



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Bridge Inspection Memorandum No. 24-01 Bridge Inspection Manual Revisions: Critical Findings

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TO: All Inspection Personnel and Consultants

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SUBJECT: Critical Findings

REVISION: INDOT Bridge Inspection Manual Part 2

EFFECTIVE: Immediately

Part 2, Section 2-4.0 EMERGENCY NOTIFICATIONS/CRITICAL FINDINGS has been replaced in its entirety with the following narrative.

2-4.01 Introduction

The procedures detailed in this section shall be used by all bridge inspectors and bridge inspection team leaders to timely report serious bridge conditions discovered that creates either an immediate safety hazard to persons or property, or an immediate structural hazard that could potentially result in a structural failure, that cannot remain unattended, and requires immediate response.

This section defines the responsibilities of bridge inspectors, approved bridge inspection team leaders, bridge owners, and the INDOT bridge inspection State Program Manager (SPM) for such situations.

Any INDOT Certified Bridge Inspection Team Leader may order any bridge to be immediately closed if it appears to be unsafe.

2-4.02 Critical Findings

A Critical Finding (CF) is either a structural or safety related deficiency that poses an apparent immediate threat to the safety of the motoring public and requires immediate action be taken to ensure public safety. According to federal regulations, such deficiencies include, but are not limited to, scour, damage, corrosion, section loss, settlement, cracking, deflection, distortion, loss of bearing, and any condition posing an imminent threat to public safety.

Immediate actions include either 1) executing a proactive immediate corrective action or series of actions sufficient that will either fully correct the deficiency or temporarily mitigate the deficiency until permanent repairs can be executed, or 2) carrying out an immediate follow-up investigation consisting of either an In-Depth Inspection or expedited structural/load rating review sufficient to properly assess the severity of the deficiency and detail appropriate actions.

Any of the following situations shall be considered and subsequently reported by a bridge inspector as a critical finding:

1. Structural danger: a structure-related deficiency that can interrupt the load path and not allow loads to be transferred as designed that, in turn, can cause surrounding components to become overstressed or unstable, potentially leading to a partial or total collapse of the structure.
2. Public safety danger: a non-structure-related deficiency that jeopardizes the safety of motorists, pedestrians, or other users on or below the structure.
3. Discovery of conditions that require the bridge inspection team leader to lower the deck, superstructure, substructure, or culvert conditions (NBI Items 58, 59, 60, or 62, respectively) to a Condition Rating of 2 (Critical) or less.
4. Discovery of conditions that require the bridge inspection team leader to lower the channel condition (NBI Item 61) to a Condition Rating of 2 (Critical) or less.
5. Lowering the code for Scour Critical Bridges (NBI Item 113) to a status for vulnerability to scour to a condition of 2 or less.
6. Discovery of conditions for any one or more non-redundant steel tension member (NSTM) to a Condition Rating of 3 (Serious) or less.
7. Discovery of missing or incorrect load restriction signs (commercial and emergency vehicles as required), both at the approach roadway ends at each end of the bridge and the advanced warning signs at the nearest intersections approaching the bridge, shall be reported as a critical finding.

When a critical finding is discovered, the consideration of its potential impact to the motoring public safety must be paramount. The immediate actions taken by the inspection team leader will vary with the circumstance. Regardless, the inspection team leader shall always take all necessary actions to ensure that the structure is secure. If the inspection team leader determines that the deficiency seriously reduces the structure's load carrying capacity, the inspection team leader should initially isolate the deficiency by closing lanes and diverting traffic away. If the deficiency is extensive enough where lane closures are insufficient, then the team leader should immediately have the bridge closed to all vehicular traffic.

2-4.02(01) Procedures for Inspectors

Prior to the start of bridge inspection operations, either an internal Standard Operating Procedure or Notification List of the names and contact information that specifies key individuals that need to be informed if a bridge critical finding is discovered shall be prepared. These internal Standard Operating

Procedures or Notification Lists of names shall be considered “living documents” that shall be reviewed and updated every four (4) years minimum to ensure that the names and contact information of key individuals are current and accurate.

