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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.

#### § 650.311 Inspection interval.

- (a) **Routine inspections.** Each bridge must be inspected at regular intervals not to exceed the interval established using one of the risk-based methods outlined in paragraph (a)(1) or (2) of this section.
  - (1) **Method 1.** Inspection intervals are determined by a simplified assessment of risk to classify each bridge into one of three categories with an inspection interval as described below.
    - (i) **Regular intervals.** Each bridge must be inspected at regular intervals not to exceed 24 months, except as required in paragraph (a)(1)(ii) of this section and allowed in paragraphs (a)(1)(iii) of this section.
    - (ii) **Reduced intervals.**
      - (A) State transportation departments, Federal agencies, or Tribal governments must develop and document criteria used to determine when intervals must be reduced below 24 months. Factors to consider include structure type, design, materials, age, condition ratings, scour, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies.
      - (B) Certain bridges meeting any of the following criteria as recorded in the National Bridge Inventory (NBI) (see § 650.315) must be inspected at intervals not to exceed 12 months:
        - (1) One or more of the deck, superstructure, or substructure, or culvert components is rated in serious or worse condition, as recorded by the Deck, Superstructure, or Substructure Condition Rating items, or the Culvert Condition Rating item, coded three (3) or less; or
        - (2) The observed scour condition is rated serious or worse, as recorded by the Scour Condition Rating item coded three (3) or less.
      - (C) Where condition ratings are coded three (3) or less due to localized deficiencies, a special inspection limited to those deficiencies, as described in § 650.313(h), can be used to meet this requirement in lieu of a routine inspection. In such cases, a complete routine inspection must be conducted in accordance with paragraph (a)(1)(i) of this section.
    - (iii) **Extended intervals.**
      - (A) Certain bridges meeting all of the following criteria as recorded in the NBI (see § 650.315) may be inspected at intervals not to exceed 48 months:

- (1) The deck, superstructure, and substructure, or culvert, components are all rated in satisfactory or better condition, as recorded by the Deck, Superstructure, and Substructure Condition Rating items, or the Culvert Condition Rating item coded six (6) or greater;
  - (2) The channel and channel protection are rated in satisfactory or better condition, as recorded by the Channel Condition and Channel Protection Condition items coded six (6) or greater;
  - (3) The inventory rating is greater than or equal to the standard AASHTO HS-20 or HL-93 loading and routine permit loads are not restricted or not carried/issued, as recorded by the Inventory Load Rating Factor item coded greater than or equal to 1.0 and the Routine Permit Loads item coded A or N;
  - (4) A steel bridge does not have Category E or E' fatigue details, as recorded by the Fatigue Details item coded N;
  - (5) All roadway vertical clearances are greater than or equal to 14'-0", as recorded in the Highway Minimum Vertical Clearance item;
  - (6) All superstructure materials limited to concrete and steel and all superstructure types limited to certain arches, box girders/beams, frames, girders/beams, slabs, and culverts, as recorded by the Span Material items coded C01-C05 or S01-S05, and the Span Type items coded A01, B02-B03, F01-F02, G01-G08, S01-S02, or P01-P02; and
  - (7) Stable for potential scour and observed scour condition is rated satisfactory or better, as recorded by the Scour Vulnerability item coded A or B and the Scour Condition Rating item coded six (6) or greater.
- (B) State transportation departments, Federal agencies, or Tribal governments that implement paragraph (a)(1)(iii)(A) of this section must develop and document an extended interval policy and must notify FHWA in writing prior to implementation. Factors to consider include structure type, design, materials, age, condition ratings, scour, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies.
- (2) **Method 2.** Inspection intervals are determined by a more rigorous assessment of risk to classify each bridge, or a group of bridges, into one of four categories, with inspection intervals not to exceed 12, 24, 48, or 72 months. The risk assessment process must be developed by a Risk Assessment Panel (RAP) and documented as a formal policy. The RAP must be comprised of not less than four people, at least two of which are professional engineers, with collective knowledge in bridge design, evaluation, inspection, maintenance, materials, and construction, and include the NBIS program manager. The policy and criteria which establishes intervals, including subsequent changes, must be submitted by the State transportation department, Federal agency, or Tribal government for FHWA approval. The request must include the items in paragraphs (a)(2)(i) through (vi) of this section:
- (i) Endorsement from a RAP, which must be used to develop a formal policy.
  - (ii) Definitions for risk factors, categories, and the probability and consequence levels that are used to define the risk for each bridge to be assessed.

