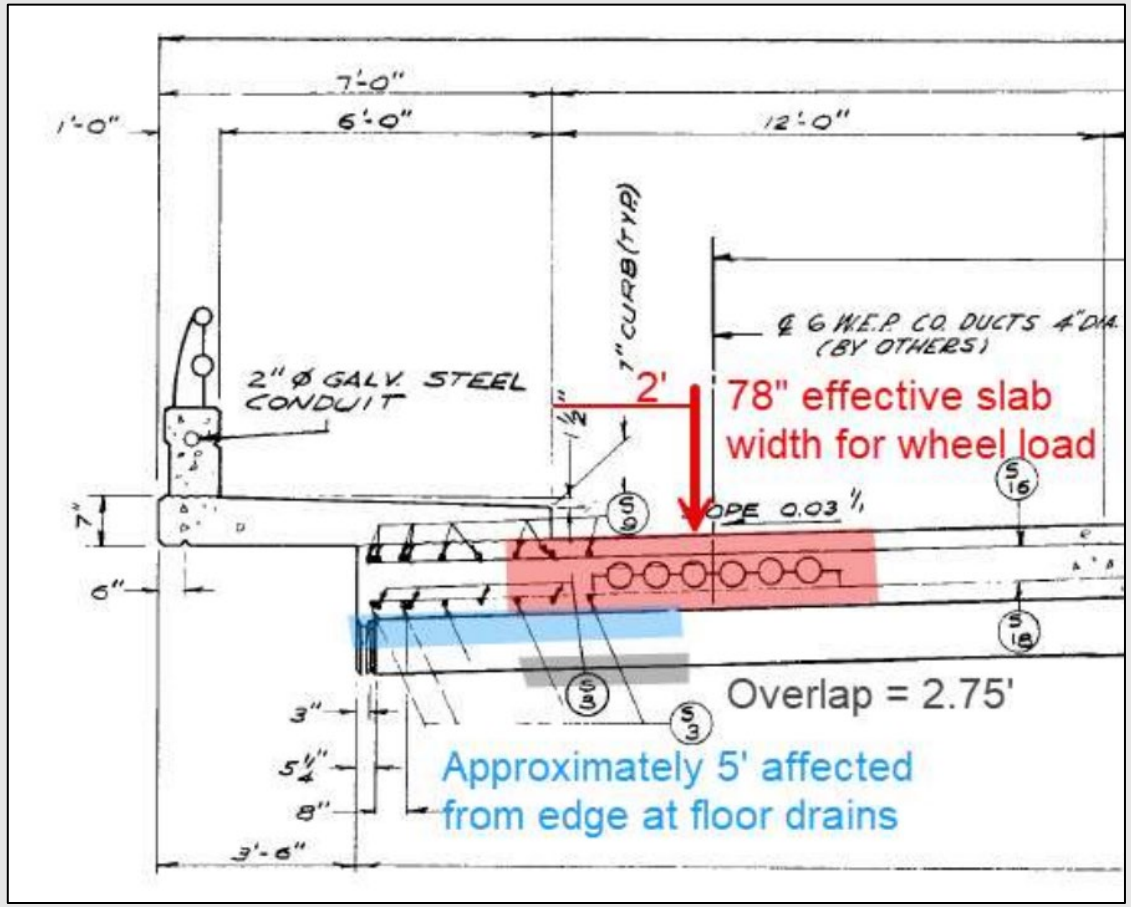
Concrete Slab Edges

SR required

- Spalling at rebar splice or end anchorage zones
- Refined analysis + repair occurred

Structural Reviews

Concrete Slab Edges



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Structural Reviews

- BOS Load Rating Unit can often assist with local bridge Structural Reviews
  - Moderate deterioration on common bridge types
  - Contact us early; we will tell you if it's beyond our resource availability
  - B/P structures only, not V structures
  - Judgment-based posting often a group decision (inspector, PM/owner, load rating engineer)

- Structural Reviews can influence SNBI Component Rating....

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.

SNBI Condition Rating Guidance

Super/Sub/Culvert Component Condition Rating 5-4-3

- ***"Strength and/or performance of the component is affected"***
  - Usually refers to load rating/posting reductions, but not always straightforward
- **Situations that are unclear - inspector should seek assistance**
  - Evaluate through the SR process – reviewed by a PE or load rating engineer; or
  - Consult with the PM and/or another TL for assistance determining the SNBI component condition rating
- **The Structural Review recommendations can help inform the 5-4-3 decision**
  - Inspector may consult with SR Engineer and/or Load Rating Engineer to help determine component rating
- **Super/Sub/Culvert Component Condition Rating ≤ 4 should always have elements in CS4**
  - And a Structural Review if anything has changed since the last inspection
- **May need to manually check the Structural Review activity in HSIS if it is not automatic**
  - Only automatic if CS4 quantity increases for certain elements/defects
- **Always document reasons for determining a component condition rating if not apparent from the information provided in the inspection report**

SNBI Condition Rating Guidance

Super/Sub/Culvert Component Condition Rating 5-4-3

Be mindful of element conditions that may not currently control, but are vulnerable

- Further deterioration could lead to a sudden, significant strength reduction, instability, or full/partial closure
- These may justify a lower Component Rating even if they are not yet controlling the overall load rating
- Plan a repair for these conditions, otherwise a conservative posting or partial closure should be considered

Examples:

- Steel girder ends with heavy section loss in the web or stiffeners - strength decreases exponentially with more section loss (loss of load path, web crippling/buckling)
- P/S concrete girder ends with significant spalling, shear cracking, or loss of bearing area
- Bottom flanges in negative moment regions with significant section loss (lateral-torsional buckling sensitivity)
- Steel or timber columns and caps with severe section loss or decay
- Scour-critical foundations where progressive scour exposure may cause sudden instability
- Any CS4 deterioration in NSTM element - if close to controlling overall load rating

SNBI Condition Rating Guidance

Super/Sub/Culvert Component Condition Rating 5-4-3

EXAMPLE 1

- 12’ of pier cap in CS4 due to multiple exposed rebars with x-loss.
- SR finds the pier cap to be the controlling load member.
- Change in load governing member results in a posting
- Results in 20 ton posting.
- **Substructure SNBI = 3**

SNBI Condition Rating Guidance

Super/Sub/Culvert Component Condition Rating 5-4-3

EXAMPLE 2

- South exterior girder has 3 strands fully and partially broken along with heavy fascia spalling the length of the exterior girder. North exterior girder is similar. P/S Girder with CS4 quantity requiring a SR.
- SR finds the exterior girder becomes load governing member
- Results in 25 ton posting
- **Superstructure SNBI = 3**

SNBI Condition Rating Guidance

Super/Sub/Culvert Component Condition Rating 5-4-3

EXAMPLE 3

- Girder condition CS4 = 5%, CS3 = 40%
- 1 severed strand on one interior girder.
- SR resulted in reduced load ratings
  - Inv Rating from HS21 to HS15
  - Oper Rating from HS38 to HS30
  - No load posting.
- Component strength affected due to condition of the load-governing member.
- **Superstructure SNBI = 4**

