

# **Policies and Procedures**

## DelDOT Bridge Inspection Policies & Procedures

### Inspection Activity Related Timeline

#### Bridge Inspection, Rating, Reporting, and Load Posting Timeline

Activity	Time Constraint
Inspect the bridge	Previous inspection date + Inspection frequency +/- 30 calendar days
Prepare Reports (Pontis, photos, sketches)	Within 4 work days of the Inspection Date
Download the Inspection Report	Within 7 calendar days of the Inspection Date
Submit Maximo work orders	Within 7 calendar days of the Inspection Date
Update Load Ratings	Within 14 calendar days of the Inspection Date
Submit Critical Bridge Action Form	Within 14 calendar days of the Inspection Date
Sign the Inspection Report	Within 21 calendar days of the Inspection Date *
Prepare and submit Load Posting Resolution	Within 30 calendar days of the Inspection Date
Distribute Signed Load Posting Resolution	Within 60 calendar days of the Inspection Date
Verify Placement of Posting Signs	Within 90 calendar days of the Inspection Date

\* note: for consultant inspections, and other owners, this time may be within 180 days of the inspection date.

### Pontis Computer Work:

- Inspection teams are to review each other's work to verify the following:
  1. All proper Pontis elements have been selected from DelDOT's Pontis Manual
  2. All elements have been rated in accordance to the condition state language in the manual
  3. Span numbering shall be in the direction of the "forward" milepoint direction obtained from RIMS for new bridges. This typically will result in either south-north or west-east. In the case of new "twin" bridges, both bridges are to be numbered in the same "forward" direction as the bridge that comes first. For existing bridges leave them as they are for consistency with previous reports.
  4. Beams, bearings, piles, diaphragms and bay numbering for new bridges will be from left-right while facing in the "forward" direction. Leave existing bridges as they are for consistency with previous reports.
  5. Quantities for Pontis elements are to be verified for any obvious mistakes – **it is not required of the inspection teams to re-measure all elements for each bridge!**
  6. MSPE Sheets for multi-span bridges has been properly completed and reviewed.
  7. Verify that the Comments in Pontis and/or in the MSPE sheets matches the quantities entered for the various condition states for each element.
  8. Calculate any scale factors (if applicable)
  9. All scour related info has been entered into Pontis Scour Info page under the Agency tab
  10. Regarding the Inspection Notes tab in Pontis, the inspectors are to document which duties each of the inspection team members were responsible for during each inspection. The following abbreviations are to be used;
    - Inspection: (I)
    - Scour Sketch sheet and Scour Sounding: (S)
    - Photos: (P)
    - Under Record Sketch sheet: (U)
    - Review of report: (R)
    - UBIV Deckman: (D)

UBIV Operator: (O)

Beam Sheet: (B)

11. Document in the Insp. Notes tab any required Maximo maintenance that needs to be sent in accordance with items listed in the Pontis Manual. Maintenance items not listed in the Pontis Manual, need to be discussed and verified with the Pontis Maintenance Engineer (Calvin) before being sent in Maximo.
12. In regards to UBIV inspections, inspectors need to enter the appropriate UBIV inspection info located in the Agency tab of Pontis.

**Photos:**

- Inspection Teams will download and attach all of their inspection photos for each bridge using the “Inspect” program. Procedures for using the ‘Inspect’ program will be located on the g drive. The photos are not to be deleted from the camera – they will still be downloaded and saved by the BIE as backup.
- Inspection teams are required to get 5 (or 6 if applicable) standard photos for each bridge:
  1. Approach Roadway (both Approaches if an inventory inspection)
  2. Elevation View (both Elevations if an inventory inspection)
  3. General View
  4. Upstream or Under Record
  5. Downstream or Under Record
  6. Bridge Plaque
  7. Vertical Underclearance Signs (if applicable)
  8. Load Posting Signs at the structure (if applicable)
- In addition to the standard photos, inspection teams are to take photos of any condition state of a ‘3’ or higher for each Pontis element type. If multiple CS3’s exist for the same type of element throughout the bridge, the worst-case scenario shall be photographed at a minimum. Other photos can be taken as deemed necessary by the inspection team, no matter the condition state or location. Also, anything that requires a maximo request, no matter the condition state, shall have a photo taken as well.
- **Please do not take a photo in the “portrait” position unless absolutely necessary – take all photos in the “landscape” position.**
- Please handle cameras with care and store camera in case when not in use so as to lessen the chance of an accident with the camera from happening.
- In regards to discrepancy photos, inspectors or to use either a tape measure or a 6’ rule as a scale in the photo.
- The team member responsible for taking photos is to put their initials first in the photo log.

