



Connecticut DOT

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## ENGINEERING BULLETIN

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Division Chief, Bridges

### Revisions to Bridge Inspection Manual

As described in Bridge Safety Memo 2018-2, the criteria for In-Depth inspections is now revised. The new definition of In-Depths focuses on individual bridge components only, rather than a “hands-on” inspection of the entire bridge. In-depth requirements only apply to bridges with an NBIS length of more than 20 feet. The CTDOT Bridge Inspection Manual (BIM) will be updated in the future to include the outlined changes.

#### Definitions:

Key Feature - a roadway, parking lot, pedestrian walkway or other area of foot traffic, active railroad line or waterways likely to be used for boating or other activities

Suspect Areas - an area of a concrete element with suspected delamination, or showing evidence of cracking, scaling, dampness or efflorescence

The following components will require periodic in-depth inspections, with the suggested interval in months shown in parentheses (intervals may vary, based on structural condition rating, special design features or materials, etc., based on the judgement of the Engineer. In-depths will generally be performed concurrently with the Routine inspection):

#### Concrete Decks and Superstructures (120)

- Bare decks shall be chain dragged, or tested by other means.
- 100% of haunches shall be sounded over key features.
- 100% of suspect areas over key features shall be sounded, plus 25% of areas over key features showing no apparent deterioration. Suspect areas on exterior faces of parapets and/or substructure units over key features shall also be sounded 100%.

#### Metal Decks (120)

- Metal grid decks (open or filled) shall be inspected 100% hands-on.

#### Steel Pins (120)

- Ultrasonic testing (UT) of pin and hanger assemblies, along with other types of fracture critical rods and/or bars, in load path non-redundant structures (2 or 3 girders) or where they are not retrofitted with a redundant support system (catcher’s mitt, etc.). Stainless steel pins will not require UT unless directed by the Supervising Engineer. will also be considered for UT.

#### Steel Multi-Girders (120)

- An in-depth will be scheduled only if there are fatigue prone locations (cover plate ends, diaphragm or lateral bracing connection plate welds to webs, etc.) that are difficult to inspect and would require special equipment or lane closures to access, or were otherwise not inspected hands-on over a 120-month cycle.

Alternately, a hands-on inspection of the entire superstructure may be scheduled where record keeping for each inspection would be too complex.

#### Steel Girder and Floorbeam Systems/ Trusses/ Open Spandrel Steel Arches/ Steel Cross Girders (120)

- UT of all transverse, full penetration groove welds found in tensile zones of fracture critical members. Also, if any welded detail on the bridge has experienced fatigue cracking in the past, all similar details shall be considered for testing, as determined by the Supervising Engineer.
- Bridges carrying limited access highways - In addition to requirements for routine inspections, all welded connections shall be inspected hands-on.

#### Steel Box Girders (120)

- In addition to requirements for routine inspections, all external diaphragms and bracing, including connections, shall be inspected hands-on.

#### Steel Expansion Bearings (120)

- Measurements of all lines of steel expansion bearings for spans greater than 50 feet shall be taken and recorded on the appropriate sheet in Chapter 6 of the BIM. Typically, the fascia beams and one interior beam near the center will be measured and recorded per bearing line.

#### Scour Critical Structures (24)

- Bridges with Item 113 rated 3 or lower shall have a full channel plan sketch with soundings shown in representative locations. Additionally, soundings shall be shown along all substructure units on elevation view sketches.

#### Other (24-120)

- Any other details/locations as determined by the Transportation Engineer 3 and concurred by the Supervising Engineer. Note the locations and the inspection method required in the In-Depth Tracking form in SMS.

Each bridge requiring in-depth inspection on one or more of the components listed above shall have the In-Depth Tracking form filled out and included with the inspection report, as appropriate. Any special inspection methods or access requirements shall be included with the description. The information shall be checked and updated at each inspection, including proposed dates and date of most recent in-depth inspection for each component. In-depths that are no longer required will be deleted as necessary. The form will be included immediately after the Location Map in the PDF output report for each inspection. Bridges with no in-depth requirements will not include the form in the report.

The Bridge Inspection Manual will be updated to reflect these changes in the future.