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Title 23 –Highways

Chapter I –Federal Highway Administration, Department of Transportation

Subchapter G –Engineering and Traffic Operations

Part 650 –Bridges, Structures, and Hydraulics

Subpart C –National Bridge Inspection Standards (NBIS)

Source: 87 FR 27429, May 6, 2022, unless otherwise noted.

Authority: 23 U.S.C. 119, 144, and 315.

§ 650.313 Inspection procedures.

- (a) **General.** Inspect each bridge to determine condition, identify deficiencies, and document results in an inspection report in accordance with the inspection procedures in Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317). Special equipment or techniques, and/or traffic control are necessary for inspections in circumstances where their use provide the only practical means of accessing and/or determining the condition of the bridge. The equipment may include advanced technologies listed in the BIRM.
- (b) **Initial inspection.** Perform an initial inspection in accordance with Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317) for each new, replaced, rehabilitated, and temporary bridge as soon as practical, but within 3 months of the bridge opening to traffic.
- (c) **Routine inspection.** Perform a routine inspection in accordance with Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317).
- (d) **In-depth inspection.** Identify the location of bridge members that need an in-depth inspection and document in the bridge files. Perform in-depth inspections in accordance with the procedures developed in paragraph (g) of this section.
- (e) **Underwater inspection.** Identify the locations of underwater portions of the bridge in the bridge files that cannot be inspected using wading and probing during a routine inspection. Perform underwater inspections in accordance with the procedures developed in paragraph (g) of this section. Perform the first underwater inspection for each bridge and for each bridge with portions underwater that have been rehabilitated as soon as practical, but within 12 months of the bridge opening to traffic.
- (f) **NSTM inspection.**
 - (1) Identify the locations of NSTMs in the bridge files.
 - (i) A State transportation department, Federal agency, or Tribal government may choose to demonstrate a member has system or internal redundancy such that it is not considered an NSTM. The entity may develop and submit a formal request for FHWA approval of procedures using a nationally recognized method to determine that a member has system or internal redundancy. FHWA will review the procedures for approval based upon conformance with the nationally recognized method. The request must include:
 - (A) Written policy and procedures for determining system or internal redundancy.

- (B) Identification of the nationally recognized method used to determine system or internal redundancy. Nationally recognized means developed, endorsed and disseminated by a national organization with affiliates based in two or more States; or currently adopted for use by one or more State governments or by the Federal Government; and is the most current version.
 - (C) Baseline condition of the bridge(s) to which the policy is being applied.
 - (D) Description of design and construction details on the member(s) that may affect the system or internal redundancy.
 - (E) Routine inspection requirements for bridges with system or internally redundant members.
 - (F) Special inspection requirements for the members with system or internal redundancy.
 - (G) Evaluation criteria for when members should be reviewed to ensure they still have system and internal redundancy.
- (ii) Inspect the bridge using the approved methods outlined in paragraphs (f)(1)(i)(E) and (F) of this section.
- (2) Perform hands-on inspections of NSTMs in accordance with the procedures developed in paragraph (g) of this section.
 - (3) Perform the first NSTM inspection for each bridge and for each bridge with rehabilitated NSTMs as soon as practical, but within 12 months of the bridge opening to traffic.
- (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.
 - (h) **Special inspection.** For special inspections used to monitor conditions as described in § 650.311(a)(1)(ii) and (b)(1)(ii), develop and document procedures in accordance with Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317).
 - (i) **Service inspection.** Perform a service inspection when the routine inspection interval is greater than 48 months. Document the inspection date and any required follow up actions in the bridge file.
 - (j) **Team leader.** Provide at least one team leader at the bridge who meets the minimum qualifications stated in § 650.309 and actively participates in the inspection at all times during each initial, routine, in-depth, NSTM, underwater inspection, and special inspection described in paragraph (h) of this section.
 - (k) **Load rating.**
 - (1) Rate each bridge as to its safe load capacity in accordance with Sections 6 and 8, excluding the 3rd paragraph in Article 6B.7.1, AASHTO Manual (incorporated by reference, see § 650.317).
 - (2) Develop and document procedures for completion of new and updated bridge load ratings. Load ratings must be completed as soon as practical, but no later than 3 months after the initial inspection and when a change is identified that warrants a re-rating such as, but not limited to, changes in condition, reconstruction, new construction, or changes in dead or live loads.

- (3) Analyze routine and special permit loads for each bridge that these loads cross to verify the bridge can safely carry the load.