- (iii) Deterioration modes and attributes that are used in classifying probability and consequence levels, depending on their relevance to the bridge being considered. A system of screening, scoring, and thresholds are defined by the RAP to assess the risks. Scoring is based on prioritizing attributes and their relative influence on deterioration modes.
    - (A) A set of screening criteria must be used to determine how a bridge should be considered in the assessment and to establish maximum inspection intervals. The screening criteria must include:
      - (1) Requirements for flexure and shear cracking in concrete primary load members;
      - (2) Requirements for fatigue cracking and corrosion in steel primary load members;
      - (3) Requirements for other details, loadings, conditions, and inspection findings that are likely to affect the safety or serviceability of the bridge or its members;
      - (4) Bridges classified as in poor condition cannot have an inspection interval greater than 24 months; and
      - (5) Bridges classified as in fair condition cannot have an inspection interval greater than 48 months.
    - (B) The attributes in each assessment must include material properties, loads and safe load capacity, and condition.
    - (C) The deterioration modes in each assessment must include:
      - (1) For steel members: Section loss, fatigue, and fracture;
      - (2) For concrete members: Flexural cracking, shear cracking, and reinforcing and prestressing steel corrosion;
      - (3) For superstructure members: Settlement, rotation, overload, and vehicle/vessel impact; and
      - (4) For substructure members: Settlement, rotation, and scour.
    - (D) A set of criteria to assess risk for each bridge member in terms of probability and consequence of structural safety or serviceability loss in the time between inspections.
  - (iv) A set of risk assessment criteria, written in standard logical format amenable for computer programming.
  - (v) Supplemental inspection procedures and data collection that are aligned with the level of inspection required to obtain the data to apply the criteria.
  - (vi) A list classifying each bridge into one of four risk categories with a routine inspection interval not to exceed 12, 24, 48, or 72 months.
- (3) **Service inspection.** A service inspection must be performed during the month midway between routine inspections when a risk-based, routine inspection interval exceeds 48 months.
  - (4) **Additional routine inspection interval eligibility.** Any new, rehabilitated, or structurally modified bridge must receive an initial inspection, be in service for 24 months, and receive its next routine inspection before being eligible for inspection intervals greater than 24 months.

- (b) **Underwater inspections.** Each bridge must be inspected at regular intervals not to exceed the interval established using one of the risk-based methods outlined in paragraph (b)(1) or (2) of this section.
- (1) **Method 1.** Inspection intervals are determined by a simplified assessment of risk to classify each bridge into one of three categories for an underwater inspection interval as described in this section.
- (i) **Regular intervals.** Each bridge must be inspected at regular intervals not to exceed 60 months, except as required in paragraph (b)(1)(ii) of this section and allowed in paragraph (b)(1)(iii) of this section.
- (ii) **Reduced intervals.**
- (A) State transportation departments, Federal agencies, or Tribal governments must develop and document criteria used to determine when intervals must be reduced below 60 months. Factors to consider include structure type, design, materials, age, condition ratings, scour, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle/vessel impact damage, loads and safe load capacity, and other known deficiencies.
- (B) Certain bridges meeting at least any of the following criteria as recorded in the NBI (see § 650.315) must be inspected at intervals not to exceed 24 months:
- (1) The underwater portions of the bridge are in serious or worse condition, as recorded by the Underwater Inspection Condition item coded three (3) or less;
- (2) The channel or channel protection is in serious or worse condition, as recorded by the Channel Condition and Channel Protection Condition items coded three (3) or less; or
- (3) The observed scour condition is three (3) or less, as recorded by the Scour Condition Rating item.
- (C) Where condition ratings are coded three (3) or less due to localized deficiencies, a special inspection of the underwater portions of the bridge limited to those deficiencies, as described in § 650.313(h), can be used to meet this requirement in lieu of a complete underwater inspection. In such cases, a complete underwater inspection must be conducted in accordance with paragraph (b)(1)(i) of this section.
- (iii) **Extended intervals.**
- (A) Certain bridges meeting all of the following criteria as recorded in the NBI (see § 650.315) may be inspected at intervals not to exceed 72 months:
- (1) The underwater portions of the bridge are in satisfactory or better condition, as recorded by the Underwater Inspection Condition item coded six (6) or greater;
- (2) The channel and channel protection are in satisfactory or better condition, as indicated by the Channel Condition and Channel Protection Condition items coded six (6) or greater;
- (3) Stable for potential scour, Scour Vulnerability item coded A or B, and Scour Condition Rating item is satisfactory or better, coded six (6) or greater.
- (B) State transportation departments, Federal agencies, or Tribal governments that implement paragraph (b)(1)(iii)(A) of this section must develop and document an underwater extended interval policy and must notify FHWA in writing prior to implementation. Factors

to consider include structure type, design, materials, age, condition ratings, scour, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle/vessel impact damage, loads and safe load capacity, and other known deficiencies.