SNBI Condition Rating Guidance

Super/Sub/Culvert Component Condition Rating 5-4-3

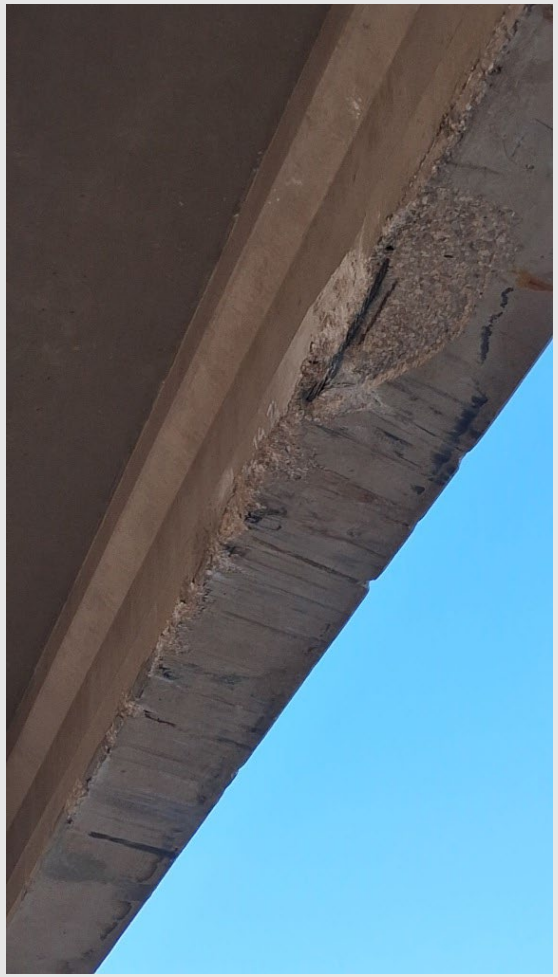
EXAMPLE 4

- A large spall on exterior girder with ~33% of P/S strands severed – isolated CS4 quantity. 5% of P/S girders are in CS3.

- SR finds exterior girder became load governing member and reduced load rating
  - Inv Rating from HS25 to HS15
  - Oper Rating from HS45 to HS20
  - No load posting.
- New load governing member – strength is affected
- **Superstructure SNBI = 4**

SNBI Condition Rating Guidance

Super/Sub/Culvert Component Condition Rating 5-4-3



EXAMPLE 5

- Overheight impact caused exterior girder damage with single severed P/S strand - CS4
- SR shows interior girder still controls and no immediate action required.
- Strength/performance of the overall superstructure is not affected since the exterior girder has not become load-governing.
- **Superstructure SNBI = 5**

NEXT UP
More Inspection Topics

Presented by Dave Bohnsack, PE
State Inspection Program Manager
david.bohnsack@dot.wi.gov

R

Special Inspection – Isolated Activity

Inspection for Localized Deficiencies in Lieu of Routine Inspection

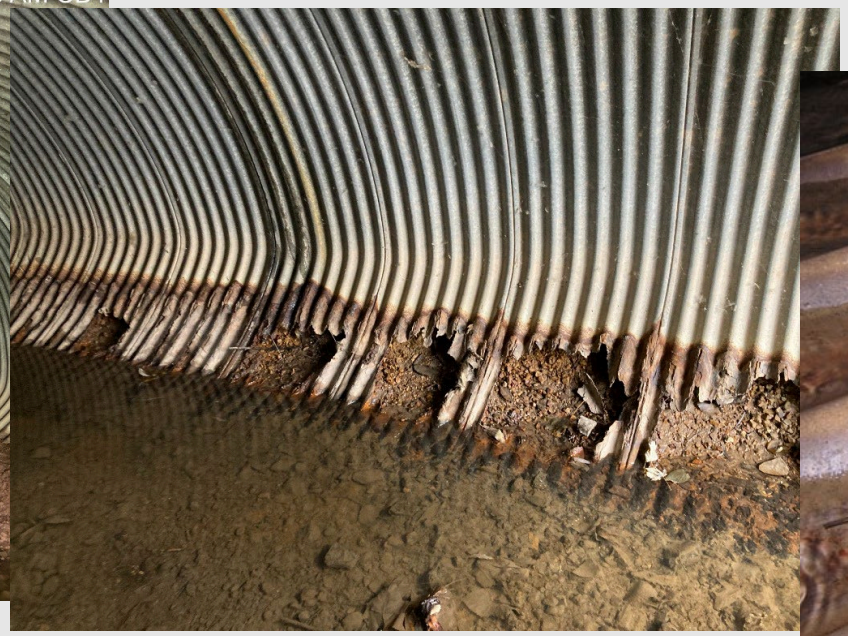
- **When deck, superstructure, substructure, culvert, or scour condition rating ≤ 4**
- **In lieu of Routine inspection at < 24-month interval** (in lieu of 12-month routine inspection)
- **Bridge specific PM will determine Routine or Special-Isolated Activity**
- **In HSIS, select Special Inspection with Isolated Activity**
- **Document bridge specific inspection procedures**
  - Outline the scope/reason for the special inspection
  - Identify the elements and areas being inspected as part of the Special inspection
  - Identify access methods and equipment needed for the Special inspection
  - Include any inspection recommendations and notify PM of any inspection recommendations
- **Reference SIM 1.3.10.2**

Structure Inspection Field Manual Update

240 Steel Culvert Element

Language update in Chapter 3.A page 24

- Condition State 4 (Severe)
  - Corrosion (1000)
    - Loss of section where perforations/holes exist. ~~exist throughout the pipe.~~



Wearing Surface

Reminders

- **BOX CULVERT** element can have a wearing surface

Elements

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State 1	2	3	4
X	**241**		**Reinforced Concrete Culvert**	LF	87	**60**	**17**	**10**	0
	8000		Wearing Surface (Bare) Top of box ceiling carries live traffic. Protection angle at north end is damaged. TK290 applied in 1998.	SF	1,168	1,164	0	4	0

Do not add a separate deck or slab element with the only purpose being to add a wearing surface.

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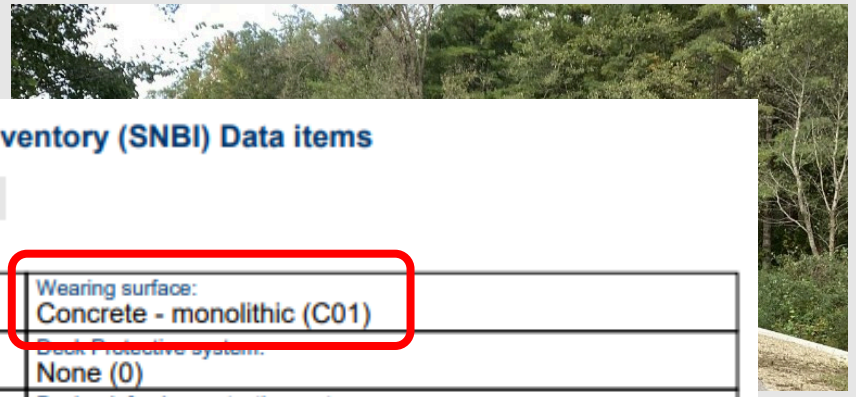
Wearing Surface

Reminders

- SP.10 WEARING SURFACE – **for all bridges with bare concrete deck/slab**

Report **C01 Concrete - monolithic**.



