



IN REPLY REFER TO
FILE NO.

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
INTRADEPARTMENTAL CORRESPONDENCE

January 3, 2023

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MEMORANDUM

TO: ASSISTANT DISTRICT ADMINISTRATOR - OPERATIONS

FROM: HAYLYE BROWN, P.E. ^{DS} *HB*
STRUCTURES & FACILITIES ENGINEER ADMINISTRATOR

RE: SNBI CHANGES TO INSPECTION FORMS

The purpose of this memorandum is to serve as notification of the following changes, effective immediately, to Inspection forms due to the SNBI.

Notable changes:

1. Please see the attached Routine Inspection Input Form. A new section "SNBI Condition Ratings" has been added in the center of the form.
 - a. The Scour Condition Rating shall be collected as part of the routine inspection as shown on the attached SNBI Scour Condition Rating (Pg. 263)
 - b. The Channel Condition Rating shall be collected as part of the routine inspection shown on the attached SNBI Channel Condition Rating (Pg. 259)
 - c. The Channel Protection Condition Rating shall be collected as part of the routine inspection as shown on the attached SNBI Channel Protection Condition Rating (Pg. 261) only if channel protection devices exist. Otherwise, this will be coded N.
 - d. The NSTM Condition Rating shall be collected as part of the routine inspection as shown on the attached SNBI Table 20 (Pg. 240) only if NSTM (Fracture Critical) elements exist. Otherwise, this will be coded N.
 - e. SNBI Table 20 (Pg. 240) shall also be used for Deck, Superstructure, Substructure, and Culvert Condition ratings already being collected as part of the routine inspection. There should be minimal changes due to this.
 - f. The underwater condition rating will be carried over from the previous Underwater inspection and shown on the routine form. It will be locked and unable to be changed as part of the routine inspection.

2. A new Phase 1 Scour Assessment form has been developed for the new SNBI coding and is also attached. Please have the Parish submit this form when submitting plans and load rating information for a new bridge add. The form will be available on the Bridge Maintenance website.

Should you have any questions, please contact Stephanie Doolittle at (225) 379-1329.

HGB: SSD

Cc: Mr. David Miller
Mr. Todd Donmyer

ROUTE	CON / SC	LOG MI.	ID	CROSSING DESCRIPTION	TYPE	YR BUILT	LENGTH

INSPECTION DATES

190 ROUTINE DATE 191 ROUT INSP FREQ

192A FCM INSP REQ 193A FCM INSP DATE

192C INTERIM INSP REQ 193C INTERIM INSP DATE

DATE NEXT DOTD INSP TYPE NEXT

Num Inspectors Man-hours

Team Leader

CONDITION RATINGS

DECK SUPER SUB

CULVERT CHANNEL PIER PROT

INSPECTION DETAILS

Posted Load NBI 41 Open/Closed/Posted

Surface Thickness (in) UWI Needed (Previously not required)

NBI 113 Scour Critical 192B UWI

SNBI CONDITION RATINGS

SCOUR CHANNEL CHANNEL PROTECTION

NSTM (FC) UNDERWATER

APPRAISAL RATINGS

BRDG RAIL TRANS

APPR GDRL GDRL ENDS

WW ADQ APPR ALGN

SPECIAL (FCM) DETAILS

Pin & Hanger Assembly

2 - Girder System

2 - Truss System

Suspended Span

X-Girder / Floorbeam

Steel Pier Cap

ACCESS EQUIPMENT (HRS)