**(2) Method 2.** Inspection intervals are determined by a more rigorous assessment of risk. The policy and criteria which establishes intervals, including subsequent changes, must be submitted by the State transportation department, Federal agency, or Tribal government for FHWA approval. The process and criteria must be similar to that outlined in paragraph (a)(2) of this section except that each bridge must be classified into one of three risk categories with an underwater inspection interval not to exceed 24, 60, and 72 months.

**(c) NSTM inspections.** NSTMs must be inspected at regular intervals not to exceed the interval established using one of the risk-based methods outlined in paragraph (c)(1) or (2) of this section.

**(1) Method 1.** Inspection intervals are determined by a simplified assessment of risk to classify each bridge into one of three risk categories with an interval not to exceed 12, 24, or 48 months.

**(i) Regular intervals.** Each NSTM must be inspected at intervals not to exceed 24 months except as required in paragraph (c)(1)(ii) of this section and allowed in paragraph (c)(1)(iii) of this section.

**(ii) Reduced intervals.**

**(A)** State transportation departments, Federal agencies, or Tribal governments must develop and document criteria to determine when intervals must be reduced below 24 months. Factors to consider include structure type, design, materials, age, condition, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies.

**(B)** Certain NSTMs meeting the following criteria as recorded in the NBI (see § 650.315) must be inspected at intervals not to exceed 12 months:

**(1)** The NSTMs are rated in poor or worse condition, as recorded by the NSTM Inspection Condition item, coded 4 or less; or

**(2)** [Reserved].

**(iii) Extended intervals.**

**(A)** Certain NSTMs meeting all of the following criteria may be inspected at intervals not to exceed 48 months:

**(1)** Bridge was constructed after 1978 as recorded in the NBI (see § 650.315) Year Built item and fabricated in accordance with a fracture control plan;

**(2)** All NSTMs have no fatigue details with finite life;

**(3)** All NSTMs have no history of fatigue cracks;

**(4)** All NSTMs are rated in satisfactory or better condition, as recorded in the NBI (see § 650.315) by the NSTM Inspection Condition item, coded 6 or greater; and

(5) The bridge's inventory rating is greater than or equal to the standard AASHTO HS-20 or HL-93 loading and routine permit loads are not restricted or not carried/issued, as recorded in the NBI (see § 650.315) by the Inventory Load Rating Factor item coded greater than or equal to 1.0 and the Routine Permit Loads item coded A or N;

(6) All NSTMs do not include pin and hanger assemblies.

(B) State transportation departments, Federal agencies, or Tribal governments that implement paragraph (c)(1)(iii)(A) of this section must develop and document an extended interval policy, and notify FHWA in writing prior to implementation. Factors to consider include structure type, design, materials, age, condition, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies.

(2) **Method 2.** Inspection intervals are determined by a more rigorous assessment of risk. The policy and criteria which establishes intervals, including subsequent changes must be submitted by the State transportation department, Federal agency, or Tribal government for FHWA approval. The process and criteria must be similar to that outlined in paragraph (a)(2) of this section except that each bridge must be classified into one of three risk categories with a NSTM inspection interval not to exceed 12, 24, or 48 months.

(d) **Damage, in-depth, and special inspections.** A State transportation department, Federal agency, or Tribal government must document the criteria to determine the level and interval for these inspections in its bridge inspection policies and procedures.

(e) **Bridge inspection interval tolerance.**

(1) The acceptable tolerance for intervals of less than 24 months for the next inspection is up to two (2) months after the month in which the inspection was due.

(2) The acceptable tolerance for intervals of 24 months or greater for the next inspection is up to three (3) months after the month in which the inspection was due.

(3) Exceptions to the inspection interval tolerance due to rare and unusual circumstances must be approved by FHWA in advance of the inspection due date plus the tolerance in paragraphs (e)(1) and (2) of this section.

(f) **Next inspection.** Establish the next inspection interval for each inspection type based on results of the inspection and requirements of this section.

(g) **Implementation.**

(1) The requirements of paragraphs (a)(1)(ii), (b)(1)(ii), and (c)(1)(ii) of this section must be satisfied within 24 months from June 6, 2022.

(2) Prior FHWA approved extended inspection interval policies will be rescinded 24 months after June 6, 2022.