Specifications for National Bridge Inventory (SNBI) Data items

B-

Span Material and Type (B.SP)

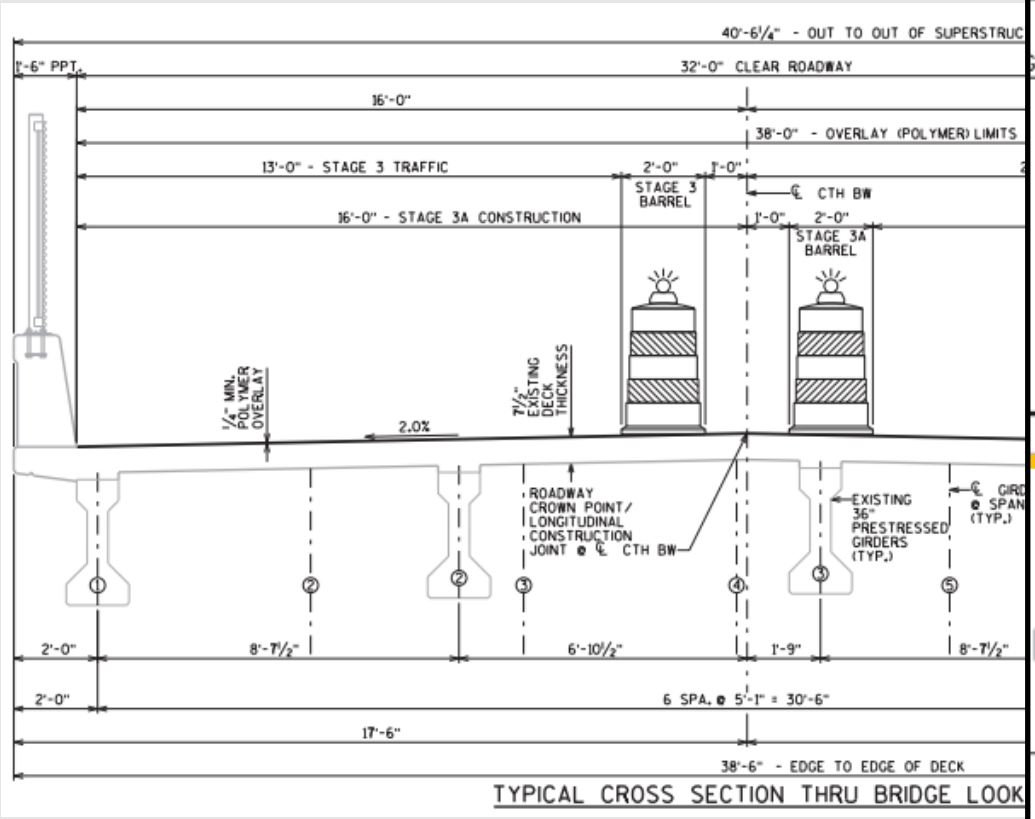
Span 1 (main)	Number Beam Lines: 1	Wearing surface: Concrete - monolithic (C01)
	Span Material: Reinforced concrete - cast-in-place (C01)	Deck Protective System: None (0)
	Span Protective System: Unknown (U)	Deck reinforcing protective system: Coating - epoxy coated (C01)
	Deck Material and Type: Reinforced concrete - cast-in-place (C01)	Deck Stay In Place Forms: None (0)

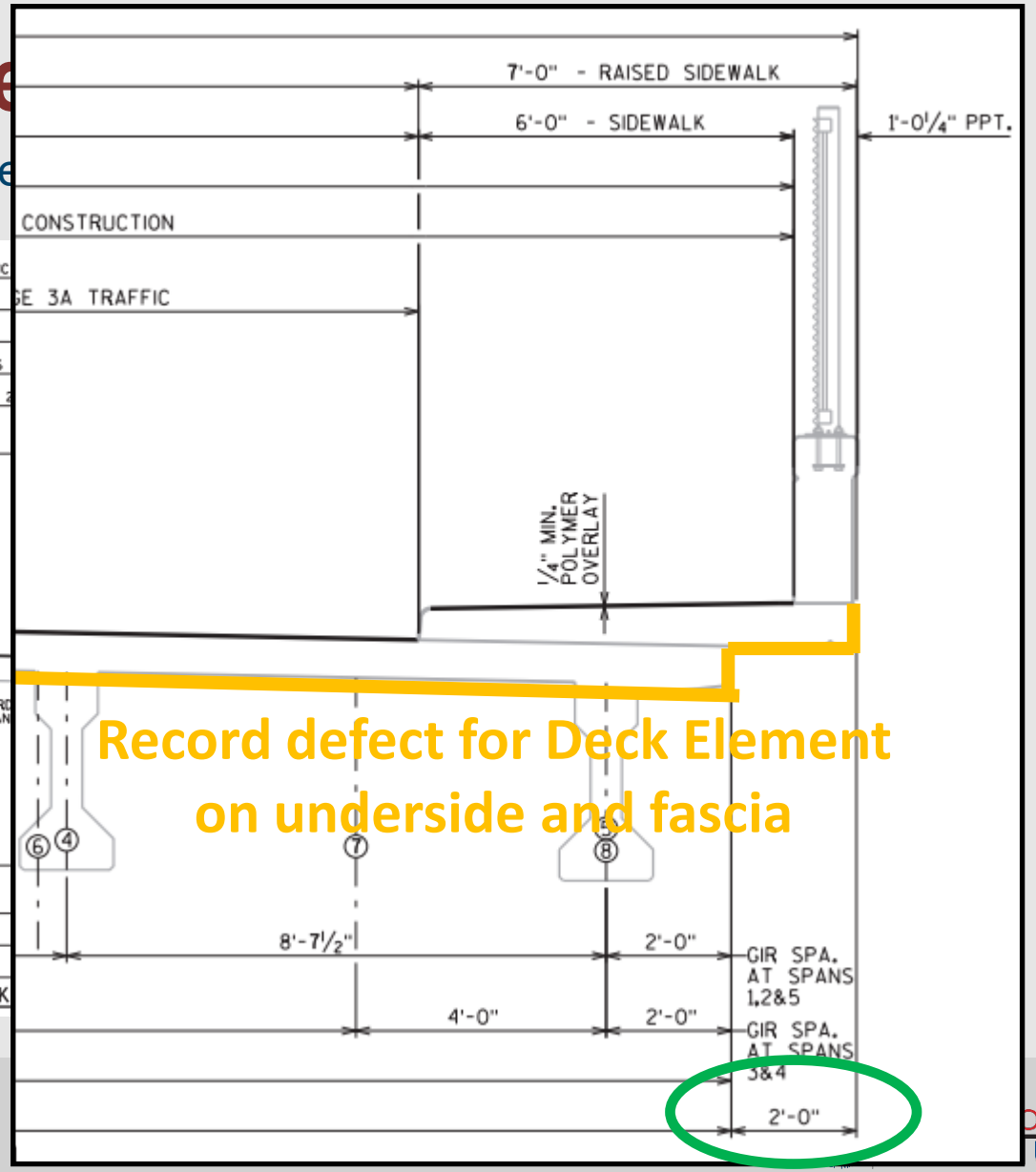
WisDOT considers the top 1/2" of a bare deck/slab to be a sacrificial layer pour monolithically with the structural deck.

