



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Bridge Inspection Memorandum No. 25-01 Bridge Inspection QA/QC Updates

February 17, 2025

TO: All Inspection Personnel and Consultants

FROM: /s/ Anthony Marino SPM
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Bridge Inspection State Program Manager
Bridge Management Division

SUBJECT: Bridge Inspection QA/QC Updates

REVISION: INDOT Bridge Inspection Manual Part 4

EFFECTIVE: Immediately

The following revisions have been made to Part 4: QA/QC of the INDOT Bridge Inspection Manual.

4-1.01 Purpose

Federal Regulation ~~23 CFR 650.313(g)~~ **23 CFR 650.313(p)** requires...

4-1.03 Definitions

Amended definitions:

- **Quality Assurance (QA):** The use of sampling and other measures to assure the adequacy of quality control (QC) procedures to verify or measure the quality level of an entire bridge inspection and load rating program. QA processes are carried out to verify that QC procedures are being properly implemented by randomly selecting bridges for review. The minimum QA requirements are defined in the National Bridge Inspection Standards (NBIS) Section 650.313 (p).
- **Quality Control (QC):** Procedures that are intended to maintain the quality of a bridge inspection and load rating at or above a specified level. The minimum QC requirements are defined in the National Bridge Inspection Standards (NBIS) Section 650.313 (p).

4-2.01 Inspection and Load Rating Teams

The qualifications and responsibilities for the individuals performing inspections and load ratings are discussed in ~~Part 1-1.04(14)~~ **Part 1 (Administration)** of the INDOT Bridge Inspection Manual (BIM).

4-2.03 Quality Control Reviewer (QCR)

Section replaced in its entirety.

Designated QCRs shall have approved inspection team leader credentials that match the types of bridge inspections receiving QC reviews. Organizations that do not have additional, independent approved inspection team leaders with credentials matching the types of bridge inspections receiving QC review, another organization or consulting firm that has qualified bridge inspection team leaders for all required inspection types shall be engaged to serve as QCRs.

Designated QCRs shall be knowledgeable of the organization's QC procedures and shall not have been an active member of the original bridge inspection team to ensure an independent review.

4-2.04(02) Quality Control Criteria

Section text deleted in its entirety and reserved for future use.

4-2.04(03) ~~Sampling~~ QC Procedures

Section replaced in its entirety.

QC procedures shall be developed by each organization that employs Agency-certified bridge inspection team leaders carrying out bridge inspection work in Indiana. All bridge inspections need to incorporate quality control to ensure that inspection procedures are being adhered to, and that accurate and comprehensive bridge inspection condition information is collected and reported. QC procedures shall be carried out throughout the planning, inspection, and reporting work.

State-owned/maintained bridges:

Using the iTAMS Inspection Report Workflow, INDOT shall carry out QC Office Reviews on 100% of all bridge inspection reports for State-owned/maintained bridges for **all inspection types** done. The QC Office Review requires the responsible INDOT bridge inspection team leader responsible for the field inspection and completing the final inspection report to submit the completed inspection report through the iTAMS workflow from the In Progress status to the Submitted for Review status to an independent INDOT bridge inspection team leader who was not involved with the inspection.

The INDOT bridge inspection team leader shall carry out the QC review and shall review the inspection report, condition ratings and descriptions, asset data, photographs, and attachments for completeness, accuracy, and adherence to the INDOT BIM and FHWA NBIS requirements. Bridge inspection reports requiring corrections or additional effort shall be routed back to the originating bridge inspection team leader responsible for the report using the iTAMS workflow, along with appropriate feedback from the QC reviewer. After making necessary corrections, the INDOT bridge inspection team leader shall again submit the completed inspection report through the iTAMS workflow for an additional QC review. Once the independent INDOT bridge inspection team leader responsible for the QC review is satisfied with the inspection report, the QC reviewer shall route the completed report through the iTAMS workflow to the Approved status.

The QA/QC NBIP File Review Checklist Form provided in the Appendices of the INDOT BIM is not required for INDOT QC Office Reviews for State-owned/maintained bridges.