Access Equip - UBI

Access Equip - BT/ML

Access Equip - Boat

Access Equip - Ladder

Access Equip - Scaffold

DATE NEXT PARISH INSP**SPECIAL INSP DATE****INSPECTION COMMENTS**

7.1 – COMPONENT CONDITION RATINGS

<i>Scour Condition Rating</i>		
Format AN (1)	Frequency EI	Item ID B.C.11
Specification		
Report the scour condition that represents the observed or measured scour using one of the following codes. The entire code description must be satisfied for the code to apply.		
Code	Condition Description	
N	Bridge does not cross over water.	
9	No scour.	
8	Insignificant scour.	
7	Some minor scour.	
6	Widespread minor or isolated moderate scour.	
5	Moderate scour; strength and stability of the bridge are not affected.	
4	Widespread moderate or isolated major scour; strength and/or stability of the bridge is affected.	
3	Major scour; strength and/or stability of the bridge is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.	
2	Major scour; strength and/or stability of the bridge is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions to keep the bridge open.	
1	Bridge is closed to traffic due to scour condition. Channel rehabilitation may return the bridge to service.	
0	Bridge is closed due to scour condition, and is beyond corrective action. Bridge replacement is needed to restore service.	
Commentary		
<p>Refer to Item B.AP.03 (<i>Scour Vulnerability</i>) to verify if the bridge has been determined to be stable or unstable for appraised scour conditions.</p> <p>Consider design scour depth and critical scour depth, commonly found in hydraulic designs, scour evaluations, and POAs, when determining the scour condition ratings.</p> <p>When observed conditions are not consistent with the scour design or the assumptions used in the scour appraisal, this indicates a need to reevaluate Item B.AP.03 (<i>Scour Vulnerability</i>).</p>		

7.1 – COMPONENT CONDITION RATINGS

Examples – Scour Condition Rating

Description: Three span scour critical bridge founded on spread footings not on bedrock. The scour elevation for three spread footings at Pier 2 is at the bottom of the footings with one footing having one foot of undermining at one corner. Agency plans to monitor more frequently to keep the bridge open until repairs are completed.



Severity: Major
Extent: 3 of 6 pier footings

Figure 153. Exposed column footing in stream.

Results: The scour condition is best characterized as “major scour” that necessitates more frequent monitoring. Bridge is seriously affected. Report 3.

Description: Scour critical bridge. Critical scour limit was established in the Plan of Action. Inspectors measured the following streambed cross-section (*Figure 154*).

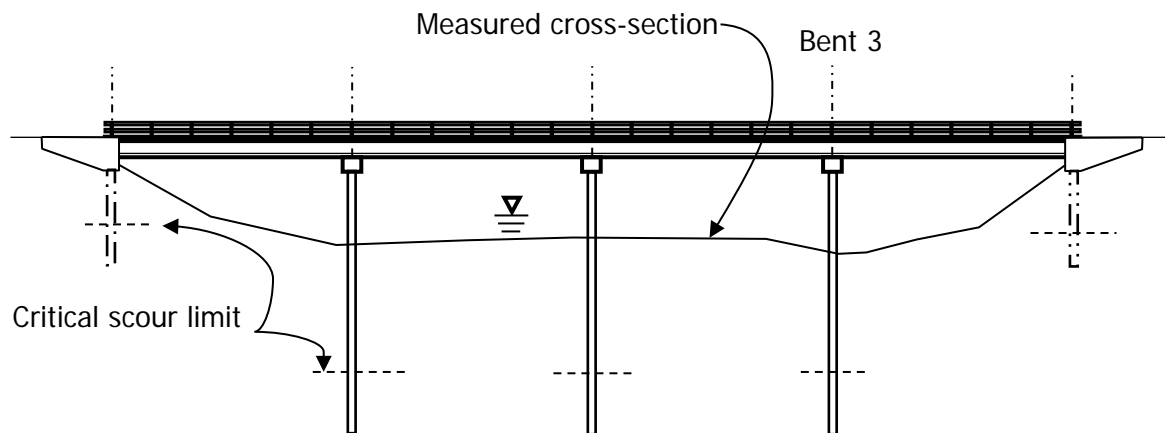


Figure 154. Elevation view showing scour elevations and stream cross-section for a bridge.

Severity: Minor (scour at Bent 3, does not exceed tolerable limit)
Extent: One of five substructure units (Isolated).

Results: The scour condition is best characterized as “isolated minor scour.” Report 7.

7.1 – COMPONENT CONDITION RATINGS

Examples Continued – Scour Condition Rating

Description: Scour critical bridge. Critical scour limit was established in the Plan of Action. Inspectors measured the following streambed cross-section (*Figure 155*), which indicates a scour depth at one bent that is below the critical scour elevation.

