



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

February 24, 2021

NBI Subscription Service Announcement 2021.04

IDOT Policy and Guidance for Bridge Inspection Comments and Documentation

The purpose of this NBI Subscription Service Announcement is to provide information to Illinois Certified National Bridge Inspection Standards (NBIS) Program Managers, Team Leaders and others involved in the bridge inspection program of an effort to improve the State of Illinois compliance with the National Bridge Inspection Program (NBIP).

Issue: Inadequate Bridge Inspection Comments/Remarks

History/Purpose

In 2011, the Federal Highway Administration (FHWA) implemented a data-driven, risk-based approach to oversight of the National Bridge Inspection Program (NBIP) and monitoring State compliance with the National Bridge Inspection Standards (NBIS).

Under this approach, the FHWA assesses 23 compliance metrics, each having direct reference to the NBIS. Metric 12 assesses Quality Inspections, which evaluates the inspection condition rating appraisal comments and inspection remarks to ensure all notable deficiencies are identified and the narrative appropriately justifies and documents the condition rating. The FHWA measures a State's compliance for each metric and assigns it to one of three performance categories: Compliant, Substantially Compliant, and Non-Compliant.

The FHWA has determined the Illinois Department of Transportation (IDOT) to be Substantially Compliant for NBIP Metric 12 in each year since 2015. In order to receive a Compliant determination for NBIP Metric 12, at least 90% of the inspection reports reviewed must have all notable bridge deficiencies identified and at least 90% of the inspection reports have condition codes supported by narrative that appropriately justifies and document the condition rating assigned. In order to receive a Substantially Compliant determination for NBIP Metric 12, at least 80% of the inspection reports reviewed must have all notable bridge deficiencies identified and at least 80% of the inspection reports have condition codes supported by narrative that appropriately justifies and document the condition rating assigned.

After the FHWA determined IDOT was Substantially Compliant for NBIP Metric 12 in 2019, the FHWA-approved Improvement Plan developed by the Bureau of Bridges & Structures (BB&S) included an Action Item to review and revise current IDOT Bridge Inspection Policy/Guidance as it relates to the documentation of inspection findings.

Bridge Inspection Policy and Guidance for Bridge Inspection Documentation

Inspection Comments

The importance of quality condition rating comments is stated in the Code of Federal Regulations (CFR) - CFR Part 650 – Subpart C 650.313(d):

“Maintain reports on the results of bridge inspections together with notations of any action taken to address the findings of such inspections. Maintain relevant maintenance and inspection data to allow assessment of current bridge condition. Record the findings and results of bridge inspections on standard State or Federal agency forms.”

IDOT Bridge Inspection Policy and guidance can be found in the IDOT *Structural Services Manual* Section 3. The following requirements and guidance supersede/augment the applicable portions of Section 3.

Section 3.3.3 lists the overall functions of a Routine Inspection, one of which is to identify and document potential problems that might affect bridge safety.

- In order to accomplish this, quality and descriptive comments must be recorded, specifically for condition ratings.
- The Inspector’s Appraisals section of the Routine Bridge Inspection Form, IDOT Form BBS BIR, contains a comment section adjacent to each condition rating item.
- A concise description of all deficiencies must be included for condition ratings ≤ “5” (Fair) and should be included for condition ratings ≥ “6” (Satisfactory).
- Any other notable deficiencies (ex. slopewall problems, railing issues, etc.) should be recorded in the Inspection Remarks (Item 90B) field.

When the number of deficiencies makes it unfeasible to document each individually, the following is recommended.

- Utilize the words “scattered”; “moderate”; “extensive”; or other phrases to capture global conditions.
 - Example for a PPC Deck Beam with a Superstructure Condition Rating (Item 59) coding of 4: “Scattered areas of single longitudinal cracking; delamination up to 8” wide; and spalling with exposed shear reinforcement up to 10” wide within the middle-half of the span on PPC Deck Beams 2; 5; and 9-11 (from the north).”
 - Example of a RC Box Culvert with a Culvert Condition Rating (Item 60) coding of 3: “Moderate areas of hairline map cracking with leaching and scattered areas of delamination and spalling with exposed primary reinforcement (section loss up to 35%) on top slab soffit of a box culvert.”

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- Example of a RC Deck with a Deck Condition Rating (Item 58) coding of 4: “Moderate areas of delamination and spalling with exposed reinforcement (section loss up to 15% over a 6’ bay length) on the deck soffit.”
- Utilize inspection drawings/sketches in concert with comments provided on the Routine Bridge Inspection Form and photographs taken in the field. This is particularly helpful when steel bridges are encountered with multiple members having varying degrees of section loss.
 - Example of a Steel Multi-Beam with a Superstructure Condition Rating (Item 59) coding of 3: “Beams 2; 3; & 6 have web section loss up to 20% at the west abutment and Beams 1 & 6 have bottom flange section loss up to 35% at the drain locations. See inspection sketch for details at these locations.”

Below are examples of the comments in the Inspector’s Appraisal and Inspection Remarks (Item 90B) sections as found in the Bridge Inspection System (BIS).

