

Structures Inspection Program Technical Bulletin

ISSUE 9 – JANUARY 2024



This bulletin is dedicated to updating and informing those involved with the Wisconsin structure inspection program. Topics in this bulletin include the following:

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BOS UAS/Drone Inspection Program – This team is in its infancy with a number of unmanned aircraft in its fleet and licensed UAS pilots (also certified bridge inspectors). This equipment will help access areas of bridges historically requiring ladders, lifts, or a “snooper” truck. These aircraft have video and still photo capabilities. Infrared capability is available on some drones which is ideal for evaluating the condition of concrete decks with potential for other concrete elements. The usage of this equipment will make it possible to free up time usually designated for the snooper trucks which require expensive traffic control and numerous staff. The team is currently looking at how to maximize the use of the equipment and staff. Additionally, BOS has added an unmanned water vessel with sonar capabilities, and a mounted camera above the water, which can be used to inspect areas difficult and dangerous to access during high water, and low clearance structures, respectively. For more information about BOS’ drone inspection program, contact Jason Lahm, BOS Inspection and Repair Section supervisor.



Moveable Bridge Team – Wisconsin has 43 (local and state) moveable bridges in its inventory. These bridges are complicated to maintain and operate. Maintenance and inspection require specialized skills and knowledge. A team of BOS staff with different levels of experience and knowledge have been pulled together to form a moveable bridge team. This will be WisDOT’s experts in all areas related to movable bridges. The team will be involved with all areas of managing

the state-owned moveable bridge inventory and advise local bridge owners on inspection, maintenance, and operation. The team will work with the WisDOT regional offices and local bridge owners in recommending rehabilitation and reconstruction. The team will also lead inspection quality assurance reviews on moveable bridge inspections on both state and local bridges. For more information about the Moveable Bridge Team, contact Jason Lahm, BOS Inspection and Repair Section supervisor.



Inspection and Maintenance Access (“Snooper Truck”) –

BOS maintains a fleet of under-bridge (UB) inspection vehicles to provide access for inspection and maintenance/repairs on highway bridges in Wisconsin. This equipment is provided at no cost, including the vehicle operators, to local municipalities/counties for inspections and minor maintenance/repairs for local bridges. The municipality/county or consultant will need to arrange for traffic control (including required traffic attenuator) and supply the inspector or maintenance personal with proper fall arrest harness.



Please review your inspection/maintenance needs for 2024 and contact the region bridge inspection PM by **January 16th** so all needs can be scheduled. Remember, **Non-Redundant Steel Tension Members (formerly fracture critical) and floor beams spaced greater than 14’ require the inspector to be within arms-reach** of the member. These areas can easily be accessed using the UB vehicle. The UB season typically runs from March through November.

Tunnel Inspection Program – Wisconsin has 5 (local and state) structures considered tunnels in its inventory. In Wisconsin, these are all buried bridges versus the conventional excavated or bored tunnel most people think of. Tunnels are inventoried and inspected under a similar program to bridges called the National Tunnel Inspection Standards (NTIS). BOS has 4 certified tunnel inspectors.



Inspection Quality Assurance Reviews – Quality assurance (QA) procedures are used to maintain a high degree of accuracy and consistency in the inspection program. QA procedures include periodic field review of inspection teams and independent review of inspection reports and inventory data. Historically, WisDOT region bridge inspection PMs performed QA reviews on local inspection programs/inspectors while BOS staff performed QA reviews on the State inspection program/inspectors. FHWA also conducts a QA review which is completed independent of WisDOT. These reviews are helpful in improving the inspection program but can be time consuming and disruptive to those involved. With regions and BOS performed reviews, without a coordinated effort, there were 9 different individuals performing the reviews and the potential for 9 different interpretations/decisions. An inspector working in multiple regions could be subjected to numerous reviews in a year. To improve the QA program, BOS has moved to a central management of the QA program with the BOS supervisors of the Structure Inspection and Maintenance Units performing the QA reviews. They are able to better

coordinate and work through discrepancies in data and policy interpretation more efficiently. If you have any questions about the QA program, please contact Tom Hardinger (Thomas.hardinger@dot.wi.gov) or Julie Brooks (Julie.brooks@dot.wi.gov).

