|  |  |
| --- | --- |
| **MDT Structure ID** |  |
| **NBI Structure ID** |  |
| **Inspection Frequency** |  |
| **(6A) Feature Intersected** |  |
| **(7) Facility Carried** |  |
| **(9) Location** |  |
| **Latitude** |  |
| **Longitude** |  |
| **Inspection Procedures Update Info** |
|  **Procedures Edited Date** |  |
|  **Procedures Edited By** |  |

1. **FRACTURE CRITICAL (FC) INSPECTION PROCEDURE**

*Example:*

1. *Review the following documents in SMS and discuss any questions with MDT:*
	1. *FC inspection Procedure*
	2. *Previous inspection report*
	3. *Most recent underwater inspection report if applicable*
	4. *Any other Special inspections or Repair items occurring since the most recent fracture critical inspection.*
2. *Team leader holds a pre-inspection meeting to review procedure with team*
3. *Notify MDT contact of anticipated inspection schedule*
4. *Once team arrives onsite, team leader reviews safety risks and precautions with team before beginning inspection work.*
5. *Traffic control set up*
6. *Team members perform inspection roles as directed by team leader and according to FC inspection sequence:*
7. *Once inspection of all elements is complete, Onsite QC review performed.*
8. *Immediately notify MDT contact of any critical findings*
9. **ON-SITE SAFETY RISKS AND PRECAUTIONS**

*Examples:*

* *Loose riprap at Abutment 2 is a falling hazard*
* *Poor vertical sight distance on approach to the North*
* *High voltage lines present onsite*
* *Small roadway shoulder provides poor parking and staging areas*
* *Wildlife (Osprey nest, or other?)*
1. **TRAFFIC CONTROL MEASURES NEEDED**
2. **EQUIPMENT NEEDED FOR ARM’S LENGTH INSPECTION OF FC MEMBERS**
3. **MANPOWER NEEDED FOR ARM’S LENGTH INSPECTION OF FC MEMBERS**
4. **STAGING AREAS AND ACCESS LOCATIONS**

*In addition to a written description, an aerial photo (i.e. Google Earth screenshot) is preferred*

*Example:*

*The gravel shoulder along the west approach roadway was used to park inspection vehicles and stage inspection equipment. Sight lines were good from both directions; however, caution should still be used. Advanced warning signage was placed approximately 100 yards from bridge in both directions.*



1. **NOTIFICATION REQUIRED FOR LOCAL AGENCIES**

*Examples:*

*No notification required for local agencies*

*Fresno Reservoir Spillway – contact BLM and Sherriff*

*Indian Reservations – detail applicable requirements (i.e. business license, work permits, timelines)*

1. **PREVIOUS REPAIRS, RETROFITS, CRITICAL FINDINGS, AND FC RISK FACTORS**

|  |  |  |
| --- | --- | --- |
|  | **Risk Factor** | **Comment** *(required if risk factor is applicable)* |
| [ ]  | Fatigue and fracture prone details |  |
| [ ]  | Problematic materials |  |
| [ ]  | Poor welding techniques |  |
| [ ]  | Potential out-of-plane distortion details |  |
| [ ]  | Previous cracking or repairs *Indicate source of prior cracking* |  |
| [ ]  | Cold service temperatures |  |
| [ ]  | Superstructure condition of 4 or less |  |
| [ ]  | Subject to overloads or impact damage |  |
| [ ]  | Load posted  |  |
| [ ]  | Older service life |  |
| [ ]  | Debris |  |
| [ ]  | High ADTT *(i.e. ADTT > 5,000)* |  |

*Example – if not captured above in the above table, include any issues noted during previous inspections as potential issues that should be closely inspected during subsequent inspection.*

Additional factors identified as potential issues during previous inspections that should be closely inspected during subsequent inspections:

1. **GENERAL INSPECTION PROCEDURE COMMENTS**

*Examples:*

* *Describe any NDT testing techniques that are required (i.e. dye penetrant, magnetic particle, etc)*
* *Notes about bridge orientation/numbering (i.e. truss panel points are labeled West to East, L0 – L3 – L0’)*
* *Excessive bird dropping hinder adequate inspection of critical members. Contact MDT and recommend to removal/cleaning prior to inspection*
* *Utility pipe requires aid to climb around*
* *4 floor beams and panel points are easily inspected from ground*
* *All floor beams require aid 6 times per floor beam*
* *Significant section loss to stringer ends. Start on stringer ends.*
1. **FRACTURE CRITICAL MEMBER INSPECTION SEQUENCE**

*General sequence is acceptable, but it’s encouraged to include a more detailed sequence description if warranted by level of complexity.*

*Example (general sequence):*

T*he following tasks should be performed as part of the bridge inspection:*

* *Mobilize to site and set-up signage at each end of the bridge to warn oncoming motorists.*
* *Hands-on inspection of all primary members in the plane of the primary truss lines, and secondary bracing member connections.*
* *Cursory inspection of secondary bracing members, with hands-on inspection of any noted deficiencies.*
* *Hands-on inspection of floor beams, floor beam-to-stringer connections, and stringer ends supported by substructure units. Cursory inspection of all other floor system elements.*
* *Inspection notes and photographs of any noted deficiencies*
* *Required photos of approaches, portal view, elevation view, underside of superstructure and any posting signs with bridge in background.*
* *Element level inspection and NBI inspection of approach spans and substructure elements*

*During the inspection, the bridge should be inspected for:*

* *Steel deficiencies including corrosion, section loss, cracking of welds or base metal, bolting or welding issues, and load induced distortion or damage*
* *Concrete deficiencies including delamination, spalls, patched areas, exposed rebar, cracking, abrasion, wear, and load induced distortion or damage*
* *Timber deficiencies including checking, splitting, decay or section loss, distortions, cracks, shakes, and abrasions*
* *Substructure deficiencies including wingwall tipping, settlement, and scour*
* *Bearing deficiencies including corrosion, connection issues, movement, alignment, loss of bearing area, and damage*
1. **SKETCH OF BRIDGE WITH FRACTURE CRITICAL MEMBERS (FCM) IDENTIFIED IN RED**

*Show both truss elevation and floor system plan views. Two different examples shown below, either format is acceptable. Key things – make sure spans are labeled, indicate stream flow direction on floor system plan, only color present should be red to indicate fracture critical members. Please include a screenshot of the diagrams in the Inspection Procedures word document (rather than a separate document).*

The following diagram shows all Fracture Critical Members (FCMs) in red. FCMs shall be inspected at arm’s length per FHWA Requirements:

*Example #1:*



**Span 3 Truss Elevation**



**Span 3 Floor System**

*Example #2:*

**Span 1**

**Span 2**

**Span 3**

**Span 4**