Overhanging Sidewalk and Median

8209 R/I Concre

New deck width for inspection = 38.5’ edge to edge of de



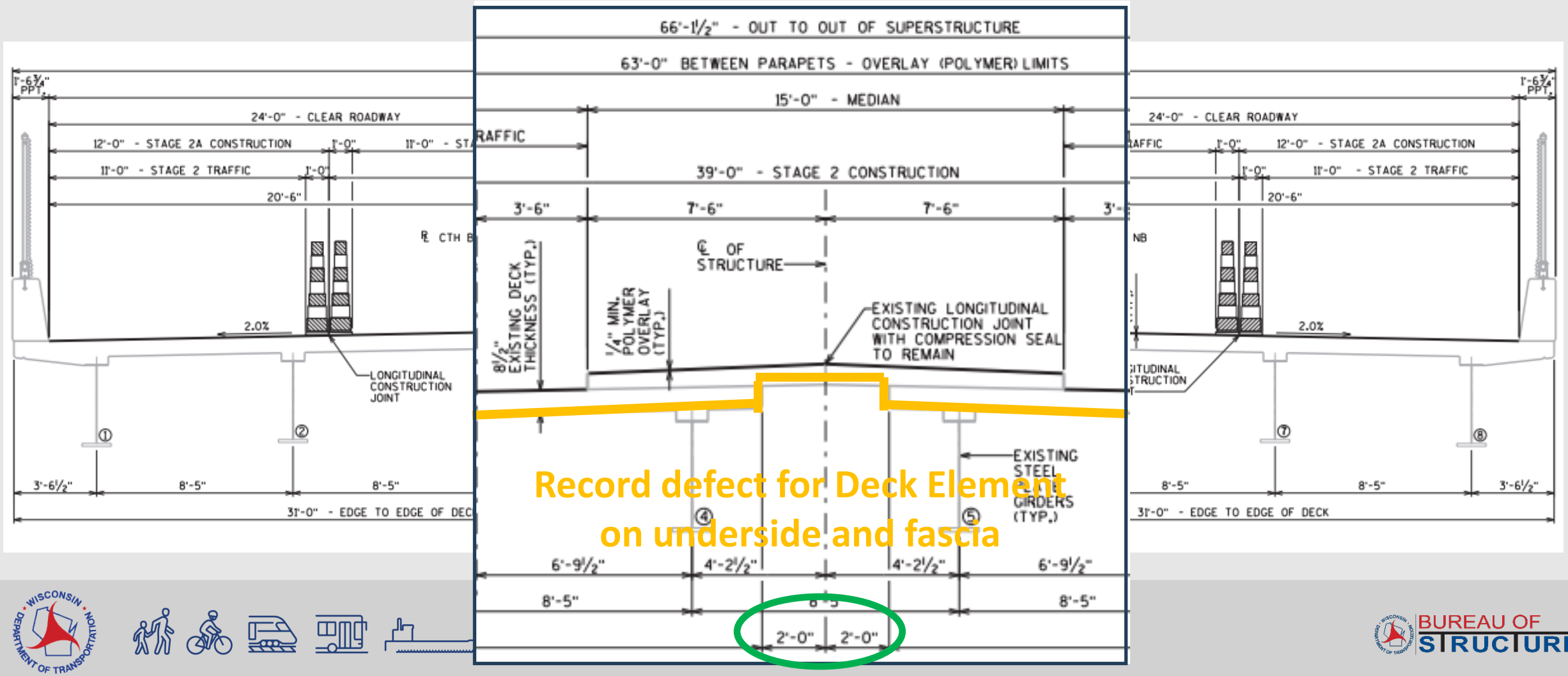


R

Overhanging Sidewalk and Median

8207 R/I Concrete Median

New deck width for inspection = 31.0 + 31.1 edge to edge of deck + 4’ median overhang = 66.2’



R

Overhanging Sidewalk and Median

8207 R/I Concrete Median & 8209 R/I Concrete Sidewalk

1. Deck/Slab Element –
   - Add the area of overhanging sidewalk & median to the deck/slab element
   - Quantify and include all defects in the exposed underside and fascia of a sidewalk and underside of the median.
2. Wearing Surface – Add element for Median and Sidewalk
   - Quantify defects in the top surface and curbed faces of the sidewalk and median under the agency defined elements sidewalk (8209) and median (8207) by SF.

Guidance for the Field Manual and SIM:

The quantity for deck and slab will be edge to edge including any sidewalk or median areas, flares, and ramps. The evaluation area will include the bottom surface and fascia.

Do not consider the sidewalk or median condition in the (NBI) rating for Deck Condition Rating, except insofar as they impact the condition of the deck/slab itself.

ie. a full depth sidewalk patch extending into the deck/slab.

R Animal Nesting/Roosting Presence on Structures

Structure Inspection Field Manual

Animal Nesting/Roosting Presence on the Structure: Check the box in HSIS under Note/requirements tab if the possible migratory bird nesting or bat roosting presence is on the bridge. Provide comments on observations (i.e. swallow nests or droppings on girders. Bat droppings below joints. Observed swallows in flight under bridge). The presence of nesting materials of unknown origin should also be noted. See BOS Website for animal nesting/roosting presence on structure guide.

Migratory Birds

Bridges
Culverts
Tunnels

- Expansion/hinge joints
- Abutments gaps
- Concrete cracks
- Drains
- Deterioration/rough surfaces
- Inside corners

WisDOT Guidance for Structure Inspectors >>

NLEB photo by Dave Redell, WDNR

R

Buried Structure Bridge Railing

Add Element for Bridge Railing to Buried Structures

Elements: *330 Metal Bridge Rail –*

W rail, thrie beam, and cable guard type rail

331 R/I Concrete Bridge Rail –

Concrete barrier wall

332 Timber Bridge Railing

333 Other Material Bridge Railing

334 Masonry Bridge Railing

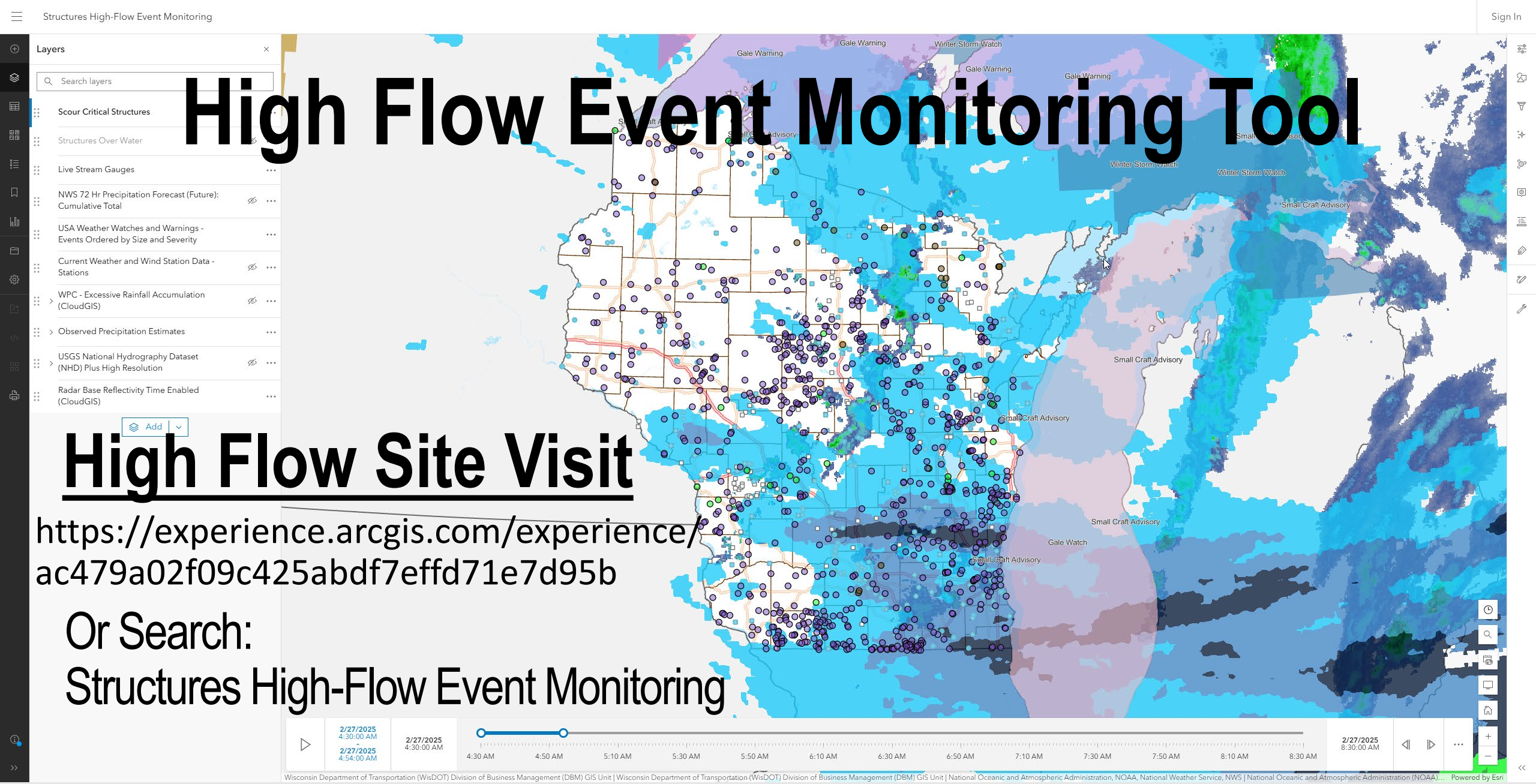
Railing over culverts/buried structures should be added to rail/parapet tab in HSI

From SNBI commentary for B.C.05 Bridge Railings Condition Rating:

Do not consider pedestrian railings when coding this item, except to the extent that the pedestrian railing is integral to the traffic barrier.