**Scour Sketch Sheet:**

- All Scour Sketch sheets are to be drawn out in the field during the inspection. **Photo copied elevations and plan views from the bridge drawings/plans can be used, but must be clear & legible.**
- The team member responsible for the Scour Sketch sheet is to put their initials first on the sheet.
- Scour sketches should include all, but not limited to, the following items:
  1. Plan View of bridge including adjacent areas and general features
  2. Elevation View (write which elevation view is being drawn)
  3. North Arrow
  4. Flow line/arrow

5. Under clearance measurement
6. Depth of water (include the average depth, max depth and max depth of any scour holes)
7. Upstream & Downstream Bank conditions
8. Sediment buildup
9. Debris Accumulation at or affecting the bridge
10. Scour limits and depths on both the elevation & plan view sketches
11. Bridge structure details
  - a) Show footer and dimension the thickness of footer
  - b) Show piles if applicable
  - c) Show any type of sheeting along abutments or piers if applicable (dimension the height of the sheeting)
  - d) Show dimension from top of footer to bottom of superstructure
  - e) Show depth of toe wall for apron or a floored culvert
12. Any type of scour countermeasure or bank protection that is observed during the inspection

There is no limit as to how many times a Scour Sketch can be reused, as long as it is clear, legible and shows all pertinent information. A team leader or member may choose to create a new one if the previous sketch is inadequate or getting difficult to understand what is going on. Before the inspection – the team leader shall make sure that there is a copy of the previous sketch sheet in the file. During the inspection, the existing date & inspection teams’ initials are to be erased from the pencil copy of the sketch and edited accordingly.

#### **Scour Sounding Sheets:**

- Scour Sounding sheets are to be done for every “Scour Critical” Bridge (NBI Item #113 = 3) during each routine inspection. Refer to the notes on the back of the Scour Sounding template for detailed instructions.
- The initials of the inspector who was responsible for the Scour Sounding sheet should be listed first on the sheet.
- The BIE will input the sounding info from the inspection teams’ Scour Sounding Sheet when downloading Pontis and photos.

#### **Under Record Sketches:**

- An under record sketch sheet is to be completed out in the field for bridges over highways and/or railroads during each biennial-routine inspections (typically 24 months). The Team Member responsible for the sketch sheet shall make note of any specific issues; ex. A new sign panel had been attached, a utility pipe might have separated and is sagging, or a new overlay had been placed on the Under Route.
- The elevation view that is drawn on the sketch should be labeled; ex. – North Elevation or South Elevation
- The vertical and lateral underclearances should be measured and recorded on the sketch sheet in accordance with the NBI coding guide.
- Vertical clearance measurements are required along both faces of the bridge @ each edge of travel lane.
- The under record sketch should be dated and the inspectors’ initials should be on the sketch, with the first set of initials being that of the inspector responsible for the sketch during the inspection.
- If vertical measurements are not feasible to obtain due to safety or traffic conditions, the measurements need to be determined from some other sort of method:
  1. Shoot down with the laser from the deck of the bridge @ each required location

## 2. Determine from plans

- **Incomplete Under Record Sketches, no matter what the circumstance, will not be acceptable!**

### **Beam Sheets:**

- Bridges with beams (steel, p/s concrete, r/c concrete, wood/timber, composites) that are found to have the worst condition states (ex. Painted Steel would be a CS5) requires a beam sheet or detailed sketch with critical dimensions and measurements. In some instances, a drawing would be better suited to describe the locations and severity of the problems.
- Beam sheets are typically done for prestressed box beams and prestressed AASHTO I-beams, although in some instances, beam sheets may be used for steel bridges as well.
- Beam sheets are to be dated and the inspector's initials should be noted.

### **Fracture Critical Inspections:**

All Fracture Critical Inspections are to be a "hands-on" type of inspection for all Fracture Critical Members (FCM's) and Fatigue Prone Details (FPD's) of a Category E Type or higher. All other bridge components or members can either be hands-on or visual, however, a hands-on is typically utilized and recommended. All Fracture Critical Inspections are to consist of at least a three-man inspection crew – this does not include the deckman (in the case of an UBIV inspection). For DelDOT in-house inspections, one of the inspection members shall be the Bridge Inspection Engineer (BIE). The BIE serves as a "third set of eyes" to oversee the inspection work and will perform QA/QC of the inspection while out during the inspection. The BIE will also perform QA/QC checks during the report write-up while out on site, as well as in the office after everything has been downloaded. This is done so as to meet one of the six NBIS requirements for fracture critical member (FCM) inspections. Enough time shall be allocated for the inspection to allow for a thorough inspection and detailed report

Prior to the date of inspection, the Inspection Team Leader shall make a copy of the "Fracture Critical Detail Sheet(s) that are to be used during the inspection. These sheets shall be kept in the main "Active" file and the original shall always be on top with the most recent inspection behind it – so on and so on. The copy will be used during the inspection to make notes including the following:

- Note deterioration and defect locations
- Identify any areas where dye-penetrant testing was performed
- Identify any areas that were not accessible at the time of the inspection
- Inspection Teams initials and date(s) shall be clearly marked in the upper right-hand corner of the first sheet
- Sketches of various details and/or deterioration – on an as-needed basis
- Impact damage locations if applicable
- Any other misc. information that might be useful

It is required for the inspection team to have, on hand at the time of inspection, a copy of "Fracture Critical Inspection Techniques for Steel Bridges" workbook/manual. It shall be noted in the Pontis Agency tab as to whether or not a boat, bucket truck and/or UBIV were needed for the inspection. Any important information, such as noting certain portions of bridge were not accessible, shall be mentioned in the "Inspection Notes" section of the "Notes" tab in Pontis.

### **Load Rating:**

- Any structural element that has a Pontis condition rating that contains the phrase "warrants analysis" shall have the load ratings evaluated by an engineer.