State of Hawaii
Department of Transportation
Highways Division

Bridge Management
Bridge Inspection
Quick Reference Guide

2014

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Contents

Introduction:

This Bridge Inspection Quick Reference Guide was created to assist the bridge inspector with quickly identifying the appropriate bridge elements and condition states.

To use this quick reference guide:

1. On pages 3-5, identify the appropriate bridge element to be inspected. Note that each element has a corresponding "Units" which shows how each bridge element should be measured.

2. For each bridge element that is identified:

    a. Go to pages 6-14 and based on the deterioration of the element, look for the appropriate material of the bridge element.

    b. Select the proper defect(s). For example, for reinforced concrete decks, go to page 6 and select the appropriate defect(s) for the reinforced concrete deck.

    c. Note that the "Damage" defect applies when there are defects that are not listed in that material category.

3. In most cases, the condition state quantity for each bridge element can be inspected as follows:

    a. Determine the total quantity for the specific bridge element.

    b. Determine the appropriate material category and select the appropriate defect for the bridge element.

    c. Determine the appropriate quantity for each appropriate defect.

    d. To determine the appropriate quantity for Condition State 1:

        Total element quantity

        – Total quantity for all defects for that element

        Quantity in Condition State 1 for that element

If you have any suggestions to improve this reference guide, please contact:

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Decks / Slabs		
El. No.	Element Name	Units
12	Reinforced Concrete Deck	AREA (sq. ft.)
13	Prestressed Concrete Deck	AREA (sq. ft.)
15	Prestressed Concrete Top Flange	AREA (sq. ft.)
16	Reinforced Concrete Top Flange	AREA (sq. ft.)
28	Steel Deck—Open Grid	AREA (sq. ft.)
29	Steel Deck—Concrete Filled	AREA (sq. ft.)
30	Steel Deck—Corrugated/Orthotropic/Etc.	AREA (sq. ft.)
31	Timber Deck	AREA (sq. ft.)
38	Reinforced Concrete Slab	AREA (sq. ft.)
54	Timber Slab	AREA (sq. ft.)
60	Other Material Deck	AREA (sq. ft.)
65	Other Material Slab	AREA (sq. ft.)

Superstructures		
El. No.	Element Name	Units
102	Closed Web/Box Girder, Steel	LENGTH (ft.)
104	Closed Web/Box Girder, Prestressed Concrete	LENGTH (ft.)
105	Closed Web/Box Girder, Reinforced Concrete	LENGTH (ft.)
106	Closed Web/Box Girder, Other	LENGTH (ft.)
107	Girder/Beam, Steel	LENGTH (ft.)
109	Girder/Beam, Prestressed Concrete	LENGTH (ft.)
110	Girder/Beam, Reinforced Concrete	LENGTH (ft.)
111	Girder/Beam, Timber	LENGTH (ft.)
112	Girder/Beam, Other	LENGTH (ft.)
113	Stringer, Steel	LENGTH (ft.)
115	Stringer, Prestressed Concrete	LENGTH (ft.)
116	Stringer, Reinforced Concrete	LENGTH (ft.)
117	Stringer, Timber	LENGTH (ft.)
118	Stringer, Other	LENGTH (ft.)
120	Truss, Steel	LENGTH (ft.)
135	Truss, Timber	LENGTH (ft.)
136	Truss, Other	LENGTH (ft.)
141	Arch, Steel	LENGTH (ft.)
142	Arch, Other	LENGTH (ft.)
143	Arch, Prestressed Concrete	LENGTH (ft.)
144	Arch, Reinforced Concrete	LENGTH (ft.)
145	Arch, Masonry	LENGTH (ft.)
146	Arch, Timber	LENGTH (ft.)
147	Cable – Main, Steel	LENGTH (ft.)
148	Cable – Secondary, Steel	EACH (EA)
149	Cable – Secondary, Other	EACH (EA)
152	Floor Beam, Steel	LENGTH (ft.)
154	Floor Beam, Prestressed Concrete	LENGTH (ft.)
155	Floor Beam, Reinforced Concrete	LENGTH (ft.)
156	Floor Beam, Timber	LENGTH (ft.)
157	Floor Beam, Other	LENGTH (ft.)
161	Pin, Pin and Hanger Assembly, or both	EACH (EA)
162	Gusset Plate	EACH (EA)