Deck Condition Rating (Item 58): “4-Poor Condition”

“Large delams & spalls in soffit w/ exp rebar & sec loss. '14- trans leach crks w/ rust stains, map crks, potholes, shielding appears clean. '16- cont minor deter of surf & soffit, minor long crk in soffit. '18- redcd 5 to 4 due to cont soffit deter w/ addl long, map, & diag crks & addl potholes in surf. '19- cont surf & soffit deter. '20-WS has several depressions in areas of soffit shielding, many potholes and general surface deter – will drop in ratings soon.”

Superstructure Condition Rating (Item 59): “4-Poor Condition”

“Rust and sec loss in crit areas <10%. '14-N abut brgs misaligned due to worn off pintles. '16- sec loss nearing 10%. '18- redcd 5 to 4 due to bm end loss >10% at NE quad & most abut brgs shifting &/or twisting. '19- cont hvy losses at ends, top fl pack elev dk, holes thru end diaphs, end loss nearing 30% - check 2019 LRI. '20-Bm end loss w/ small area of 100% Bm end loss beyond brg zone, brgs twisting out of alignment, btm flange loss in NE quad is notable.”

Substructure Condition Rating (Item 60): “4-Poor Condition”

“Long crks on abut, rust stains, delams & spalls w/ exp rebar, large spall W/ exp rebar at N side of S pier. '16- several bars exposd in cap, minor holes in backwall w/ material loss, col spall on S pier w/ exp rebar & sec loss. '18- redcd 6 to 4 due to con col core/area loss w/ mod loss to exp bars, pier cap deter/expsd stirrups w/ losses. '19- cont cap deter/stirrup losses, cont slopewall voids, failed panels. '20-cont deter conc & stirrup loss at SW column; slopewall voids cont to grow.”

Inspection Remarks (Item 90B): *“14- cont deter of dk WS & soffit w/ potholes, minor cont rust & sec loss to bm ends from failed exp jt - WO to blast & seal jt, brgs at N abut mis-aligned & twisted due to worn pintles - WO to jack & fix, minor cont deter of sub w/ large spalls & exp rebar, large voids in addn to slopewall failures at both abuts - WO to fix. '16- cont minor deter of surf & soffit, minor long crk in soffit, cont rust & loss of bm ends due to open jt, sub - several bars exposd in cap, minor holes in backwall w/ material loss, col spall on S pier w/ exp rebar & sec loss, WO to repair/repl brgs at NE quad, clean abut caps, fill slopewalls, & seal open jts. '18- dk redcd 5 to 4 due to cont soffit deter w/ addl long, map, & diag crks & addl potholes in surf, sup redcd 5 to 4 due to bm end loss >10% at NE quad & most abut brgs shifting &/or twisting, sub redcd 6 to 4 due to con col core/area loss w/ mod loss to exp bars, pier cap deter/expsd stirrups w/ losses. '19- dk - cont surf & soffit deter, sup- cont hvy losses at ends, top fl pack elev dk, holes thru end*

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diaphs, end loss nearing 30% - check 2019 LRI, sub - cont cap deter/stirrup losses, cont slopewall voids, failed panels. '20-deck WS has several depressions in areas of soffit shielding, many potholes and general surface deter – will drop in ratings soon. Super-Bm end loss w/ small area of 100% Bm end loss beyond brg zone, brgs twisting out of alignment, btm flange loss in NE quad is notable. Sub-cont deter conc & stirrup loss at SW column; slopewall voids cont to grow.”

When abbreviating, be sure to use abbreviations common/standard to the field of bridge engineering.

Inspection Photographs

Photographs are also an important part of bridge inspection documentation and are used to identify and document potential problems that might affect bridge safety.

- Per the *AASHTO Manual for Bridge Evaluation (MBE)* Section 2.2.1, the following photographs are to be included in the general file information for each bridge.
 - Top view of the roadway across the bridge,
 - a side elevation view of the bridge, and
 - an under view of the main or typical span superstructure.
- Per IDOT Bridge Inspection Policy:
 - For condition ratings ≤ “4” (Poor), all deficiencies must be documented with photographs. However, it is recommended photographs be taken during each inspection regardless of the condition of the bridge.

Summary

When performing Bridge Inspections, all notable deficiencies must be identified, and the narrative must appropriately justify and document the condition ratings. While it is good inspection practice to include comments for all condition ratings, Routine Inspection condition rating comments are required for condition ratings ≤ “5” (Fair). Condition ratings ≤ “4” (Poor) must have photographs of all deficiencies to accompany the condition rating comments. Routine Bridge Inspection Reports submitted without the correct documentation are considered “incomplete” and should be returned to appropriate party before entry into the BIS. It should be noted, Routine Inspections in the BIS cannot be submitted or approved if condition rating comments are not provided for condition ratings of ≤ “5”.

Questions regarding this NBI Subscription Service Announcement are to be directed to the Bridge Management and Inspection Unit by telephone at 217/785-4537 or by email at DOT.BBS.BridgeMgmt@illinois.gov.