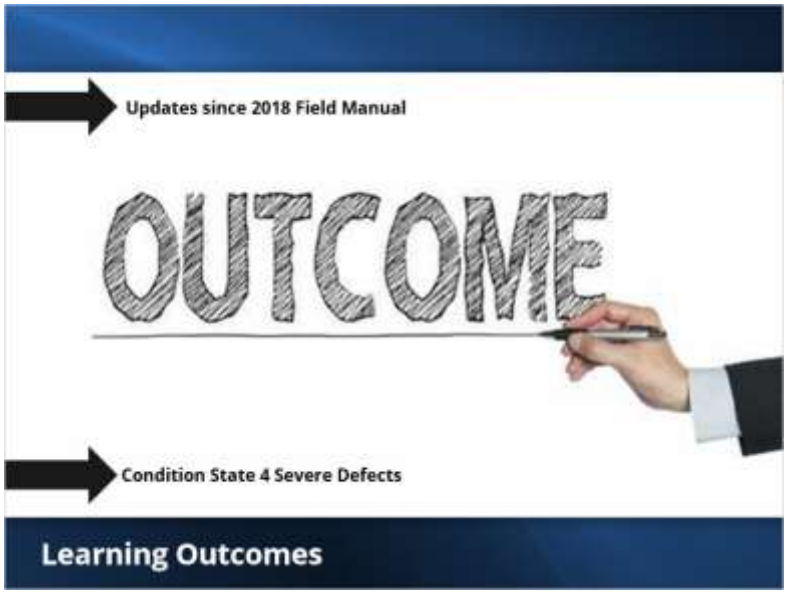
WIsDOT Structure Inspection - Field Manual Updates

1.1 Untitled Slide

Welcome to the Structure Inspection Refresher Training Series.

This module details important information on Field Manual Updates.

1.2 Untitled Slide



In this session you will learn:

New information on elements, assessments, or defects that have been updated since the last Field Manual release in 2018.

Additional language that was added to the Field Manual to better describe severe (CS4) defects on structures.

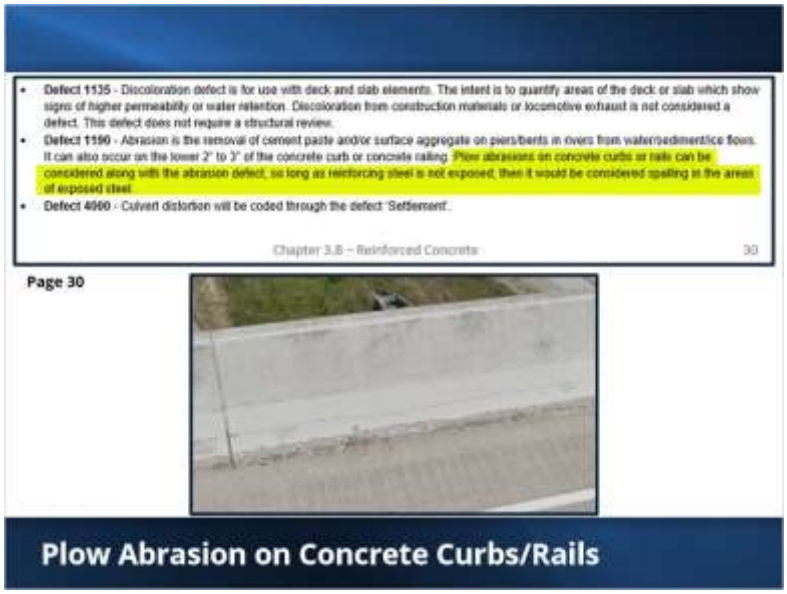
1.3 Untitled Slide

Updates have been made since the 2018 Field Manual release **and some of the key changes will be highlighted in this training**. The page numbers referenced in this module will be to the 2018 field manual.

Click on the link to see the Updated Field Manual and the **full** list of 2019 updates.

WisDOT will not be reprinting new manuals so please print out all updated pages to insert into your 2018 field manual.

1.4 Untitled Slide



One of the new updates that is highlighted in yellow includes added language for defect 1190, Abrasion. It states Plow abrasion on concrete curbs or rails is included in the defect 1190 so long as the reinforcing steel is not exposed.

