

## FRACTURE CRITICAL BRIDGE INSPECTION PROCEDURE

- PURPOSE:** To establish a formal policy and procedure for inspecting and noting fracture critical members in accordance with the requirements of 23 CFR Part 650, Subpart C, National Bridge Inspection Standards (NBIS).
- SCOPE:** This Directive applies to all bridges that have fracture critical members. Fracture Critical Member is defined as: *A steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse.*
- POLICY:** It is the policy of this Department that all bridges that have fracture critical members be inspected in accordance with 23 CFR 650.311 (c) and that all inspection details be properly noted.
- PROCEDURE:** Inspections begin with advance planning based on an office review of structural plans, the aspects that should be obtained from this review are
- Identify FC members
  - Note any members that may require special field attention, such as built-up tension members
  - Plan means of necessary access to the members
  - Make available any special tools and equipment necessary to perform the inspection such as, nondestructive testing tools, cleaning equipment, etc.

Field inspections will be conducted based on member type and in accordance with the procedures stated in the NHI Fracture Critical Inspection Techniques for Steel Bridges, Manual (FHWA-NHI 02-037, Rev. March 2006 or most current). Below is a summary table of contents for the applicable portion of the NHI manual:

Section 4, Inspection Procedures:

- 4.2 I-Girders and Floorbeams
- 4.3 Trusses
- 4.4 Box Girders
- 4.5 Pin and Hanger Assemblies
- 4.6 Arch Ties
- 4.7 Eyebars
- 4.8 Cross Girders/Steel Pier Caps

Additional inspection procedure information can be found in the AASHTO Manual for Bridge Evaluation (Sec. 4.8).

The districts will not be responsible for performing inspections involving specialized Nondestructive Testing. In-depth inspections of this nature will be managed by the Headquarters Bridge Maintenance Section. The ADA of Operations shall submit written request to the Structures and Facilities Maintenance Engineer when such testing is deemed necessary. Specialized NDT

does not include dye penetrant, which should be regularly used by the inspectors in appropriate applications.

#### DOCUMENTATION

FC member inspection details will be documented in the element notes in PONTIS. The following is the required minimum documentation:

1. In the element note for a particular FC member, state that the **member is fracture critical** or **contains fracture critical details**.
2. The location of FC member on the bridge and the method of access to the member.
3. The method of FC member inspection such as visual and/or nondestructive testing; stating the type of NDT used.
4. Date of the inspection and inspector's name.
5. Findings
  - A) If NO cracks/defects are found, explicitly state so in the element notes that "No defects were found".

B) If cracks/defects are found record the following details:

- a. General location of crack with respect to entire bridge and EXACT location on the member
- b. Original dimensions and details of the member containing the crack/defect along with dimensions and details of modifications to the member.
- c. The date and weather condition when the crack/defect was first detected, confirmed by NDT, and reexamined. (subsequent inspections)
- d. Label the member with the date of inspection and initials of a certified inspector using permanent marker. (Be sensitive to aesthetics at prominent areas)
- e. Provide detailed sketches of crack that show length, width, depth AND photographs of crack.
- f. Noticeable conditions of the crack when exposed to live load such as lengthening, opening and closing, distortions.
- g. The general condition at the location of the crack such as corrosion, dirt, debris, traffic impact, steel type. (if available)

LA DOTD BRIDGE MAINTENANCE  
DIRECTIVE #12  
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**RESPONSIBILITY:** The DOTD District ADA of Operations shall be responsible for the implementation of this policy.

**EFFECTIVE DATE:** This Directive shall become effective immediately upon receipt.

SLS

Recommend Approval  
Bridge Inspection Engineer (SEC. 51)

ORM

Recommend Approval  
Structures and Facilities Administrator (SEC. 51)



Approved  
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