NEXT UP
High Flow Event Monitoring
Bridge Maintenance

Presented by Anthony Stakston, PE
State Structures Maintenance Engineer
anthony.stakston@dot.wi.gov


Structures High-Flow Event Monitoring
Sign In
Layers
Search layers
Scour Critical Structures
Structures Over Water
Live Stream Gauges
NWS 72 Hr Precipitation Forecast (Future): Cumulative Total
USA Weather Watches and Warnings - Events Ordered by Size and Severity
Current Weather and Wind Station Data - Stations
WPC - Excessive Rainfall Accumulation (CloudGIS)
Observed Precipitation Estimates
USGS National Hydrography Dataset (NHD) Plus High Resolution
Radar Base Reflectivity Time Enabled (CloudGIS)
Add
High Flow Event Monitoring Tool
High Flow Site Visit
https://experience.arcgis.com/experience/ac479a02f09c425abdf7effd71e7d95b
Or Search:
Structures High-Flow Event Monitoring
Gale Warning
Winter Storm Watch
Small Craft Advisory
Gale Watch
2/27/2025 4:30:00 AM - 2/27/2025 4:54:00 AM
2/27/2025 4:30:00 AM
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Wisconsin Department of Transportation (WisDOT) Division of Business Management (DBM) GIS Unit | Wisconsin Department of Transportation (WisDOT) Division of Business Management (DBM) GIS Unit | National Oceanic and Atmospheric Administration, NOAA, National Weather Service, NWS | National Oceanic and Atmospheric Administration (NOAA)...
Powered by Esri

- With this tool, inspector can:
  - Quickly identify if a scour critical bridge is on a watercourse in flood stage
  - Determine if more precipitation is coming
  - Reference the stream gages to determine if flow is rising, peaking, or falling
  - Determine how much cumulative precipitation has fallen and compare to past events
  - Review the watershed boundaries to estimate contributing flow to watercourse, and which structures will be affected

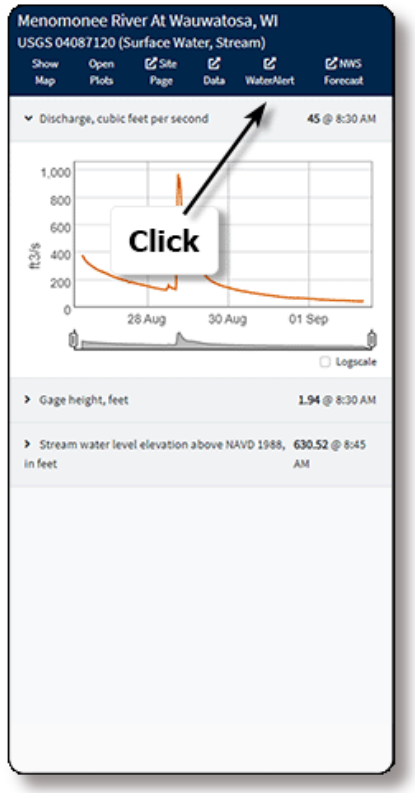
USGS WaterAlert

1 Find a monitoring location.

Use National Water Dashboard.

2 Tell WaterAlert which monitoring location.

Use National Water Dashboard to connect with WaterAlert.



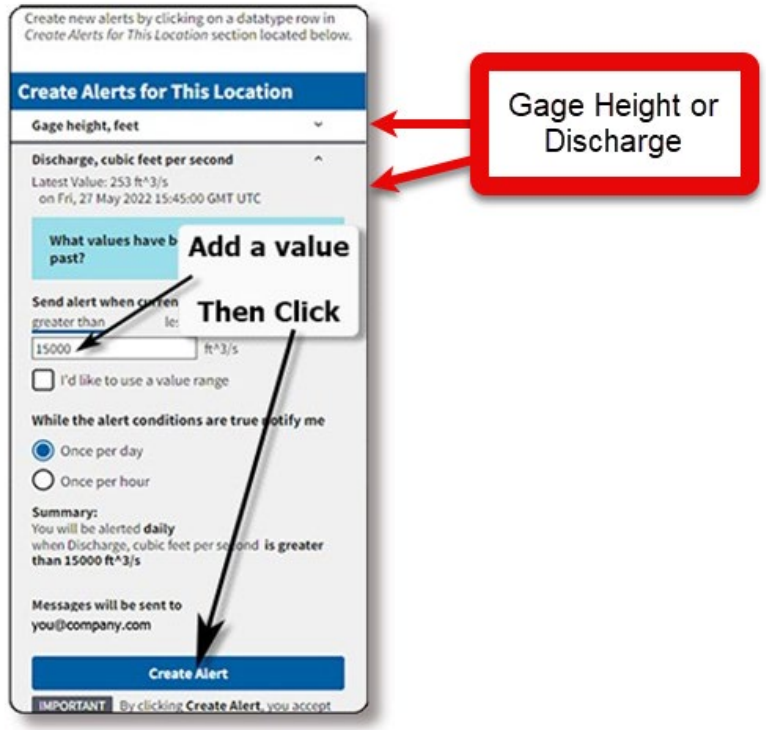
USGS WaterAlert

3 Select a water condition in which you have an interest.

In WaterAlert, sign in then click one of the water conditions rows - which water conditions are available is dependent on the sensors at the selected monitoring location.

4 Set your thresholds.

Enter a threshold value, click *Create alert* and you're done! WaterAlert will send you a notification when water conditions match your thresholds. In the meantime, check out the User Guide.



Maintenance Items and Actions

- WisDOT Maintenance PM's
- Priority Listing (High, Medium, Low)
- PM Notification
- List DLQ (Description, Location, Quantity) & **Add Pictures**.
- Cut Brush – DNR Requirements
  - DNR / DOT MOU for Maintenance Activities (Bridge & Roadway)
- Foam Jacking Units (South & North)

BOS Maintenance Staff Located in All Regional Offices

Region Maintenance Program Managers

Unit A -North

- NWR: Lee Balsiger (715) 225-2231
- NCR: Philip Saeger (715) 421-8026
- NER: Shane McCarty (920) 492-5991
- NER: Marc Roesler (920) 360-3510

Unit B - South

- SWR (La Crosse) Jered Lex (608) 785-9956
- SWR (Mad) Steve Katzner (608) 516-6425
- SER- Ryan Schnurer (262) 548-8730