National Bridge Inspection Standards Update

National Bridge Inspection Standards (NBIS) for highway bridges has been updated by FHWA with the final rule being effective on June 6, 2022. Some of the new rules were effective immediately, a few will take effect 24 months later (June 6, 2024), while the new data collection and submittal is being implemented over the next 4 years. The new rules and additional information can be found on FHWA's website. [Federal Register: National Bridge Inspection Standards](#)

The Recording and Coding Guide has been replaced with the Specifications for the National Bridge Inventory (SNBI). The guide outlines the new bridge inventory information to collect. WisDOT is working on an implementation plan for gathering new data and converting existing data to meet the new requirements.

SNBI Updating and Training

Collecting of new items identified in the [Specifications for the National Bridge Inventory \(SNBI\)](#) will start during the 2024 inspection cycle. The bridge inspection cycle will begin March 1, 2024. WisDOT will be hosting multiple 1-day in-person SNBI training sessions around the state in February 2024. Information about the 4 hour online prerequisite and upcoming 1-day SNBI training was sent out to inspectors, program managers, and bridge owners in an email on December 22, 2023. A memo version of that email is located on the [BOS Maintenance & Inspection Training webpage](#). Participants can register for the prerequisite and the 1-day course through the LearnCenter. The 1-day course is titled WisDOT DTSD Specifications for the National Bridge Inventory (SNBI). The training is intended to inform inspectors and program managers of the new SNBI data needed and how to gather the information.

It is highly recommended that all inspectors attend an in-person session, but it is not required. A recorded version will be available and posted online for those that cannot make the course or need a review/reference. Inspectors found on a regular basis not correctly coding SNBI items are subject to a Plan of Corrective Action (PCA) in order to remain an active inspector. The new NBIS requires WisDOT to maintain a registry of certified bridge inspectors including actions and results taken against them. An action such as an inspector's PCA would be included in the registry.

Required 18 Hours of Refresher Training

The NBIS requires 18 hours of FHWA approved refresher training every 60-month period. The only course in any state currently approved by FHWA is the [NHI 130053 Bridge Inspection Refresher Training](#). WisDOT started requesting this course in the fall 2022 and only on Dec 6th were told we would receive 5 sessions in the beginning of 2024 at a cost of \$925 per participant. NHI restricts class size to 30. WisDOT has requested an additional course for 2024.

NHI Bridge 130053 Inspection Refresher Training (8 am to 5 pm each day)

Course Date	Location
Jan 23-25, 2024	Hill Farms Office Building – Madison, Rm S152/S156
Jan 30-Feb 1, 2024	Hill Farms Office Building – Madison, Rm S152/S156
Feb 27-30, 2024	Northcentral Region – Wisconsin Rapids Office, Rm 124
March 5-7, 2024	Northcentral Region Office – Wisconsin Rapids Office, Rm 124
March 12-15, 2024	Southeast Region Office – Waukesha Office
TBD	Hill Farms Office Building - Madison

The initial offering of this course in Wisconsin is for active inspectors on staff with state or local governments. An active inspector is someone that has actively participated in an inspection in the last 3 years or is a current program manager (PM). A BOS representative will be in contact with inspectors and PMs that are eligible to enroll in these first courses. At this time, consultant inspectors will be offered space in the courses if room is available. Consultant inspectors with interest

in being placed on the refresher training waiting list, please email dtdtsdstructureinspection@dot.wi.gov. Consultants can request to host sessions of the course through the [NHI website](#).