LPA-owned/maintained bridges:

Bridge inspection consulting firms/organizations shall carry out QC Office Reviews in accordance with their organization's formal Quality Control and Quality Assurance Procedures for Bridge Inspections. The organization's formal bridge inspection QC/QA procedures shall be written out in a manual format and shall fully detail the organization's QC procedures for bridge inspection operations and reporting and include review forms or checklists necessary to ensure that inspection procedures are being adhered to, and to ensure that accurate and comprehensive bridge inspection condition information is collected and reported. All bridge inspection consulting firms/organizations shall provide a copy of their formal and written bridge inspection QC/QA procedures manual to the INDOT Bridge Inspection State Program Manager (SPM) if requested.

QC Office Reviews shall be done during each phase of a bridge inspection contract. Documentation of completed QC Office Reviews shall be properly completed and maintained by the responsible bridge inspection consulting firm/organization responsible for carrying out bridge inspections in Indiana and shall provide evidence to the INDOT Bridge Inspection SPM documenting the QC Office Reviews completed.

All bridge inspection reports for all bridge inspection types must be completed within the iTAMS bridge inspection report workflow, and the iTAMS bridge inspection reporting platform requires an Approved Bridge Inspection Team Leader to advance a report from the In Progress status to the Submitted for Review. An independent Approved Bridge Inspection Team Leader who was not involved with the inspection, who must be the one that advances an inspection report through the iTAMS workflow to the Approved status.

4-2.05(02) Quality Control Criteria

Section text deleted in its entirety and reserved for future use.

4-2.05(03) Sampling QC Procedures

Section replaced in its entirety.

State-owned/maintained bridges:

INDOT Bridge Inspection Area Engineers and District Bridge Inspection Supervisors shall carry out QC Field Reviews during actual bridge inspection field operations. These QC Field Reviews shall involve either an Inspection Area Engineer or District Bridge Inspection Supervisor being on site and shadowing an INDOT bridge inspection team consisting of one or more Approved Team Leaders and Team Members and observing the bridge inspection field operations. The Area Engineer or District Bridge Inspection Supervisor shall serve in an observational role capacity and not participate in the field inspections in a responsible-charge manner.

For Routine Inspections, QC Field Reviews shall involve the QCR being present on site with the INDOT bridge inspection team for the entire duration of the inspection day. The inspection day shall have a minimum of four (4) routine bridge inspections scheduled and completed.

- Inspection Area Engineers shall carry out a minimum of two (2) QC Field Review days within each of their responsible districts during each calendar year.
- District Bridge Inspection Supervisors shall carry out a minimum of one (1) QC Field Review day in a separate district and not their own.
- The INDOT Bridge Inspection State Program Manager (SPM) may adjust these QC Field Review requirements for Routine Inspections if necessary.

For NSTM Inspections, QC Field Reviews shall be done by an Inspection Area Engineer and shall be done on at least one (1) NSTM Bridge within the Area Engineer's responsible districts. Similar for Routine Inspections, the INDOT Bridge Inspection State Program Manager (SPM) may make either adjustments or allowances to these QC Field Review requirements if necessary.

Following each QC Field Review day, the QCR shall send a summary email to the SPM detailing the inspection day's operations, bridges inspected, and overall observations on the level of quality of the field inspections completed.

LPA-owned/maintained bridges:

Bridge inspection consulting firms/organizations shall carry out QC Field Reviews in accordance with their organization's formal Quality Control and Quality Assurance Procedures for Bridge Inspections. The organization's formal bridge inspection QC/QA procedures shall be written out in a manual format and shall fully detail the organization's QC procedures for bridge inspection operations and reporting and include review forms or checklists necessary to ensure that inspection procedures are being adhered to, and to ensure that accurate and comprehensive bridge inspection condition information is collected and reported. All bridge inspection consulting firms/organizations shall provide a copy of their formal and written bridge inspection QC/QA procedures manual to the INDOT Bridge Inspection State Program Manager (SPM) if requested.