Substructures		
El. No.	Element Name	Units
202	Columns, Steel	EACH (EA)
203	Columns, Other	EACH (EA)
204	Columns, Prestressed Concrete	EACH (EA)
205	Columns, Reinforced Concrete	EACH (EA)
206	Columns, Timber	EACH (EA)
207	Column Tower (Trestle), Steel	LENGTH (ft.)
208	Column Tower (Trestle), Timber	LENGTH (ft.)
210	Pier Wall, Reinforced Concrete	LENGTH (ft.)
211	Pier Wall, Other	LENGTH (ft.)
212	Pier Wall, Timber	LENGTH (ft.)
213	Pier Wall, Masonry	LENGTH (ft.)
215	Abutment, Reinforced Concrete	LENGTH (ft.)
216	Abutment, Timber	LENGTH (ft.)
217	Abutment, Masonry	LENGTH (ft.)
218	Abutment, Other	LENGTH (ft.)
219	Abutment, Steel	LENGTH (ft.)
220	Pile Cap/Footing	LENGTH (ft.)
225	Pile, Steel	EACH (EA)
226	Pile, Prestressed Concrete	EACH (EA)
227	Pile, Reinforced Concrete	EACH (EA)
228	Pile, Timber	EACH (EA)
229	Pile, Other	EACH (EA)
231	Pier Cap, Steel	LENGTH (ft.)
233	Pier Cap, Prestressed Concrete	LENGTH (ft.)
234	Pier Cap, Reinforced Concrete	LENGTH (ft.)
235	Pier Cap, Timber	LENGTH (ft.)
236	Pier Cap, Other	LENGTH (ft.)

Culverts		
El. No.	Element Name	Units
240	Culvert, Steel	LENGTH (ft.)
241	Culvert, Reinforced Concrete	LENGTH (ft.)
242	Culvert, Timber	LENGTH (ft.)
243	Culvert, Other	LENGTH (ft.)
244	Culvert, Masonry	LENGTH (ft.)
245	Culvert, Prestressed Concrete	LENGTH (ft.)

Joints		
El. No.	Element Name	Units
300	Strip Seal Expansion Joint	LENGTH (ft.)
301	Pourable Joint Seal	LENGTH (ft.)
302	Compression Joint Seal	LENGTH (ft.)
303	Assembly Joint/Seal (Modular)	LENGTH (ft.)
304	Open Expansion Joint	LENGTH (ft.)
305	Assembly Joint without Seal	LENGTH (ft.)
306	Other Joint	LENGTH (ft.)

Bearings		
El. No.	Element Name	Units
310	Elastomeric Bearing	EACH (EA)
311	Movable Bearing (roller, sliding, etc.)	EACH (EA)
312	Enclosed/Concealed Bearing	EACH (EA)
313	Fixed Bearing	EACH (EA)
314	Pot Bearing	EACH (EA)
315	Disk Bearing	EACH (EA)
316	Other Bearing	EACH (EA)

Approach Slabs		
El. No.	Element Name	Units
320	Prestressed Concrete Approach Slab	AREA (sq. ft.)
321	Reinforced Concrete Approach Slab	AREA (sq. ft.)

Bridge Rails		
El. No.	Element Name	Units
330	Metal Bridge Railing	LENGTH (ft.)
331	Reinforced Concrete Bridge Railing	LENGTH (ft.)
332	Timber Bridge Railing	LENGTH (ft.)
333	Other Bridge Railing	LENGTH (ft.)
334	Masonry Bridge Railing	LENGTH (ft.)

Wearing Surface and Protective Systems		
El. No.	Element Name	Units
510	Wearing Surface	AREA (sq. ft.)
515	Steel Protective Coating	AREA (sq. ft.)
520	Concrete Reinforcing Steel Protective System	AREA (sq. ft.)
521	Concrete Protective Coating	AREA (sq. ft.)