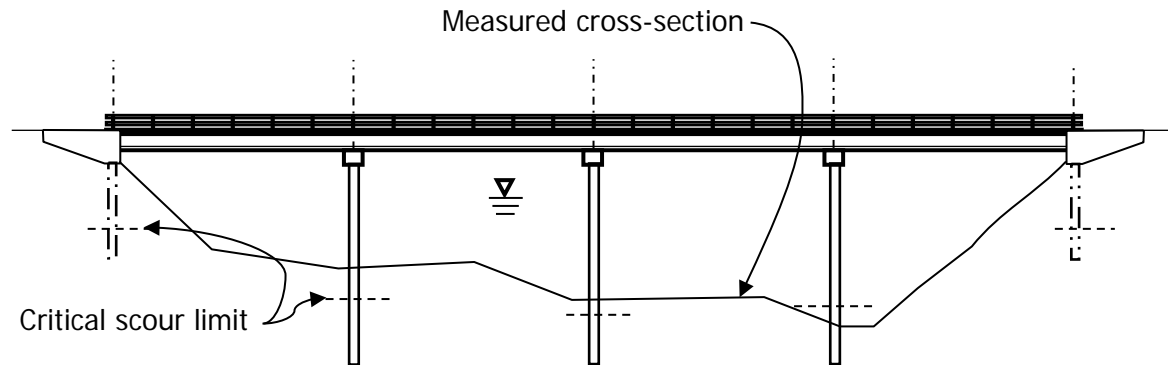


Figure 155. Elevation view showing critical scour limits and stream cross-section for a bridge.

Severity: Moderate

Extent: 2 of 5 substructure units (some)

Severity: Major

Extent: 1 of 5 substructure units (isolated)

Results: The scour condition is best characterized as "major scour". The bridge is closed until corrective actions are completed. Report 1.

7.1 – COMPONENT CONDITION RATINGS

Examples Continued – Scour Condition Rating

Description: Bridge was appraised for scour vulnerability and not considered scour critical. No scour calculations and no structural stability analysis were performed. Piles are end bearing on rock. Inspectors measured the following streambed cross-section, which indicates a scour depth at two piers that is not consistent with the scour assessment assumptions.

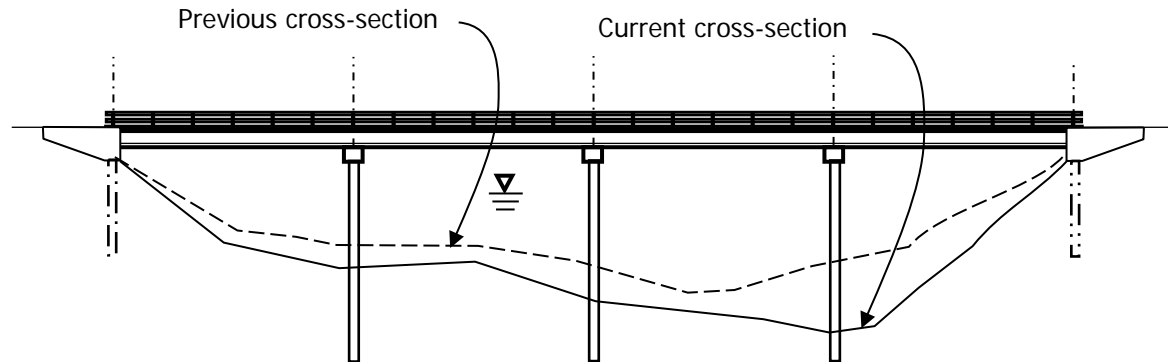


Figure 156. Elevation view showing current cross-section and previous cross-section for a bridge over water.

Severity: Moderate

Extent: 1 of 5 substructure units (isolated)

Severity: Major

Extent: 1 of 5 substructure units (isolated)

Results: The scour condition is best characterized as “isolated major scour”. The defects warrant a structural and/or hydraulic review to determine the effect on strength and/or stability of the bridge. Report 4.