18 hours of refresher training is required for every 60-month period. It is a rolling schedule – the training hours are good for 60 months past the date the training was received. The same number of hours must be accounted for in new training before 60 months passed the date of the expiring training hours. For example, the 5 hours of the WisDOT 2019 Structure Inspection Refresher Series which was taken by many in the fall of 2019 are removed from an inspector’s qualification in the fall of 2023 (60 months after completion of the course), a minimum of 5 new hours must be added to the inspector’s records by fall of 2023. The only FHWA approved course is the 18-hour NHI course discussed above.

A refresher training grace period, which ends June 6, 2024, was allowed for WisDOT approved training. The preapproved refresher training is provided on the [BOS webpage](#). A minimum of 18 hours of training must be completed between June 6, 2019 and June 6, 2024. Hours of WisDOT approved training will carry over past the end of the grace period but only FHWA approved courses can be taken after June 6, 2024 to cover any courses that fall off, as explained in the above paragraph. NOTE: Retaking the same course that has not been updated since the last time taken, does not count towards refresher training.

Inspector training records are required to be maintained by WisDOT in the future. For the grace period, June 6, 2019 to June 6, 2024, each inspector is required to complete at least 18 hours of WisDOT approved refresher training and submit on the [WisDOT Inspection Refresher Training Record](#) by June 6, 2024 to remain a certified inspector. If requested, the inspector is required to supply the refresher training records to WisDOT in a timely manner.

Uncoated Weathering Steel Bridges – Inspection Finding Follow-Up Actions

FHWA provided a memo with directions for all states regarding the in-service inspection, inventory, and evaluation of bridges and bridge components made from uncoated weathering steel. If an existing bridge with uncoated weathering steel is in your inventory, you were notified in early November via email regarding requirements which need to be complete during the next inspection. The inspector must identify all preventative maintenance or preservation activities necessary to ensure the satisfactory performance of the uncoated weathering steel; and notify the bridge owner/maintainer of the identified activities.

Effective preventative maintenance or preservation activities are essential to ensure bridges with uncoated weathering steel bridges reach their intended service life. The following maintenance actions should be identified when needed:



- Seal full depth deck cracks
- Divert approach roadway drainage away from the bridge structure.
- Repair deck joints to be "watertight".
- Maintain deck drainage systems to divert deck drainage away from weathering steel.
- Clean and paint all steel within a minimum distance of 10 feet from bridge joints.
- Remove dirt, debris and other deposits that trap moisture against the steel surfaces.
- Remove vegetation which can prevent the natural drying of wet steel surfaces.

Bridge Owners/Local Program Managers are to notify WisDOT BOS Region PM when task is complete. Refer to memo found on the [BOS' Maintenance & Inspection Policy Memos webpage](#).

Documentation and Treatment of Materials Stored Under a Highway Bridges

[FHWA issued a memo on 11/15/2023](#) reminding bridge owners of the hazards that can result from materials being stored under bridges. The memo instructs bridge owners to direct inspectors to document materials found in the inspection report. The memo notes that materials considered flammable, explosive, or hazardous should be treated as a critical finding. A [memo from WisDOT-BOS](#) with additional clarification was issued on 12/8/2023. A copy of the WisDOT as well as the FHWA memo are posted on [BOS' Maintenance & Inspection Policy Memos webpage](#).



Underwater Dive Inspection Program and Policy Updates

WisDOT's inspection program and policies for underwater dive inspections have been reviewed very extensively by FHWA in recent years. The reviews have found some areas requiring updates and changes. BOS will be updating policies and practices in the coming years to improve underwater bridge inspections. Some areas of focus include:



1. Quality assurance reviews of underwater dive inspections.
2. Inspection procedures must be written and updated after each inspection following [SIM 1.3.7.6](#).
3. Develop hydrographic survey criteria for when they should be completed.
4. Develop supplemental methods for monitoring lateral stream migration in lieu of current practice of comparing historical streambed profiles.
5. Develop policy requiring written quality control plans for underwater dive inspections.
6. Develop policy for maximum interval for streambed profiles for low-risk structures.