Maintenance Action Items

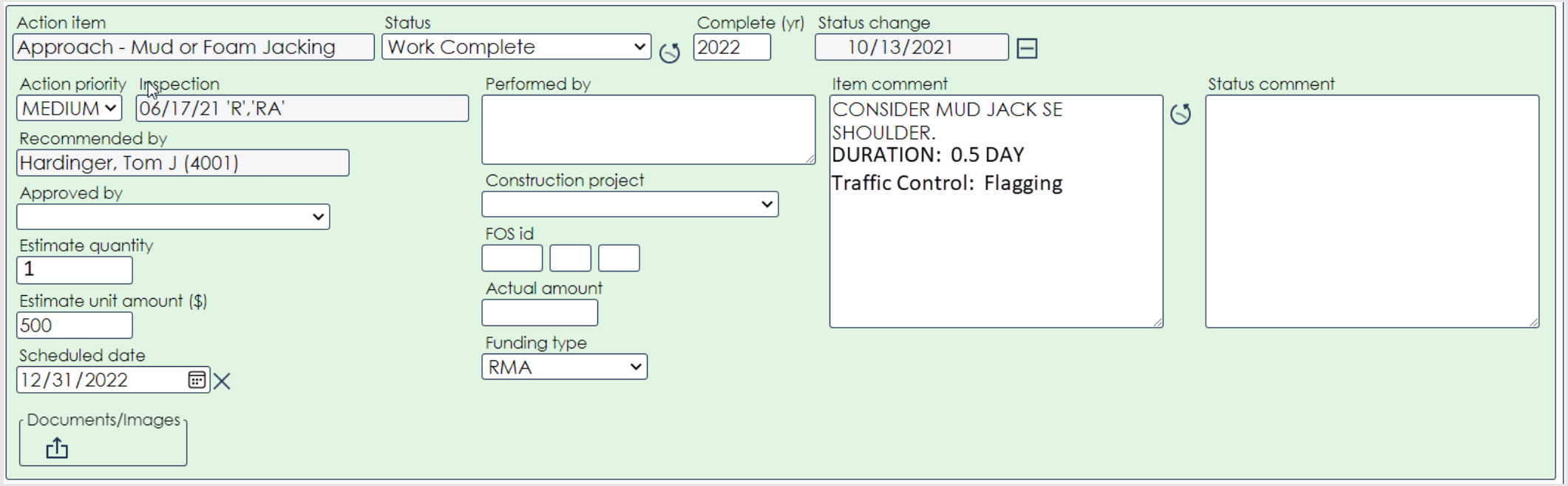
- Action Priority
  - High – within 30 days and notify Bridge Maintenance PM
  - Medium – within 1 year
  - Low – before next inspection

Bridge Program Manager Notification

Bridge Maintenance PMs for state bridges should be notified of High priority items via email or phone call within a reasonable length of time following field inspection.

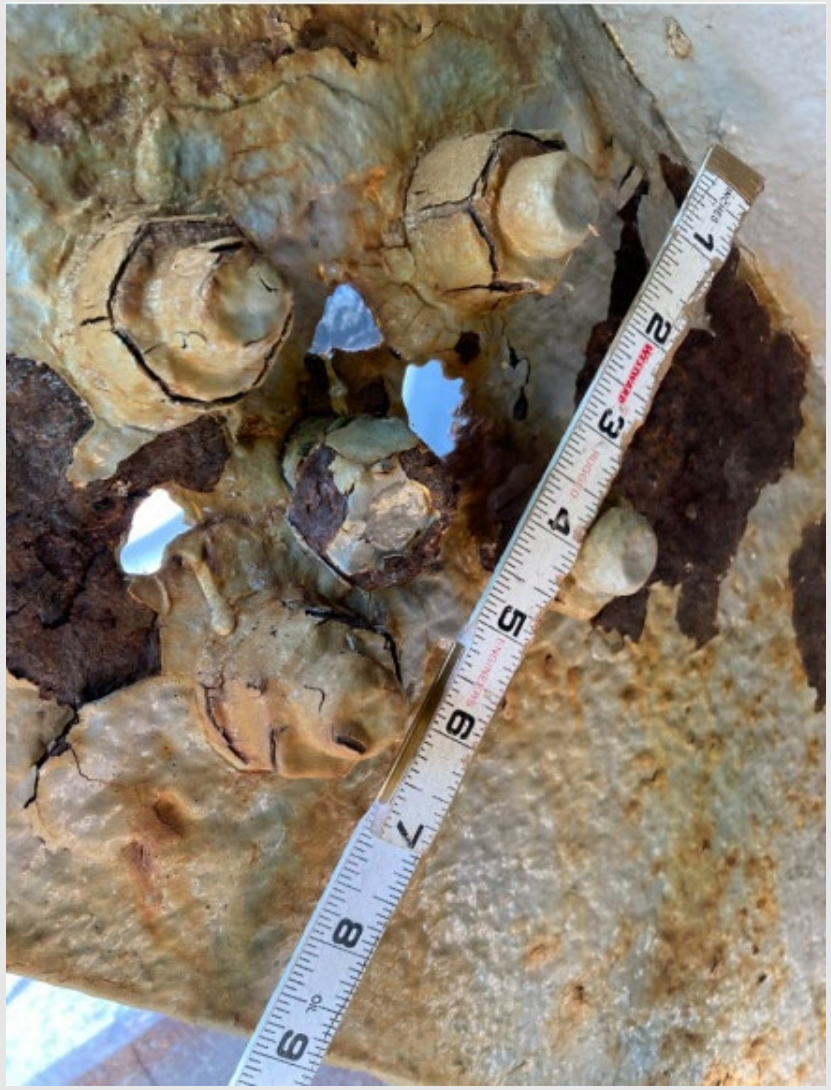
Maintenance Action Items – Item Comment Field (HSIS)

- Estimated Quantity
- Access Equipment
- Location (Layman's Terms - DNR)
- Traffic Control



Maintenance Action Items – Item Comment Field (HSIS)

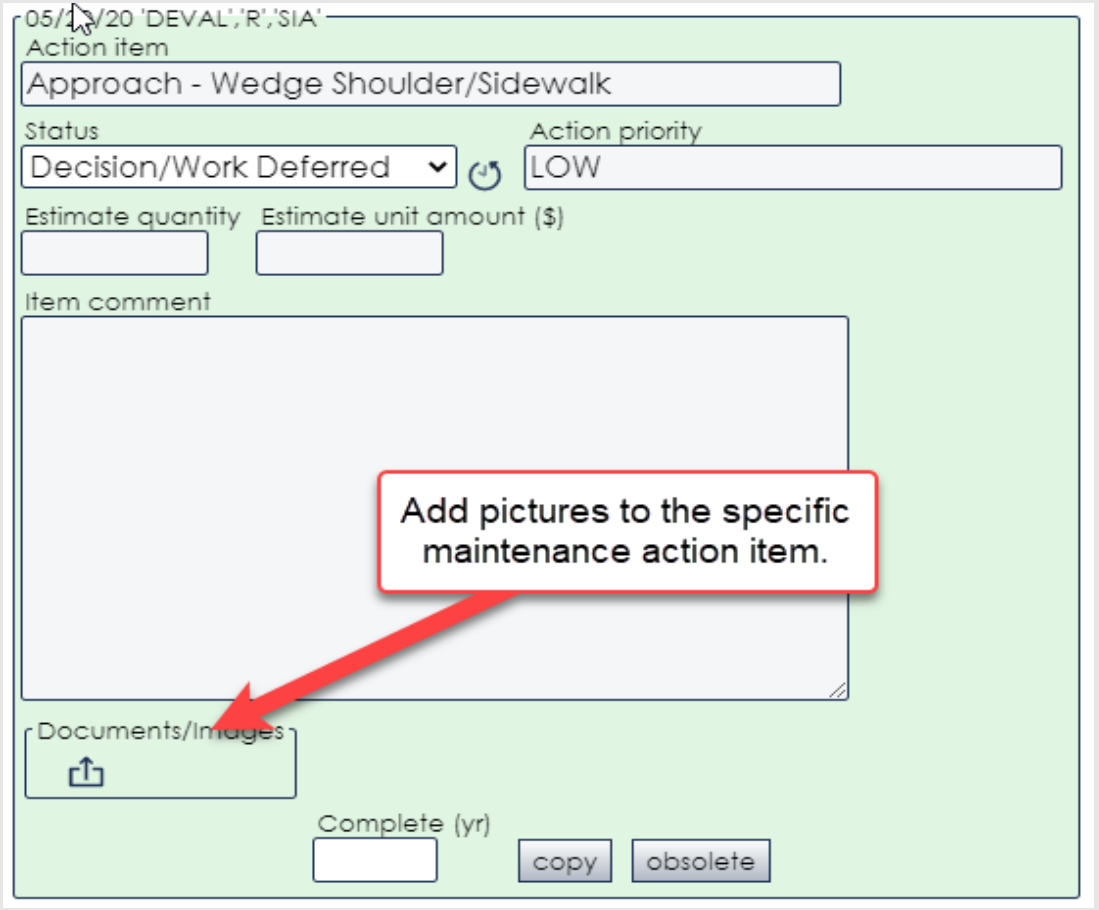
- Helpful Recommendation:
  - Any other pertinent information that would be useful.
    - E.g. Exact locations of any steel repairs.
- State Inspectors:
  Recommend Repair Method
  - Let Project,
  - County Crew, or
  - BOS Maintenance Crews.