Since observed conditions are not consistent with the scour appraisal assumptions, then scour is considered in the coding of B.C.03 (*Substructure Condition Rating*). In this case, observed conditions also indicate a need to reevaluate Item B.AP.03 (*Scour Vulnerability*).

7.1 – COMPONENT CONDITION RATINGS

<i>Channel Condition Rating</i>		
<u>Format</u> AN (1)	<u>Frequency</u> EI	<u>Item ID</u> B.C.09
Specification		
Report the channel condition using one of the following codes. The entire code description must be satisfied for the code to apply.		
Code	Condition	Description
N	NOT APPLICABLE	Bridge does not cross over water.
9	EXCELLENT	No defects.
8	VERY GOOD	Inherent defects only.
7	GOOD	Some minor defects.
6	SATISFACTORY	Widespread minor or isolated moderate defects.
5	FAIR	Moderate defects; bridge and approach roadway are not threatened.
4	POOR	Widespread moderate or isolated major defects; bridge and/or approach roadway is threatened.
3	SERIOUS	Major defects; bridge or approach roadway is seriously threatened. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.
2	CRITICAL	Major defects. Bridge or approach roadway is severely threatened. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions in order to keep the bridge open.
1	IMMINENT FAILURE	Bridge is closed to traffic due to channel condition. Channel rehabilitation may return the bridge to service.
0	FAILED	Bridge is closed due to channel condition, and is beyond corrective action. Bridge location or design can no longer accommodate the channel, and bridge replacement is needed to restore service.
Commentary		
<p>This item is used to provide a condition rating for the channel at the bridge. Consider the channel upstream and downstream only insofar as it threatens the bridge and approach roadway.</p> <p>The condition of channel protection devices is addressed under a separate item. Refer to Item B.C.10 (<i>Channel Protection Condition Rating</i>).</p> <p>For concrete lined channels, channel defects typically do not apply, except for Aggradation and Debris. The condition of the channel lining would be addressed by Item B.C.10 (<i>Channel Protection Condition Rating</i>).</p>		

7.1 – COMPONENT CONDITION RATINGS

Examples – Channel Condition Rating

Single span bridge. Channel is aggrading and requires periodic excavation to maintain a tolerable hydraulic opening. The thalweg has migrated such that flow is directed at one abutment (*Figure 150*) and threatens the approach roadway. However, a structural and hydraulic review has determined that the stability of the bridge is not impacted.



Defects: Aggradation and migration
Severity: Moderate
Extent: Widespread

Figure 150. Bridge elevation view of channel condition. (Source: Alaska DOT)



Figure 151. Looking downstream from bridge at excavated material. (Source: Alaska DOT)

Results: The channel can best be characterized as having “widespread moderate defects.” Report 4.

7.1 – COMPONENT CONDITION RATINGS

<i>Channel Protection Condition Rating</i>		
<u>Format</u> AN (1)	<u>Frequency</u> EI	<u>Item ID</u> B.C.10
Specification		
Report the condition of the channel protection device(s) using one of the following codes. The entire code description must be satisfied for the code to apply.		
Code	Condition	Description
N	NOT APPLICABLE	Bridge does not cross over water or channel protection devices do not exist.
9	EXCELLENT	Isolated inherent defects.
8	VERY GOOD	Some inherent defects.
7	GOOD	Some minor defects.
6	SATISFACTORY	Widespread minor or isolated moderate defects.
5	FAIR	Some moderate defects; performance of the channel protection is not affected.
4	POOR	Widespread moderate or isolated major defects; performance of channel protection is affected.
3	SERIOUS	Major defects; performance of channel protection is seriously affected. Condition typically necessitates more frequent monitoring or corrective actions.
2	CRITICAL	Major defects; channel protection is severely compromised. Condition typically necessitates more frequent monitoring or corrective actions.
1	IMMINENT FAILURE	Channel protection has failed, but corrective action could restore it to working condition.
0	FAILED	Channel protection is beyond repair and must be replaced.
Commentary		
<p>This item is used to provide a condition rating for channel protection devices.</p> <p>Evaluate the condition and effectiveness of channel protection devices installed on banks or in the stream to mitigate channel issues that may impact the bridge. When reporting this item, consider erosion and scour, damage (unraveling, displacement, separation, and sagging), and material defects (scaling, abrasion, spalling, corrosion, cracking, splitting, and decay).</p> <p>Channel protection devices are considered countermeasures that control, inhibit, delay, or minimize stream instability and scour problems, including river training and armoring countermeasures.</p> <p>River training countermeasures may include: spurs, bendway weirs, guide banks, drop structures, and check dams. Additional river training countermeasures can be found in HEC-23 and elsewhere.</p>		