Local Small Structures Inspection Program

This program is getting close to being rolled out by the end of January. WisDOT is working with our local partners - WI County Association, WI Towns Association, WI League of Municipalities, and WI County Hwy Association, to develop the policy governing the inventory and inspection of local road structures greater than 6' and less than or equal to 20' in length (as measured along the roadway centerline). In general, we are trying to closely match WisDOT's bridge inventory and inspection procedures and policies.

The inventory phase will include locating the local small structures, gather the location info, structure type, and size. This can be completed by anyone the locals (county, city, village, towns) wish to use. Target completion for this is the end of 2024.

The inspection phase is a structure assessment/evaluation following the National Bridge Inspection Standards completed by certified bridge inspectors. This will be completed after or jointly with the inventory phase. Target completion for this is the end of 2026, but could be extended; however, the funding must be encumbered by 6/30/2025.



A third phase, if funding is still available, is to load rate the structures found to be in the worst condition and those that have bridge like components.

There are an estimated 25,000 small local structures. All inventory and inspection information will be loaded into Wisconsin's Highway Structures Information System (HSIS). Structure numbers will be assigned to each structure through this system.

BOS will be presenting on this topic at the WCHA Winter Road School on January 22nd in Wisconsin Dells.



Administrative Codes Trans Rules 212 and 213 Update

WisDOT/BOS is currently working with the Office of General Council to draft modifications and updates to the references and standards related to the inspection of bridges in chapter Trans 212, and the method of determining eligibility for funding of local bridges in chapter Trans 213. This rulemaking will bring the rules into conformance with current bridge inspection standards and broaden local bridge eligibility for funding opportunities for local units of government to appropriately identify timely bridge improvement work to preserve or extend the bridge life.

Trans 212 and 213 were first adopted in 1982 with few revisions - 1986 (Trans 212 only), 1992 and 1999. Trans 212 deals with standards for a highway bridge inspection program. Trans 213 implements the local bridge reconstruction and rehabilitation program. Though rules have remained unchanged since 1999, there have been several improvements in the bridge inspection standards and the programming strategies and approaches for recommending infrastructure improvements. Updates to chapter Trans 212 will be compliant with 23 CFR Part 650 Subpart C Final Rule on National Bridge Inspection Standards, effective 2022. WisDOT will review its processes related to the methodology and criteria for determining local bridge eligibility in Trans 213.

BOS will be presenting on this topic at the WCHA Winter Road School on January 22nd in Wisconsin Dells.

Maintenance Cost Gathered for State-Owned Bridges

Bridge maintenance costs are a factor in the life cycle cost analysis used to evaluate alternatives for future rehabilitation. Over the life of a bridge, the owner must decide when to continue maintenance and when to schedule a rehabilitation. Much of this decision is based on the bridges condition and the cost to maintain. For state-owned bridges, WisDOT has not historically captured individual bridge maintenance costs, instead averaged the total bridge maintenance costs over a large collection of bridges. This average can be misleading since some bridges require more maintenance resources than others.

In February 2008, the Legislative Audit Bureau (LAB) released a report reviewing the WisDOT bridge inspection program which included a review of the routine maintenance work completed as a direct result of the inspections. One of the recommendations from the report was for WisDOT to better track the type and cost of routine bridge maintenance on each state-owned bridge.

BOS is investigating methods for tracking the completed maintenance work and costs for each state-owned bridge. There have been past efforts to gather this information working with some counties to pull the information from the county's electronic accounting database. Having information about the cost of the routine bridge maintenance work completed on each bridge would not only help ensure that program funds are spent appropriately, but also help with more accurately estimate the cost of future work. BOS will be discussing options with WCHA and each county highway department.



INSPECTION PROGRAM CONTACTS

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Hill Farms	Matt Coupar	608-266-5083		Matthew.Coupar@dot.wi.gov	Assistant Statewide Program Manager
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Green Bay	Steve Doocy	608-261-6063		Steve.doocy@dot.wi.gov	Statewide Ancillary Inspection Program Manager
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