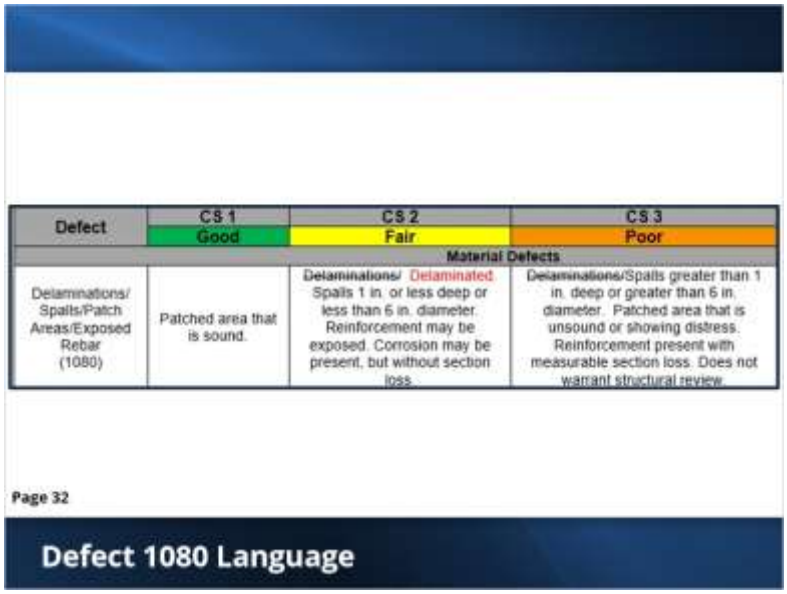
Note in the photo the abrasion at the bottom of concrete bridge rail.

1.5 Untitled Slide

Discoloration 8904 is a new defect for deck and slab elements. The intent is to quantify areas of the deck or slab which show signs of higher permeability or water retention.

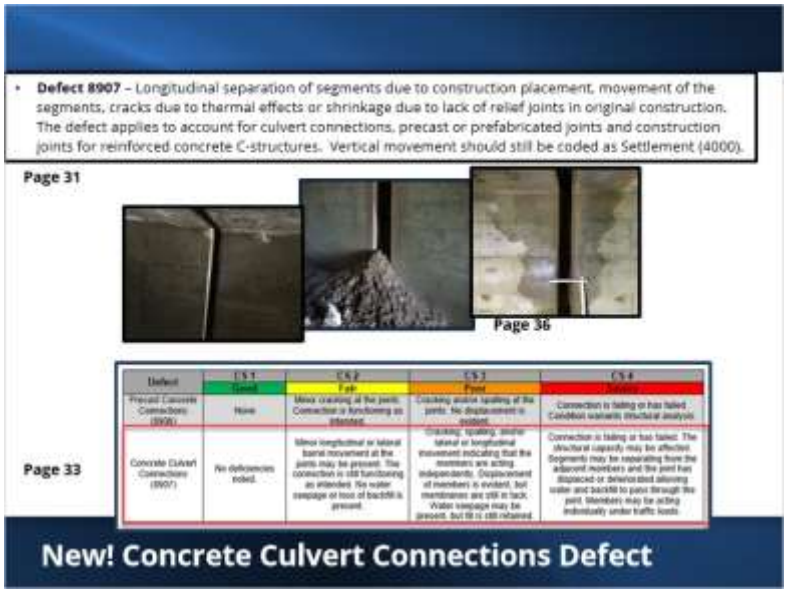
Discoloration from construction materials or locomotive exhaust is not considered a defect. This defect does not require a structural review.

1.6 Untitled Slide



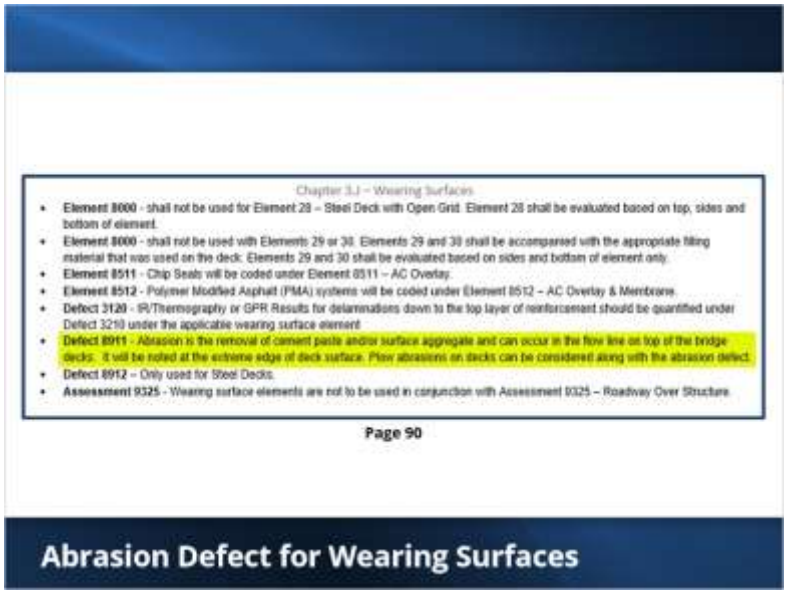
For reinforced and prestressed concrete elements, defect 1080 that pertains to spalls and delaminations has been updated to only consider delamination in condition state 2, regardless of the size of the defect. This change is consistent with the AASHTO Manual for Bridge Element Inspection.

1.7 Untitled Slide



Another new defect for reinforced concrete is concrete culvert connections 8907. A description was also added to the Narrative on page 31. The defect was added to the table on page 33 and pictures were added on page 36. This new defect was added to better quantify the condition states of concrete culvert connections.

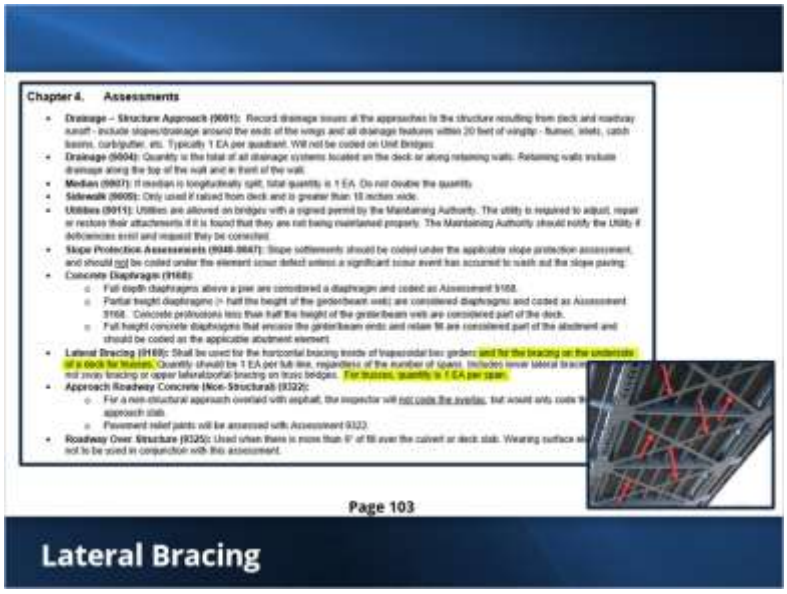
1.8 Untitled Slide



On page 90 Defect 8911 Abrasion was added to the Wearing surfaces narrative to define what it is and where and how it can occur.

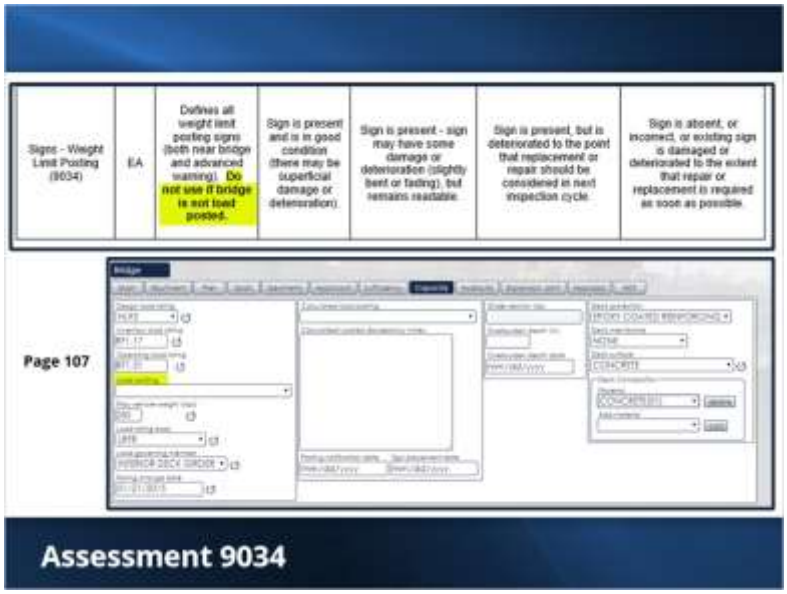
Abrasion is the removal of cement paste and or surface aggregate and can occur in the flow line on near the curb or rail. Abrasion on top of decks can also be caused by snow plow blades and should be coded using Defect 8911. This is commonly seen at the deck ends near approaches.

1.9 Untitled Slide



Another update took place for Assessment Lateral Bracing 9169. **<u>This assessment can also be used</u>** for the bracing on the underside of a deck for trusses. The quantity is 1 each per span **<u>for a truss bridge</u>**.

1.10 Untitled Slide

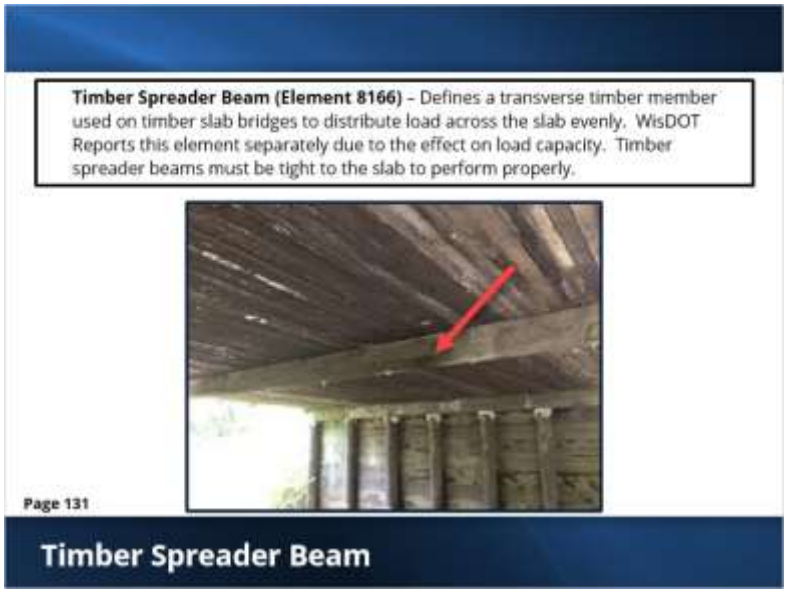


On page 107 The Assessment Signs-Weight Limit Posting 9034 is not used if the bridge is not load posted. In the past some inspectors have coded 9034 when there is no sign present because of the CS 4 language that states sign is absent. This should only be utilized when a load posting is listed under the capacity tab in HSI.[Bring in bottom image when reading this last sentence]

Inspectors won't be able to sign and complete their report in HSI if provided without a load posting.

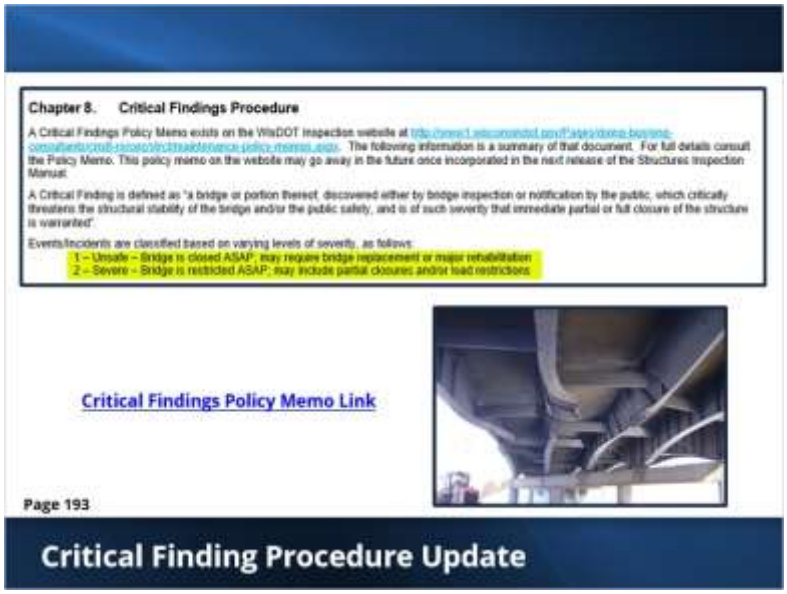
Any discrepancies in load posting should be forwarded to the Bureau of Structures Load Rating Unit.

1.11 Untitled Slide



On page 131 the definition was added for Element 8166 Timber spreader beam. There have been many instances that the timber spreader beam has been coded incorrectly as Timber floor beam. Timber floor beams support stringers and timber spreader beams **distribute the load across the slab evenly**. WisDOT reports this element separately due to the effect on load capacity. Timber spreader beams must be tight to the slab to perform properly.

1.12 Untitled Slide

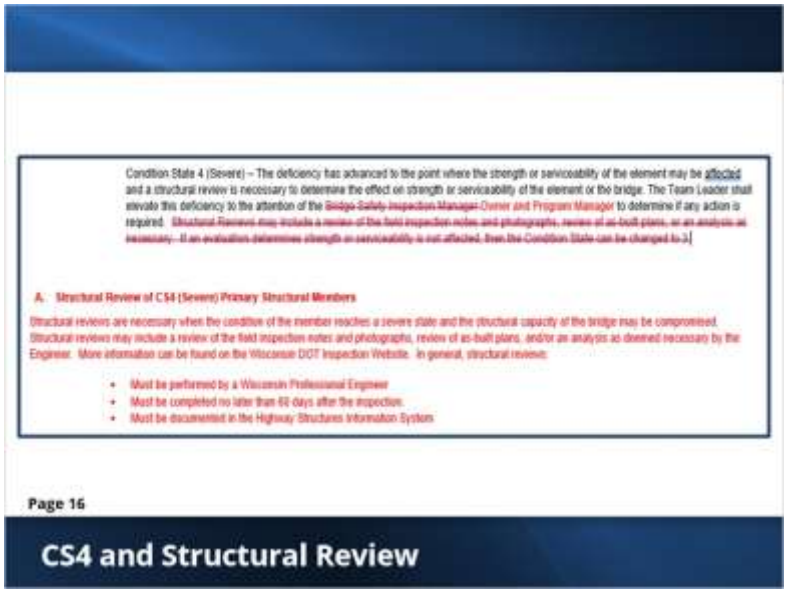


The Critical findings definition on page 193 now requires a bridge closure (full or partial) to be considered a critical finding.

The levels of severity per event are now limited to two, Unsafe and Severe. This policy was updated to coincide with the new structural review rules.

For more information click on the link to bring you to the policy memo.

1.13 Untitled Slide

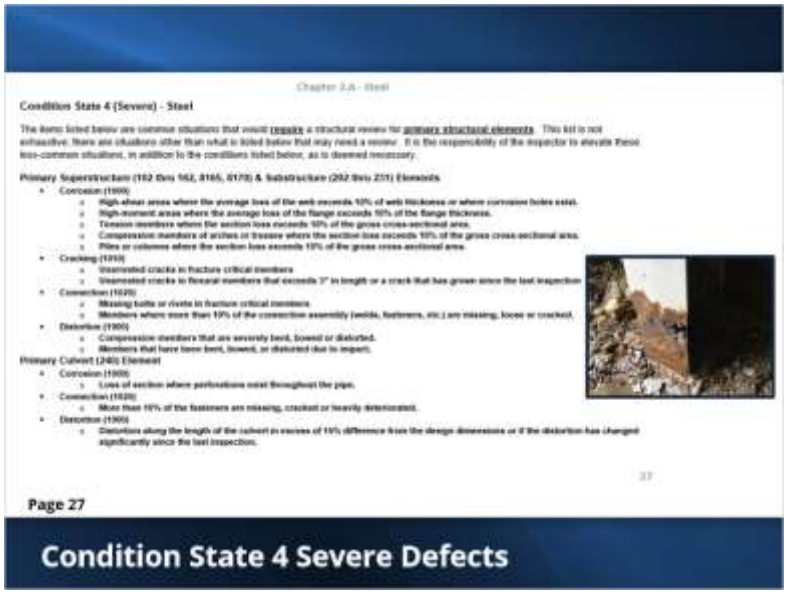


On page 16 the structural review information was removed from the definition for condition state 4 (severe).

Information was also added on structural reviews for primary structural members in condition state 4. This includes when they are necessary and what is involved.

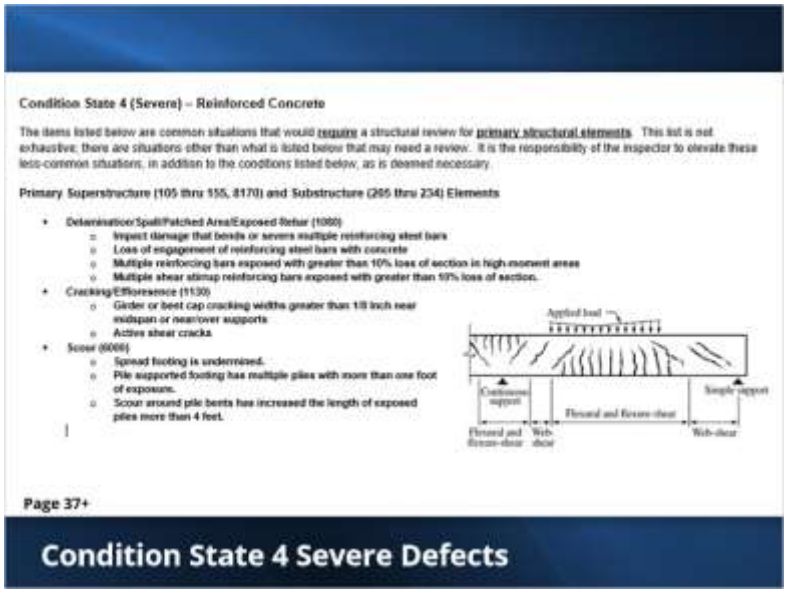
These reviews must be performed by a Wisconsin Professional Engineer, completed no later than 60 days after the inspection and documented in the Highway Structures Information System.

1.14 Untitled Slide



In addition, new guidance was created to help the inspector identify condition state 4 defects. In the past we did not have criteria, and deferred to the inspector's best judgement to classify a CS4 defect.
You may have instances where a defect is not stated in the list but can still qualify as CS4.
[Bring in CS 4 criteria image] On page 27 the condition state 4 criteria is listed for steel defects.
Some common situations include high shear areas greater than 10% section loss of web or holes in web, greater than 10% section loss of flange in high moment areas, and greater than 15% of the gross cross-sectional area for piles or columns. More criteria are listed for cracking, connection and distortion defects.

1.15 Untitled Slide

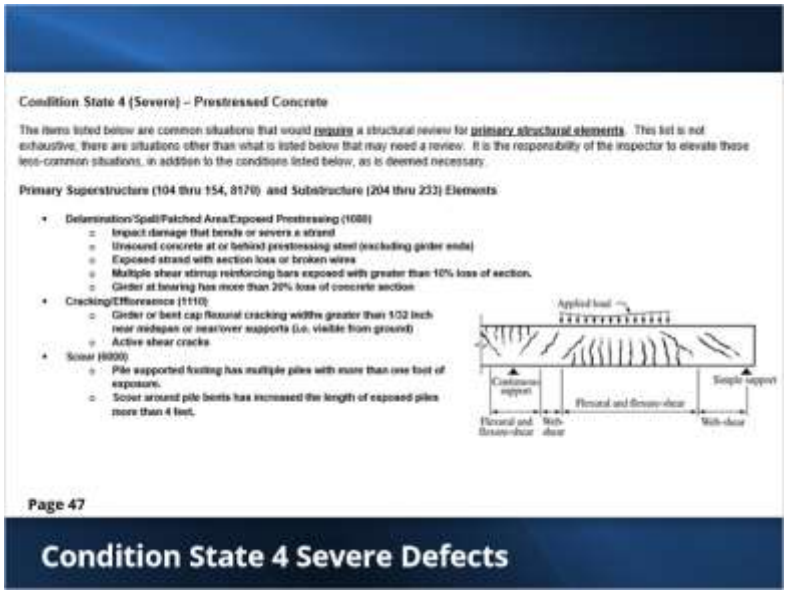


After the Reinforced concrete defect photos in the field manual the condition state 4 criteria is listed for reinforced concrete defects.

Some common situations include impact damage that bends or severs multiple reinforcing steel bars, loss of engagement of reinforcing steel bars with concrete, multiple reinforcing bars exposed with greater than 10% section loss in high moment areas and girder or bent cap cracking widths greater than 1/8 inch near midspan or near supports.

A new member diagram was also added showing high moment and shear zones.

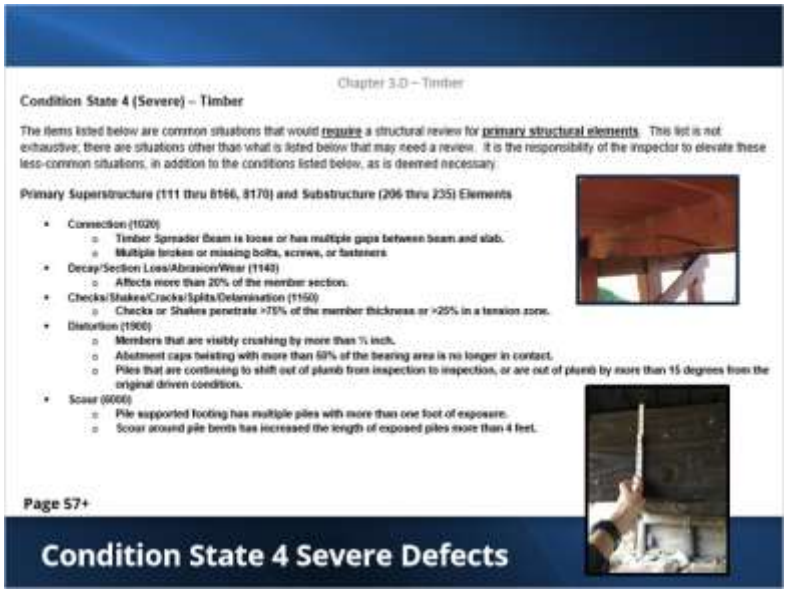
1.16 Untitled Slide



On page 47 the condition state 4 criteria is listed for Prestressed concrete defects.

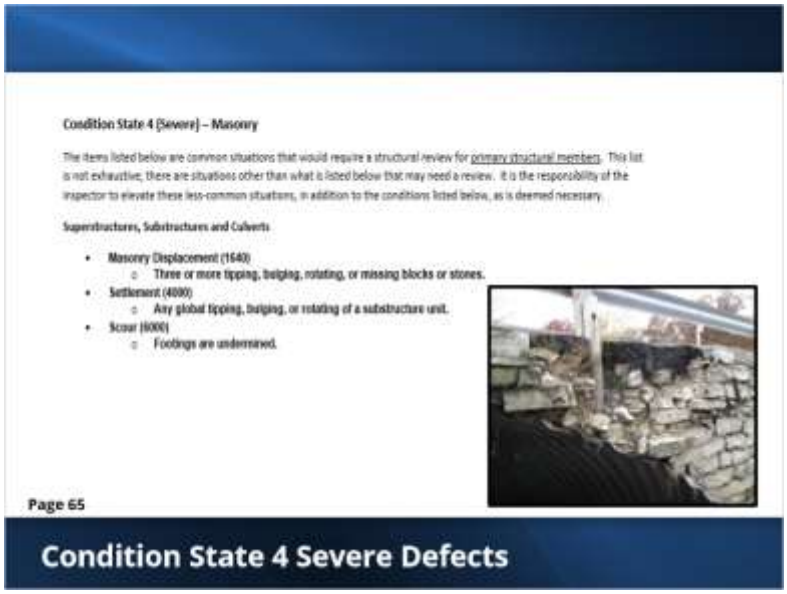
Some common situations include impact damage that bends or severs a strand, unsound concrete at or behind prestressing steel (excluding girder ends), exposed strand with section loss or broken wires, girder at bearing has more than 20% section loss of concrete and girder or bent cap flexural cracking widths greater than 1/32 inch.

1.17 Untitled Slide



After the Reinforced concrete defect photos in the field manual the condition state 4 criteria is listed for Timber defects. Some common situations include Timber spreader beam is loose or has multiple gaps between beam and slab, multiple broken or missing bolts, screws, or fasteners, decay that affects more than 20% of the member section, checks or shakes that penetrate greater than 75% of the member thickness or greater than 25% in a tension zone.

1.18 Untitled Slide



On page 65 the condition state 4 criteria is listed for Masonry defects.

Some common situations include three or more tipping, bulging rotating, or missing blocks or stones.

1.27 Untitled Slide