7.1 – COMPONENT CONDITION RATINGS

Commentary Continued – Channel Protection Condition Rating

Armoring countermeasures may include: rock riprap, grouted riprap, concrete slope paving, articulating concrete blocks, gabion mattresses, and grout-filled mats. Additional armoring countermeasures can be found in HEC-23 and elsewhere.

For bridges that have countermeasures not visible for inspection, use appropriate visual condition indicators to determine the applicable code. These may include measurements taken at the bridge face(s) during every inspection to help determine degree of degradation, aggradation, and/or channel migration.

For this item, a minor defect does not limit the effectiveness of the channel protection, while a moderate defect may limit its effectiveness. A major defect indicates that the channel protection is missing or is no longer effective as determined by a hydraulic review.

Example – Channel Protection Condition Rating

Description: Some stones are missing and revetment has limited effectiveness. Streambed is scouring and undermining the remaining riprap and culvert.



Defects: Scour and damage
Severity: Moderate
Extent: Widespread

Figure 152. Scour and missing riprap at concrete box culvert outlet.

Results: The channel can best be characterized as having “widespread moderate defects.” Performance of the channel protection is affected. Report 4.

7.1 – COMPONENT CONDITION RATINGS

<i>NSTM Inspection Condition</i>		
<u>Format</u> AN (1)	<u>Frequency</u> EI	<u>Item ID</u> B.C.14
Specification		Commentary
<p>Report the condition rating of the Non-Redundant Steel Tension Members (NSTM) using one of the codes in <i>Table 20</i>.</p> <p>Do not report this item when Item B.IR.01 (<i>NSTM Inspection Required</i>) is N.</p>		<p>This item represents the condition of NSTM(s) identified to be inspected in the NSTM inspection procedures, and incorporated into the superstructure or substructure condition rating.</p> <p>For a bridge with NSTM(s) in both the superstructure and substructure, report only the lower of the two condition values for the condition of the NSTM(s).</p>

SUBSECTION 7.1: COMPONENT CONDITION RATINGS

The data items in this subsection provide condition information for the bridge and waterway(s) and are considered part of the Primary Data Set. These data items have a one-to-one relationship with a bridge. The data for these items may change after each inspection.

The following data items are included in this subsection.

Item ID	Data Item
B.C.01	Deck Condition Rating
B.C.02	Superstructure Condition Rating
B.C.03	Substructure Condition Rating
B.C.04	Culvert Condition Rating
B.C.05	Bridge Railing Condition Rating
B.C.06	Bridge Railing Transitions Condition Rating
B.C.07	Bridge Bearings Condition Rating
B.C.08	Bridge Joints Condition Rating
B.C.09	Channel Condition Rating
B.C.10	Channel Protection Condition Rating
B.C.11	Scour Condition Rating
B.C.12	Bridge Condition Classification
B.C.13	Lowest Condition Rating Code
B.C.14	NSTM Inspection Condition
B.C.15	Underwater Inspection Condition

Items B.C.12 (*Bridge Condition Classification*) and B.C.13 (*Lowest Condition Rating Code*) are calculated by FHWA using data from other items in the SNBI. The data item pages explain how these items are calculated and recorded in the NBI, and are presented for reference only. These items are not intended to be reported by an inspector or designated agency personnel. Therefore, the wording of the specifications and commentary is different (passive voice) than for other items (active voice) in this subsection.

Condition ratings indicate the existing field conditions of the bridge components and waterway. A condition rating code must therefore consider the type, location, and severity of the defects; the extent to which they exist throughout the item being evaluated; and the degree to which the defects affect strength and/or performance of the bridge or component.