(l) **Load posting.**

- (1) Implement load posting or restriction for a bridge in accordance with the incorporated articles in Section 6, AASHTO Manual (incorporated by reference, see § 650.317), when the maximum unrestricted legal loads or State routine permit loads exceed that allowed under the operating rating, legal load rating, or permit load analysis.
- (2) Develop and document procedures for timely load posting based upon the load capacity and characteristics such as annual average daily traffic, annual average daily truck traffic, and loading conditions. Posting shall be made as soon as possible but not later than 30 days after a load rating determines a need for such posting. Implement load posting in accordance with these procedures.
- (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.

- (m) **Closed bridges.** Develop and document criteria for closing a bridge which considers condition and load carrying capacity for each legal vehicle. Bridges that meet the criteria must be closed immediately. Bridges must be closed when the gross live load capacity is less than 3 tons.

- (n) **Bridge files.** Prepare and maintain bridge files in accordance with Section 2.2, AASHTO Manual (incorporated by reference, see § 650.317).

(o) **Scour.**

- (1) Perform a scour appraisal for all bridges over water, and document the process and results in the bridge file. Re-appraise when necessary to reflect changing scour conditions. Scour appraisal procedures should be consistent with Hydraulic Engineering Circulars (HEC) 18 and 20. Guidance for scour evaluations is located in HEC 18 and 20, and guidance for scour assessment is located in HEC 20.
- (2) For bridges which are determined to be scour critical or have unknown foundations, prepare and document a scour POA for deployment of scour countermeasures for known and potential deficiencies, and to address safety concerns. The plan must address a schedule for repairing or installing physical and/or hydraulic scour countermeasures, and/or the use of monitoring as a scour countermeasure. Scour plans of actions should be consistent with HEC 18 and 23.
- (3) Execute action in accordance with the plan.

(p) **Quality control and quality assurance.**

- (1) Assure systematic QC and QA procedures identified in Section 1.4, AASHTO Manual (incorporated by reference, see § 650.317) are used to maintain a high degree of accuracy and consistency in the inspection program.
- (2) Document the extent, interval, and responsible party for the review of inspection teams in the field, inspection reports, NBI data, and computations, including scour appraisal and load ratings. QC and QA reviews are to be performed by personnel other than the individual who completed the original report or calculations.
- (3) Perform QC and QA reviews and document the results of the QC and QA process, including the tracking and completion of actions identified in the procedures.

(4) Address the findings of the QC and QA reviews.

(q) **Critical findings.**

(1) Document procedures to address critical findings in a timely manner. Procedures must:

(i) Define critical findings considering the location and the redundancy of the member affected and the extent and consequence of a deficiency. Deficiencies include, but are not limited to scour, damage, corrosion, section loss, settlement, cracking, deflection, distortion, delamination, loss of bearing, and any condition posing an imminent threat to public safety. At a minimum, include findings which warrant the following:

(A) Full or partial closure of any bridge;

(B) An NSTM to be rated in serious or worse condition, as defined in the NBI (see § 650.315) by the NSTM Inspection item, coded three (3) or less;

(C) A deck, superstructure, substructure, or culvert component to be rated in critical or worse condition, as defined in the NBI (see § 650.315) by the Deck, Superstructure, or Substructure Condition Rating items, or the Culvert Condition Rating item, coded two (2) or less;

(D) The channel condition or scour condition to be rated in critical or worse condition as defined in the NBI (see § 650.315) by the Channel Condition Rating or Scour Condition Rating items, coded critical (2) or less; or

(E) Immediate load restriction or posting, or immediate repair work to a bridge, including shoring, in order to remain open.

(ii) Develop and document timeframes to address critical findings identified in paragraph (q)(1)(i) of this section.

(2) State transportation departments, Federal agencies, and Tribal governments must inform FHWA of all critical findings and actions taken, underway, or planned to resolve critical findings as follows:

(i) Notify FHWA within 24 hours of discovery of each critical finding on the National Highway System (NHS) as identified in paragraphs (q)(1)(i)(A) and (B) of this section;

(ii) Provide monthly, or as requested, a written status report for each critical finding as identified in paragraph (q)(1)(i) of this section until resolved. The report must contain:

(A) Owner;

(B) NBI Structure Number;

(C) Date of finding;

(D) Description and photos (if available) of critical finding;

(E) Description of completed, temporary and/or planned corrective actions to address critical finding;

(F) Status of corrective actions: Active/Completed;

(G) Estimated date of completion if corrective actions are active; and

(H) Date of completion if corrective actions are completed.

- (r) **Review of compliance.** Provide information annually or as required in cooperation with any FHWA review of compliance with this subpart.

[87 FR 27429, May 6, 2022, as amended at 87 FR 57821, Sept. 22, 2022]