QC Field Reviews shall be done during each phase of a bridge inspection contract. Documentation of completed QC Field Reviews shall be properly completed and maintained by the responsible bridge inspection consulting firm/organization responsible for carrying out bridge inspections in Indiana and shall provide evidence to the INDOT Bridge Inspection SPM documenting the QC Field Reviews completed.

4-2.06 Corrective Actions

The team leader is responsible for any corrective action that is needed for an existing bridge file under review. The office and field reviews are intended to be an instructive process where errors and omissions can be found and ~~eliminated~~ ~~corrected~~. ~~The only repercussion to the quality control reviews would be the lack of quality of the review or if corrections were recommended but not completed or~~

~~explained by the team leader. The INDOT Data Manager (Asst Bridge Inspection Mgr) will review the files in question.~~

4-2.07 State Owned and Maintained Fracture Critical Bridges

Section text deleted in its entirety and reserved for future use.

4-3.01 Quality Assurance

Section replaced in its entirety.

Quality Assurance (QA) procedures regarding sampling and other measures shall be developed by each organization that carries out bridge inspection work in Indiana.

QA measures are required to ensure that established QC procedures and protocols are being adhered to and are effective to ensure that the overall quality of bridge inspections and bridge load ratings are done in accordance with both the federal NBIS and Indiana regulations. The INDOT Bridge Inspection SPM is responsible for the completion of the annual QA reviews through independent oversight methodology by independent QA reviewers carrying out office reviews, field reviews, and preparation of a final Quality Assurance Review Report.

During each calendar year, the INDOT Bridge Inspection SPM shall assign one or more Approved Bridge Inspection Team Leader(s) to provide Quality Assurance through independent oversight as detailed herein. This methodology generally involves enlisting a third party to reinspect a bridge that was inspected previously by an inspection team leader to verify that the inspection was done in accordance with federal NBIS regulations and performance metrics, the INDOT BIM, and any bridge-specific inspection plans that may be part of the bridge file, and then comparing the results of the QA independent review against the inspection findings.

Engineering consulting firms/organizations that are under contract with either INDOT or LPA bridge owners for LPA bridge inspection contracts and work assignments shall carry out their own QA in accordance with their organization's formal Quality Control and Quality Assurance Procedures for Bridge Inspections.

The organization's formal bridge inspection QC/QA procedures shall be written out in a manual format that fully details the organization's bridge inspection and load rating QA procedures, along with review forms or checklists necessary to ensure that the organization's quality control for bridge inspection and load rating operations is effective. All bridge inspection consulting firms/organizations shall provide a copy of their formal and written bridge inspection QC/QA procedures manual to the INDOT Bridge Inspection SPM if requested. QA shall be done during each phase of a bridge inspection contract. Documentation of completed QA shall be properly completed and maintained by the responsible bridge inspection consulting firm/organization responsible for carrying out bridge inspection and load rating QA and shall provide evidence to the INDOT Bridge Inspection SPM documenting the QA completed.

4-3.02 Control Bridge or Training Workshop

Section replaced in its entirety.

At the discretion of the INDOT Bridge Inspection SPM, either a test control bridge or training workshop will be held annually.

If INDOT Bridge Inspection elects to use a test control bridge for quality assurance, the test bridge location and all participation, inspection, and reporting instructions shall be detailed by INDOT and provided to participants in advance.

4-3.03 Independent Oversight

Section replaced in its entirety.

A minimum of 30 bridge assets will be randomly selected annually for independent oversight. Bridge assets selected shall include LPA-owned/maintained bridges that were inspected during the program review year by consulting firms currently under contract to provide LPA bridge inspection services, Indiana Toll Road bridges, and State-owned/maintained bridges that were inspected by INDOT bridge inspection team leaders.