Maintenance Action Items

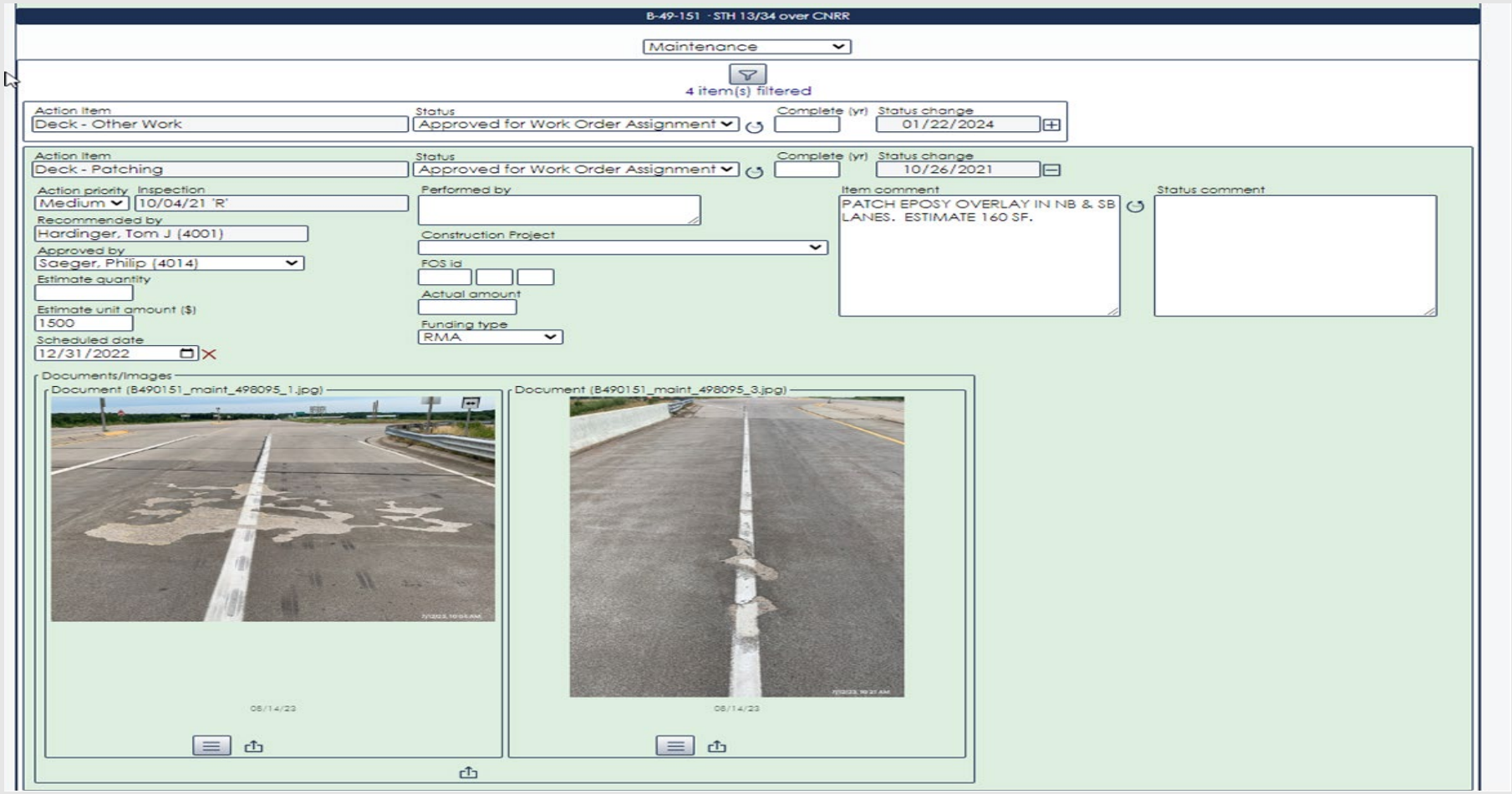
- Include Photo(s) –

  Maintenance Tab (Required)
  - E.g.
    - Specific Picture(s) of Repair – prefer at least two pictures (zoomed in and wide angle).
    - Including wide-angle picture for location, access (ladder, lift, snooper, etc) & DNR approval (If Needed)



Maintenance Recommendation w Pics

- Pictures are very helpful!!

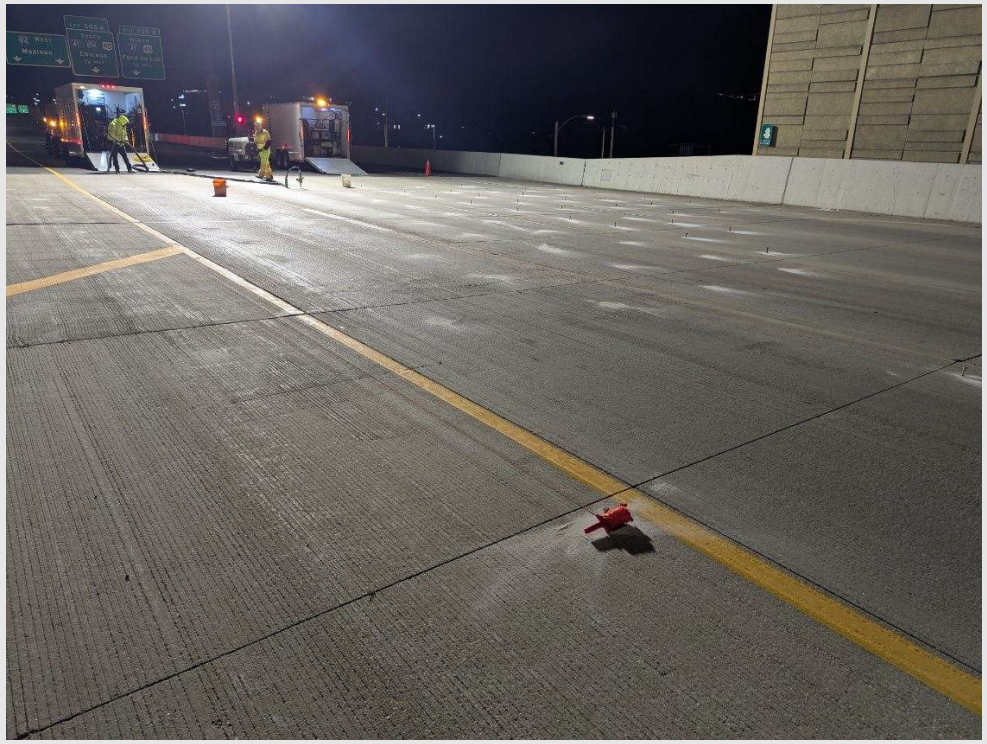


Cut Brush – DNR Requirements

- Diame ould b
  - Tre st Hei
  - Bru st Heig
- Locatio
  - Up
- Wide v ush to
  DNR / ded wi
  Mainte