Determine the condition rating codes for the bridge components (Items B.C.01 through B.C.07) by correlating field observations with Table 20. The remaining condition ratings (Items B.C.08 through B.C.11) can be determined using the tables embedded in the item descriptions. These tables define the condition ratings in terms of defect severity, extent, and effect on strength and/or performance of the bridge or component. The term "defect", used in these tables indicates a problem with the bridge component that may be caused by deterioration, damage, or an inherent defect.

As used in the condition rating tables, an inherent defect is not indicative of damage or deterioration, but is characteristic of the material or results from normal construction practices. A minor defect is one where damage or deterioration has initiated but is not yet considered significant. A moderate defect is one where damage or deterioration are significant, but the strength and performance of the component are not affected. A major defect affects the strength and/or performance of the component, as determined by a structural and/or hydraulic review. For joints, bearings, railings, and railing transitions, a major defect prevents the component from functioning as intended.

7.1 – COMPONENT CONDITION RATINGS

A defect is considered widespread when it is present in many separate areas of the component, while an isolated defect occurs in one or a few concentrated locations. The term “some” is used when the defect prevalence is more than isolated and less than widespread.

Load posting alone, for an existing bridge designed for less than current legal loads, is not considered a defect and does not affect the condition rating code.

Evaluate portions of bridge components that are supported or strengthened by temporary members also considering the condition of the temporary members.

Optional tables provided in Appendix C give additional guidance on various defects and deterioration mechanisms.

Use Table 20 to determine condition rating codes for the bridge component items in this section (Items B.C.01 through B.C.07). The entire code description must be satisfied for the code to apply.

Table 20. Codes and descriptions for component condition ratings.

Code	Condition	Description
N	NOT APPLICABLE	Component does not exist.
9	EXCELLENT	Isolated inherent defects.
8	VERY GOOD	Some inherent defects.
7	GOOD	Some minor defects.
6	SATISFACTORY	Widespread minor or isolated moderate defects.
5	FAIR	Some moderate defects; strength and performance of the component are not affected.
4	POOR	Widespread moderate or isolated major defects; strength and/or performance of the component is affected.
3	SERIOUS	Major defects; strength and/or performance of the component is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.
2	CRITICAL	Major defects; component is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions in order to keep the bridge open.
1	IMMINENT FAILURE	Bridge is closed to traffic due to component condition. Repair or rehabilitation may return the bridge to service.
0	FAILED	Bridge is closed due to component condition, and is beyond corrective action. Replacement is required to restore service.

S.P. No: FAP. No: Date:	PHASE 1 SCOUR ASSESSMENT OF BRIDGES OVER WATERWAYS	DISTRICT: PARISH: STRUCT. No.:
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Stream Name:

Route:

SNBI Item B.AP.03 Worksheet

- Unknown Foundation, Code (D) Pile Length

- Bridge Not Over Water (N) Min, pile penetration %

- Scour Stable (A)
 - Min. pile penetration of 50%, 20-ft minimum (drainage area < 10-sq mi)
 - Min. pile penetration of 50%, 25-ft minimum (10-sq mi < drainage area < 25-sq mi)
 - Min. pile penetration of 50%, 30-ft min; (25-sq mi < drainage area < 100-sq mi)
 - Engineering Judgment (See Notes/Report)
 - Drainage area <= 2-sq mi
 - No history of scour (from available records)
 - Bridge service life >= 20-yrs
 - Not on Interstate/NHS Route
 - No significant signs of lateral/vertical instability

- Scour Susceptible (D), Bridge is or may become Scour Critical
 - Pile penetration less than 50%
 - Pile penetration less than 20-ft (drainage area < 10-sq mi)
 - Pile penetration less than 25-ft (drainage area > 10-sq mi)
 - Pile penetration less than 30-ft (25-sq mi < drainage area < 100-sq mi)
 - Drainage area greater than 100-sq mi

- Scour Critical with Temporary (not designed) Countermeasures (C)

Phase I SNBI Item B.AP.03 Rating

Notes:

