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BUREAU OF STRUCTURES

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DATE: 9/23/2025

TO: WisDOT Certified Bridge Inspectors

FROM: David Bohnsack, P.E.

SUBJECT: Accurate Inspections

WisDOT uses asset management principles to determine bridge eligibility for preservation, rehabilitation, and replacement. These principles require accurate and thorough inspection information and documentation which includes SNBI condition ratings, element level condition states and quantities, photographs/sketches of conditions and defects, and descriptive element/defect narrative. Inspectors are expected to provide high quality bridge inspections.

The recent application process for the WisDOT Local Bridge Program has identified discrepancies in some bridge inspection reports between the SNBI Condition Rating (deck, super, sub, culvert) and the Element Condition States. Additionally, there have been inspections that lack the required inspection documentation. Accurate inspection data starts with the inspectors.

SNBI condition ratings must be backed with accurate and corresponding element level condition states and quantities, photographs/sketches for CS3 and CS4 defects, and the element/defect narrative. It is important to have enough detail in the element/defect narrative to explain the results of the element condition states which then should correlate with the SNBI condition rating. All of these are used to determine bridge program eligibility and appropriate work action recommendations.

Additionally, there may be a misunderstanding of when an element defect should be considered in CS4. The Structure Inspection Field Manual provides guidance for when a defect should be considered CS4. Each tabbed material type has a section titled **Condition State 4 (Severe)** that provides guidance for common situations that require a structural review for primary structural elements – **CS4 situations**. This CS4 guidance is located on the pages just prior to the defect table for each material type. Below is an example of the CS4 guidance for Prestressed Concrete.

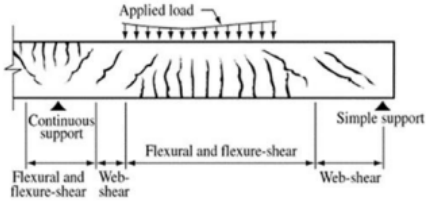
Chapter 3.C – Prestressed Concrete

Condition State 4 (Severe) – Prestressed Concrete

The items listed below are common situations that would **require** a structural review for **primary structural elements**. This list is not exhaustive; there are situations other than what is listed below that may need a review. It is the responsibility of the inspector to elevate these less-common situations, in addition to the conditions listed below, as is deemed necessary.

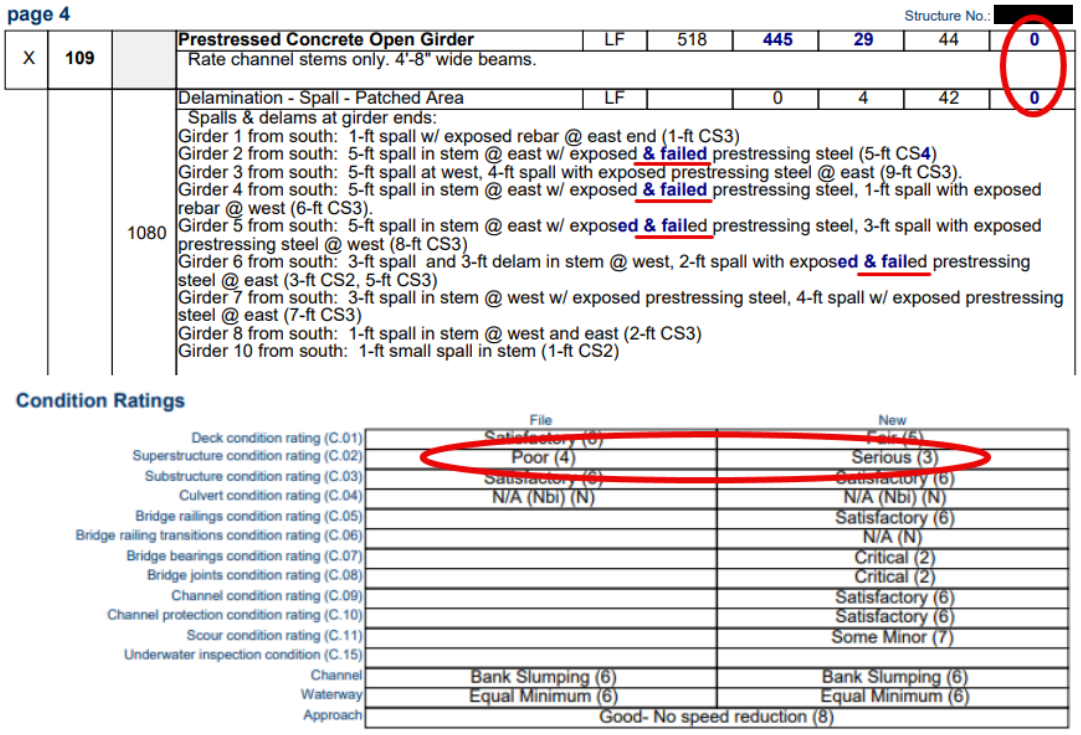
Primary Superstructure (104 thru 154, 8170) and Substructure (204 thru 233) Elements

- Delamination/Spall/Patched Area/Exposed Prestressing (1080)
  - Impact damage that bends or severs a strand
  - Unsound concrete at or behind prestressing steel (excluding girder ends)
  - Exposed strand with section loss or broken wires
  - Multiple shear stirrup reinforcing bars exposed with greater than 10% loss of section.
  - Girder at bearing has more than 20% loss of concrete section
- Cracking/Efflorescence (1110)
  - Girder or bent cap flexural cracking widths greater than 1/32 Inch near midspan or near/over supports (i.e. visible from ground)
  - Active shear cracks
- Scour (6000)
  - Pile supported footing has multiple piles with more than one foot of exposure.
  - Scour around pile bents has increased the length of exposed piles more than 4 feet.



Below are two examples of the discrepancies found in bridge inspection reports:

1. The narrative and photos (not shown) indicate failed prestressing strands, and the SNBI superstructure condition rating went from 4 to 3 with no defect quantity in CS4 for the P/S Concrete Girder element.



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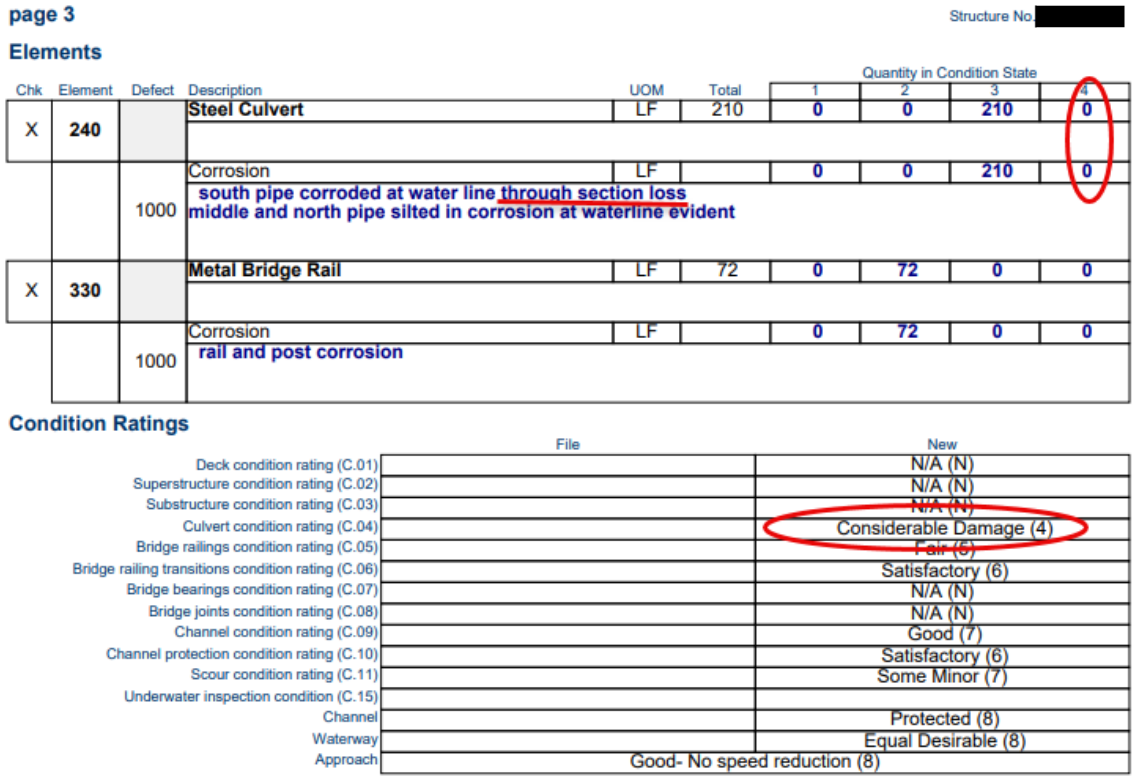
Chk	Element	Defect	Description	UOM	Total	1	2	3	4
X	109		**Prestressed Concrete Open Girder** Rate channel stems only. 4'-8" wide beams.	LF	518	**445**	**29**	44	**0**
		1080	Delamination - Spall - Patched Area Spalls & delams at girder ends: Girder 1 from south: 1-ft spall w/ exposed rebar @ east end (1-ft CS3) Girder 2 from south: 5-ft spall in stem @ east w/ exposed **& failed** prestressing steel (5-ft CS4) Girder 3 from south: 5-ft spall at west, 4-ft spall with exposed prestressing steel @ east (9-ft CS3). Girder 4 from south: 5-ft spall in stem @ east w/ exposed **& failed** prestressing steel, 1-ft spall with exposed rebar @ west (6-ft CS3). Girder 5 from south: 5-ft spall in stem @ east w/ exposed **& failed** prestressing steel, 3-ft spall with exposed prestressing steel @ west (8-ft CS3) Girder 6 from south: 3-ft spall and 3-ft delam in stem @ west, 2-ft spall with exposed **& failed** prestressing steel @ east (3-ft CS2, 5-ft CS3) Girder 7 from south: 3-ft spall in stem @ west w/ exposed prestressing steel, 4-ft spall w/ exposed prestressing steel @ east (7-ft CS3) Girder 8 from south: 1-ft spall in stem @ west and east (2-ft CS3) Girder 10 from south: 1-ft small spall in stem (1-ft CS2)	LF		0	4	42	**0**

Condition Ratings

	File	New
Deck condition rating (C.01)	~~Satisfactory (6)~~	~~Fair (5)~~
Superstructure condition rating (C.02)	Poor (4)	Serious (3)
Substructure condition rating (C.03)	~~Satisfactory (6)~~	~~Satisfactory (6)~~
Culvert condition rating (C.04)	N/A (Nbi) (N)	N/A (Nbi) (N)
Bridge railings condition rating (C.05)		Satisfactory (6)
Bridge railing transitions condition rating (C.06)		N/A (N)
Bridge bearings condition rating (C.07)		Critical (2)
Bridge joints condition rating (C.08)		Critical (2)
Channel condition rating (C.09)		Satisfactory (6)
Channel protection condition rating (C.10)		Satisfactory (6)
Scour condition rating (C.11)		Some Minor (7)
Underwater inspection condition (C.15)		
Channel	Bank Slumping (6)	Bank Slumping (6)
Waterway	Equal Minimum (6)	Equal Minimum (6)
Approach	Good- No speed reduction (8)	

2. The narrative and photos (not shown) indicate long sections of through wall perforations in a galvanized steel culvert, and the SNBI culvert condition rating was 4 with no quantity in CS4 for the Steel Culvert element.



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Elements

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State 1	2	3	4
X	240		**Steel Culvert**	LF	210	**0**	**0**	**210**	**0**
		1000	Corrosion **south pipe corroded at water line through section loss** **middle and north pipe silted in corrosion at waterline evident**	LF		**0**	**0**	**210**	**0**
X	330		**Metal Bridge Rail**	LF	72	**0**	**72**	**0**	**0**
		1000	Corrosion **rail and post corrosion**	LF		**0**	**72**	**0**	**0**

Condition Ratings

	File	New
Deck condition rating (C.01)		N/A (N)
Superstructure condition rating (C.02)		N/A (N)
Substructure condition rating (C.03)		~~N/A (N)~~
Culvert condition rating (C.04)		Considerable Damage (4)
Bridge railings condition rating (C.05)		~~Fair (6)~~
Bridge railing transitions condition rating (C.06)		Satisfactory (6)
Bridge bearings condition rating (C.07)		N/A (N)
Bridge joints condition rating (C.08)		N/A (N)
Channel condition rating (C.09)		Good (7)
Channel protection condition rating (C.10)		Satisfactory (6)
Scour condition rating (C.11)		Some Minor (7)
Underwater inspection condition (C.15)		
Channel		Protected (8)
Waterway		Equal Desirable (8)
Approach	Good- No speed reduction (8)	

In the above examples, the field manual guidance indicates there should be a quantity in CS4 and a Structural Review is required. This is a serious concern when the bridge condition requires a structural review and follow-up, but the inspector does not initiate. This is a public safety concern. WisDOT Bureau of Structures will be following up with inspectors found to have these discrepancies in their inspection reports.

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