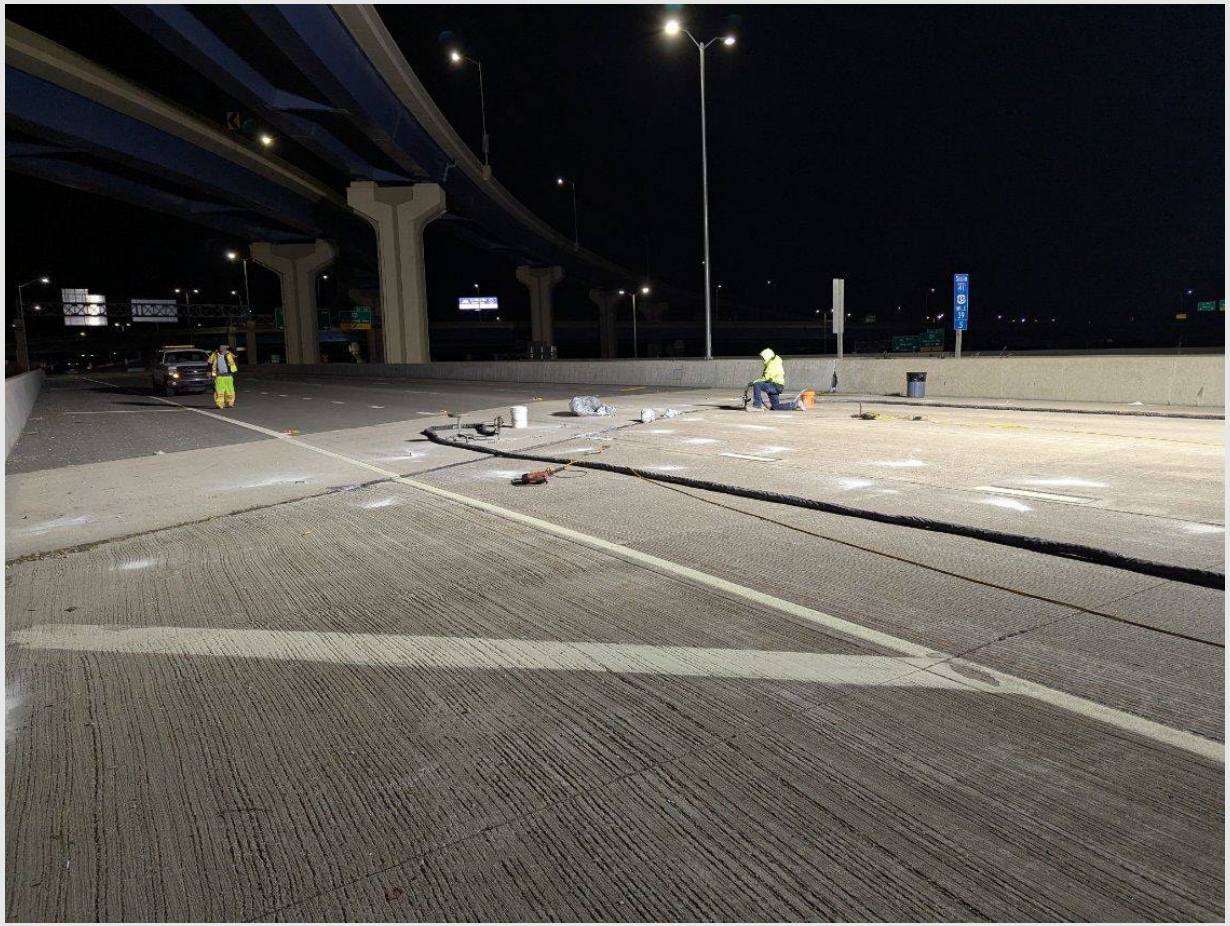
Ba – DO

M e Acti



Northern Foam Jacking Unit – Manitowoc County

Southern Foam Jacking Unit – Juneau County



Approach – Mud or Foam Jacking

Maintenance Action Item:


BEFORE
AFTER

Slope Protection – Repair Undermining of Substructure

Maintenance Action Item:

NEXT UP
Key Takeaways

Presented by Dave Bohnsack, PE
State Inspection Program Manager
david.bohnsack@dot.wi.gov

Key Takeaways

- NSTM inspections require bridge specific procedures that must be reviewed before the inspection and updated after the inspection.
- NSTM access methods must get the inspector within arm's reach from the NSTM surfaces.
- SNBI Component Condition Rating - always document the reasons for determining a condition rating if the decision may not be clear from the information provided in the inspection report. Especially important for Condition Rating 5 to 4.
- A crack in tension zone of NSTM is a critical finding.
- All SNBI items will be required to be entered to complete the inspection report in HSIS.
- Always document reasons for determining a component condition rating if not apparent from the information provided in the inspection report
- Unclear SNBI Condition Ratings, especially 5-4-3, inspector should seek assistance from SR process, consultation with load rating engineer; PM and/or another TL.

Key Takeaways

- Inspectors are required to take a photo before and after cleaning when determining the amount of steel section loss.
- An inspector found to not adequately clean and measure section loss will be required to develop and implement an improvement plan before the inspector will be allowed to complete further inspections and employer will be notified.
- Bridge closed because of condition – NBI condition rating = 0 or 1. Notify the region PM so the bridge “status” is updated in HSIS.
- Review and remeasure overburden.
- Posting shall be made as soon as possible but not later than 30 days after a load rating determines a need for such posting.
- Missing or illegible posting signs shall be corrected as soon as possible but not later than 30 days after inspection or other notification determines a need.
- Include photos of maintenance actions identified during the inspection.

Coverage	Name	Phone	Cell	Email	Role
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Statewide	Matt Coupar	608-266-5083		Matthew.Coupar@dot.wi.gov	Assistant Statewide Program Manager
North Unit	Greg Haig	715-833-5562	715-492-8757	Gregory.haig@dot.wi.gov	Inspection & Maintenance Unit A (NC, NE, NW Region) Supervisor
South Unit	Scott Reay	262-548-6715	414-750-1504	scott.reay@dot.wi.gov	Inspection & Maintenance Unit B (SE, SW Region) Supervisor
Insp & Repair Unit	Jason Lahm	920-492-5998	920-360-2374	Jason.lahm@dot.wi.gov	Structure Inspection & Repair Unit Supervisor
Statewide	Steve Doocy	608-261-6063	608-419-6929	Steve.doocy@dot.wi.gov	Statewide Ancillary Inspection Program Manager
Statewide	Anthony Stakston	715-421-8345	715-459-2624	anthony.stakston@dot.wi.gov	Statewide Structures Maintenance Program Manager
Statewide	Ryan Bowers	608-267-3577		Ryan.bowers@dot.wi.gov	Bridge Management Engineer / HSI Contact
SE Region	Joel Maas	262-548-8760	414-750-1851	Joel.Maas@dot.wi.gov	SE Region Bridge Inspection Program Manager
SW Region- Madison	Pete Kaiser	608-245-2650	608-397-8666	Peter.Kaiser@dot.wi.gov	SW Region Bridge Inspection Program Manager
SW Region-La Crosse	Craig Fisher	608-785-9946	608-668-1390	Craig.fisher@dot.wi.gov	SW Region Bridge Inspection Program Manager
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NW Region-Eau Claire	Kyle Harris	715-579-3516	715-579-3516	Kyle.harris@dot.wi.gov	NW Region Bridge Inspection Program Manager
FHWA	Joe Balice	608-829-7528	608-609-5025	Joe.balice@dot.gov	FHWA Bridge Engineer

QUESTIONS?

Thank you for participating.

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