Upon discovery of a critical finding at either a State-owned bridge or LPA-owned bridge, the inspection team leader discovering the critical finding incident shall first immediately report the finding to the INDOT bridge inspection SPM as soon as the inspector can get to a safe location and as follows:

1. The inspection team leader shall first immediately notify the SPM by phone, text message, or email of the critical finding discovery along with the following information:
 - a. Bridge Number.
 - b. Bridge location, facility carried, and facility crossed.
 - c. Complete description of the critical finding deficiency.
 - d. Date and time that the critical finding was discovered.
 - e. Immediate corrective action recommendation.
 - f. If any immediate corrective action has already been executed.
 - g. Priority assignment: Urgent or Severe

URGENT: A critical finding that requires the immediate corrective action(s) recommended by the inspection team leader be executed no later than three (3) calendar days from the date that critical finding is discovered.

SEVERE: A critical finding that requires immediate corrective action(s) recommended by the inspection team leader be executed no later than thirty (30) calendar days from the date that critical finding is discovered.

For LPA-owned bridges, the inspection team leader shall report the critical finding discovery to both the bridge owner's employee of responsible charge (ERC) and any other pre-defined individuals immediately after the SPM has been notified.

2. Within 24 hours from the date and time of discovery, the inspection team leader shall open a critical finding incident report in the Indiana Total Asset Management (iTAMS) platform and, at minimum, provide the following information within the **Task Info** tab:
 - a. Date Found.
 - b. Priority assignment: Urgent (3d) or Severe (30d).
 - c. Description: A complete description of the critical finding discovery to include the type of defect found and the defect size (as applicable), location, and severity.
 - d. Recommendation: All recommendations made shall include an immediate corrective action or actions that must be completed within the priority assignment deadline. If required, the recommendation should include any additional final resolution work needed once the immediate corrective action work is completed and the hazard is mitigated.
 - e. Sufficient photographs to fully document the existing critical finding conditions shall be attached to the critical finding incident report in the **Photos** tab.

3. The inspection team leader shall consider the following factors when making corrective action recommendations:

- a. All immediate corrective action(s) that are recommended by the inspection team leader must be those actions that can be completed within the timeline required for the critical finding priority assignment assessed.
- b. All immediate corrective action(s) that are recommended by the inspection team leader must also be those actions that can be successfully executed within the required timeline for the critical finding priority assignment by the forces that are going to be tasked to complete the work.
- c. Actions to correct a critical finding deficiency must include a well defined immediate corrective action or actions and, as appropriate, may include an additional, follow up final resolution action. Not all critical findings will require both.
- d. Immediate corrective action recommendations may include, but are not limited to:
 - Complete closure of the structure.
 - Partial closure of the structure to alert and direct traffic away from the deficiency.
 - Installation of temporary shoring.
 - Execution of immediate repairs to correct the deficiency.
 - Completion of a structural analysis through an expedited load rating.
- e. Any final resolution action recommendation is not bound by the required Urgent/Severe deadlines. However, no final resolution action should go longer than 6 to 8 weeks for completion after the immediate corrective action is done.

4. The inspection team leader shall then submit the critical finding incident report in the iTAMS Critical Finding Workflow through the **Routings** tab and, in the **Actions** tab, add a new workflow routing to the SPM under the “SPM Review” Status.
5. The inspection team leader shall also send an email to the SPM notifying the SPM that a critical finding incident report has been advanced for review through the iTAMS Critical Finding Workflow. This email shall serve to report and update the status of critical finding actions done from the time that a critical finding is discovered and reported until the critical finding is properly closed by the SPM.

The SPM will be responsible for both notifying FHWA within 24 hours of a bridge critical finding incident discovered and reported, and for recording and tracking all reported bridge critical finding incidents from discovery through incident report closure.

2-4.02(02) Documentation

All discovered critical finding incident reports shall follow the following iTAMS Workflow stages:

- Found

Done by the inspection team leader following discovery and notification of a critical finding incident, where the inspection team leader creates the iTAMS critical finding incident report and provides the information necessary to fully describe and document the critical finding deficiency, attach photographs, and provide recommendations for corrective action. The inspection team leader then advances the report to the SPM at the next status step of the workflow.

- SPM Review

The SPM reviews the submitted critical finding incident report for completeness. If the incident report is acceptable, the SPM will update the **Date SPM Review** section with the date the review was done, and then advances the report back to the inspection team leader at the next status step of the workflow. If the critical finding incident report is not acceptable, it will be re-routed back to the inspection team leader at the **Found** status for corrections, and then the process to advance the report back to the SPM is done again.

- Awaiting Immediate Corrective Action

It is the responsibility of the inspection team leader to work with the bridge owner to ensure that the immediate corrective action recommendations are completed within the required time frames. Once immediate corrective actions have been finished, the inspection team leader is responsible for obtaining photographs or other information documenting the immediate corrective action done. The inspection team leader shall then update the **Immediate Corrective Action Taken** comment box to detail the work completed, update the **Date Immediate CA Done** section with the date that the immediate corrective action was completed, and then advance the critical finding incident report back to the SPM at the next status step of the workflow.

- Immediate Corrective Action Done

The SPM reviews the submitted critical finding incident report for completeness and to ensure that proper supporting documentation, such as photographs or load rating summary findings, are attached to the incident report. If no other work is warranted, the SPM will close the critical finding incident report and inform the inspection team leader and FHWA Indiana Division Engineer. However, if any other additional final resolution work is either warranted or has been recommended to permanently address the deficiency, the SPM will then advance the report back to the inspection team leader at the next status step of the workflow.

- Awaiting Final Resolution (if required)

Again, it is the responsibility of the inspection team leader to work with the bridge owner to ensure that, if required, all final resolution action recommendations are completed. Not all critical findings will require both immediate corrective actions and final resolution work. In addition, final resolution work recommendations are not bound by the immediate corrective action time frames; however, it is recommended that such work be completed within 6 to 8 weeks whenever possible. Once all final resolution work has been finished, the inspection team leader is responsible for obtaining photographs or other information documenting the work done. The inspection team leader shall also update the **Final Resolution Taken** comment box to detail the work completed, update the **Final Resolution Date**

section with the date that the work was completed, and then advance the report back to the SPM at the next status step of the workflow.

- Final Resolution Complete (if required)

The SPM once again reviews the submitted critical finding incident report for completeness and to ensure that proper supporting documentation is attached to the incident report. If no other work or action is warranted, the SPM will close out the critical finding incident report.

- Closed

The SPM will close the critical finding incident report and shall notify the inspection team leader and the FHWA Indiana Division Engineer that the critical finding is closed. Each critical finding incident shall then become part of the permanent record in the asset file.

Additional required action

All State bridge inspection district supervisors and bridge inspection consulting firms shall review the bridge assets under their responsible charge and query all bridges that have the following:

1. Deck, Superstructure, Substructure, Channel, Culvert, and Scour Critical Bridge (NBI Items 58, 59, 60, 61, 62, and 113, respectively) that have a Condition Rating of 2 or less.
2. Bridges with NSTM inspection requirements that have any NSTM with a Condition Rating of 3 or less.

Bridges that meet any of these two requirements shall have their bridge histories reviewed to determine if any past critical findings have been reported. If these bridges do not have any records of critical finding incidents being reported, they shall be immediately reinspected to determine if the condition ratings remain warranted. Reinspected bridges that still warrant critical condition ratings shall have new iTAMS Critical Finding Incident Reports submitted.