Bridge assets selected for the QA independent oversight review are generally made randomly; however, some criteria used for selecting the bridge assets for review included focus on the following parameters:

- Bridge assets with decks, superstructures, substructures, or culvert types having condition ratings reported ranging between 6 (Satisfactory) to 4 (Poor) or less.
- Bridge assets with decks, superstructures, substructures, or culvert types having reported condition ratings that changed by two or more rating scores from the previous inspection.
- Bridge assets reported as scour critical (NBI Item 113 = 3 or less; SNBI Item B.AP.03 ≠ A or B).
- Bridge assets having posted weight restrictions.
- Inclusion of bridge assets that have NSTMs, Underwater components, and Special Features.
- Identity of the responsible bridge inspection team leader. This criterion was included due to the limited number of consulting firms under active bridge inspection contracts in Indiana to not repeat QA reviews on selected inspection team leaders from the previous year's QA review.

The QA reviews of the randomly selected bridge assets will involve both a Field Review and a Bridge File Review. The reviews will be done primarily by the INDOT Bridge Inspection Area Engineers; however, the INDOT Bridge Inspection State Program Manager, the INDOT Bridge Inspection Assistant State Program Manager, or other designated and approved third party organization, may also be tasked to participate in the annual QA independent oversight review work.

The field review for the QA independent oversight involves the QA reviewers reinspecting the selected bridge assets. The reinspection of the bridge assets shall be done in a comprehensive manner to generate a comparison for consistency and accuracy with the original bridge inspection condition findings.

4-3.04(02) Bridge File Review

Section replaced in its entirety.

Following the quality assurance Field Reviews, the selected bridge asset files shall then be reviewed for accuracy and completeness. The items checked in the bridge asset files shall be according to Section 2 of the AASHTO Manual for Bridge Evaluation and shall include the following:

- Presence or absence of bridge plans.
- Inspection Reports from past years.
- Presence or absence of bridge maintenance or repair records.
- Bridge load rating summary.
- Bridge-related correspondence.
- Completeness and accuracy of inventory data.
- When required: channel cross sections and scour plans of action.
- When required: critical feature (i.e. NSTM, UW, etc.) inspection reports.
- Overall quality of inspection reporting and documentation.
- Recent photograph documentation, including weight limit signs when required.

The findings of the Bridge File Reviews done as part of the QA Independent Oversight and the findings shall be included in the annual QA Report, and shall be submitted to the INDOT Bridge Inspection Program Manager.

4-3.04(03) Load Rating Verification Review

The INDOT ~~Bridge Load Rating Engineer~~ Bridge Evaluation Manager will select...

4-4.01 Disqualification Process

Section replaced in its entirety.

When INDOT Quality Assurance procedures indicate that inspection team leaders individually or bridge inspection consulting firms/organizations responsible for carrying out bridge inspections in Indiana are not meeting the acceptable standards for bridge inspections and load rating, the INDOT State Program Manager for bridge inspections may implement one or more of the following corrective measures:

1. Attendance at a meeting where the INDOT Bridge Inspection Program leadership discusses the results of its findings with the bridge inspectors so that any needed improvements can be initiated and carried forward.
2. Bridge field inspections or bridge inspection reports determined to be unsatisfactory by the INDOT Bridge Inspection Program leadership shall be returned to the responsible bridge

- inspection team leader(s) to address the comments of the unsatisfactory review at no additional cost to the agency.
3. Requiring engineering consulting firms or bridge owners to create either written Improvement Plans or Plans of Corrective Action to self-direct themselves back into compliance with the National Bridge Inspection Program (NBIP) Compliance Review Manual, the NBIP Metrics, and the INDOT Bridge Inspection Manual. Once written, reviewed, and accepted by the SPM, follow-up meetings and reviews shall be scheduled to ensure that the organization is working towards successfully completing their agreement. Failure to achieve compliance with such agreements can lead to further actions by the SPM.
 4. Suspension or revocation of approved team leader credentials.

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

4-4.02 Disqualification Criteria

Item 5 in this section shall be revised as follows:

5. Recurring miscoded **Specifications for the National Bridge Inventory (SNBI)** items.

4-4.03 Requalification Process

Section replaced in its entirety.

The requalification process shall be handled on a case-by-case basis appropriate to the reason for the disqualification circumstances.

Implementation Note:

All engineering consulting firms/organizations shall have their formal Quality Control and Quality Assurance Procedures for Bridge Inspections manuals, along with necessary checklist or similar related forms, completed no later than June 30, 2025.