



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

MEMORANDUM TO: Bridge Inspection Staff
Structure Inventory and Appraisal Staff

FROM: B. C. Hanks, P. E.
State Structures Engineer

DATE: August 23, 2024

SUBJECT: Risk Based Bridge Inspection Intervals - Method 1

In accordance with 23 CFR part 650 subpart C, the National Bridge Inspection Standards (NBIS), NCDOT– Structures Management Unit (SMU) establishes risk-based bridge inspection intervals. By extending inspection intervals of select low-risk highway structures, SMU can reallocate inspection resources to enhance the monitoring and documentation of moderate to high-risk structures. 23CFR§650.311(a)(1) – Method 1, provides guidance on classifying three categories of inspection intervals: regular intervals, reduced intervals and extended intervals.

For regular intervals, the regulations stipulate that each bridge must be inspected at intervals not to exceed twenty-four (24) months. Most bridges in the State inventory will default into the regular interval category. Inspection types that will not exceed twenty-four months for regular intervals include Routine (topside) inspections and NSTM inspections. Underwater inspections must not exceed sixty (60) month regular intervals; however, SMU typically schedules these inspections at forty-eight (48) month intervals.

Additionally, the regulations require a policy for reduced intervals and allows for extended intervals as well. On June 1, 2024, NCDOT implemented the following criteria to determine the appropriate inspection interval for structures in the State inventory. Coding items for both the Specifications for the National Bridge Inventory (SNBI), shown in parenthesis, and Federal Coding Guide, shown in brackets, are provided to help manage the transition of data collection and compliance with this policy.

Reduced Intervals:

1. When any of the following criteria are met, the routine inspection interval shall be ≤ 12 months.
 - a. Any of the general condition ratings (Items B.C.01-03 or B.C.04) [Items 58-60, or Item 62] ≤ 3 .
 - b. Scour Condition Rating (Item B.C.11) [Item 113] ≤ 3 .
2. When any of the following criteria are met, the underwater inspection interval shall be ≤ 24 months.

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Location:
1000 BIRCH RIDGE DRIVE
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- a. Underwater Inspection Condition (Item B.C.15) [Item 60] ≤ 3 .
 - b. Channel Condition (Item B.C.09) ≤ 3 , [Item 61] ≤ 5 .
 - c. Channel Protection Condition (Item B.C.10) ≤ 3 , [Item 61] ≤ 5 .
 - d. Scour Condition Rating (Item B.C.11) [Item 113] ≤ 3 .
3. The non-redundant steel tension member (NSTM) inspection interval shall be ≤ 12 months when the NSTM Inspection Condition (Item B.C.14) ≤ 4 , [Item 59 or 60] ≤ 4 due to an NSTM member.

Note that where a reduced inspection interval is required due to localized deficiencies, a special inspection (cursory review of the structure, but detailed inspection of the localized deficiencies) may be used to meet this requirement.

Extended Intervals:

1. When all the following criteria are met the routine inspection interval may be extended up to 48 months.
 - a. All general condition ratings (B.C.01-03 or B.C.04) [Items 58-60, or Item 62] ≥ 7 .
 - b. Channel Condition (Item B.C.09) [Item 61] ≥ 6 .
 - c. Channel Protection Condition (Item B.C.10) [Item 61] ≥ 6 .
 - d. Inventory Load Rating Factor (Item B.LR.05) ≥ 1.0 , [Item 66] ≥ 36 tons.
 - e. No restrictions for routine permit loads (Item B.LR.08) = A or N.
 - f. No fatigue prone details (category E or E') (Item B.IR.02) = N.
 - g. Highway Minimum Vertical Clearance (MVC) (Item B.H.13), [Items 53 and 54B].
 - i. MVC $\geq 16'-0"$ for bridges over an interstate, freeway, and other arterial.
 - ii. MVC $\geq 14'-0"$ for local roads and collectors.
 - h. Materials for the primary elements of the superstructure are limited to concrete and steel, except as noted below.
 - i. Span Material (Item B.SP.04) = C01-C05 or S01- S02, [Items 43A and 44A] = 1, 2, 3, 4, or 5.
 - ii. No prestressed concrete channel beams.
 - i. Superstructure span types are limited to certain steel and concrete girders/beams, box beams, cored slabs, soil-filled arches, and three- or four-sided box culverts, as listed in the following coding items.
 - i. Span Type (Item B.SP.06) = A01, B02-B03, F01-F02, G01-G08, P01-P02, or S01-S02, [Items 43B and 44B] = 01, 02, 05, or 19.
 - ii. No NSTM members (B.IR.01) [Item 92A] = N.
 - j. Materials for the primary elements of the substructure are limited to:
 - i. Concrete for water crossings.
 - ii. Concrete or steel for grade separations.
 - k. Scour Vulnerability (Item B.AP.03) = A or B, [Item 113] = 5 or 8.
 - l. Scour Condition Rating (Item B.C.11) ≥ 6 . [NC Scour Grade] = Good or Fair.
 - m. Age ≤ 50 years. (Calculate using Item B.W.01) [Item 27].
2. New and newly rehabbed structures will not be eligible for an extended inspection interval until the initial inspection and at least one routine inspection has been completed.

The inspection interval for each bridge will be re-evaluated after each inspection. In addition, SMU will evaluate the entire structure inventory annually to ensure all structures coded for reduced or extended inspection intervals meet the conditions outlined in this policy.

SMU typically surveys and inspects structures in areas affected by extreme events. The current practice of performing damage inspections on structures impacted by extreme events will continue.

NCDOT assists local governments or municipalities with inspection of their NBI structures. The general inspection history of locally owned and maintained structures does not warrant eligibility for extended inspection interval.

BCH/GM/DNS

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