Reinforced Concrete - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Delamination / Spall / Patched Area (1080)	None.	Delaminated. Spall 1 in. or less deep or 6 in. or less in diameter. Patched area that is sound.	Spall greater than 1 in. deep or greater than 6 in. diameter. Patched area that is unsound or showing distress. Does not warrant structural review.	The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge.
Exposed Rebar (1090)	None.	Present without measurable section loss.	Present with measurable section loss, but does not warrant structural review.	
Efflorescence / Rust Staining (1120)	None.	Surface white without build-up or leaching without rust staining.	Heavy build-up with rust staining.	
Cracking (1130)	Width less than 0.012 in. or spacing greater than 3.0 ft.	Width 0.012–0.05 in. or spacing of 1.0–3.0 ft.	Width greater than 0.05 in. or spacing of less than 1 ft.	
Abrasion / Wear (1190)	No abrasion or wearing.	Abrasion or wearing has exposed coarse aggregate but the aggregate remains secure in the concrete.	Coarse aggregate is loose or has popped out of the concrete matrix due to abrasion or wear.	
Distortion (1900)	None.	Distortion not requiring mitigation or mitigated distortion.	Distortion that requires mitigation that has not been addressed but does not warrant structural review.	
Settlement (4000)	None.	Exists within tolerable limits or arrested with no observed structural distress.	Exceeds tolerable limits but does not warrant structural review.	
Scour (6000)	None.	Exists within tolerable limits or has been arrested with effective countermeasures.	Exceeds tolerable limits, but is less than the critical limits determined by scour evaluation and does not warrant structural review.	
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Prestressed Concrete - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Delamination / Spall / Patched Area (1080)	None	Delaminated. Spall 1 in. or less deep or 6 in. or less in diameter. Patched area that is sound.	Spall greater than 1 in. deep or greater than 6 in. diameter. Patched area that is unsound or showing distress. Does not warrant structural review.	The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge.
Exposed Rebar (1090)	None	Present without measurable section loss.	Present with measurable section loss, but does not warrant structural review.	
Exposed Prestressing (1100)	None	Present without section loss	Present with section loss, but does not warrant structural review.	
Cracking (1110)	Width less than 0.004 in. or spacing greater than 3 ft.	Width 0.004–0.009 in. or spacing 1.0–3.0 ft.	Width greater than 0.009 in. or spacing less than 1 ft.	
Efflorescence / Rust Staining (1120)	None	Surface white without build-up or leaching without rust staining.	Heavy build-up with rust staining.	
Abrasion / Wear (1190)	No abrasion or wearing	Abrasion or wearing has exposed coarse aggregate but the aggregate remains secure in the concrete.	Coarse aggregate is loose or has popped out of the concrete matrix due to abrasion or wear.	
Distortion (1900)	None	Distortion not requiring mitigation or mitigated distortion.	Distortion that requires mitigation that has not been addressed but does not warrant structural review.	
Settlement (4000)	None	Exists within tolerable limits or arrested with no observed structural distress.	Exceeds tolerable limits but does not warrant structural review.	
Scour (6000)	None	Exists within tolerable limits or has been arrested with effective countermeasures.	Exceeds tolerable limits, but is less than the critical limits determined by scour evaluation and does not warrant structural review.	
Damage (7000)	Not applicable	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Steel - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Corrosion (1000)	None.	Freckled Rust. Corrosion of the steel has initiated.	Section loss is evident or pack rust is present but does not warrant structural review.	The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge.
Cracking (1010)	None.	Crack that has self arrested or has been arrested with effective arrest holes, doubling plates, or similar.	Identified crack exists that is not arrested but does not warrant structural review	
Connection (1020)	Connection is in place and functioning as intended.	Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended.	Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review.	
Distortion (1900)	None.	Distortion not requiring mitigation or mitigated distortion.	Distortion that requires mitigation that has not been addressed but does not warrant structural review.	
Settlement (4000)	None.	Exists within tolerable limits or arrested with no observed structural distress.	Exceeds tolerable limits but does not warrant structural review.	
Scour (6000)	None.	Exists within tolerable limits or has been arrested with effective countermeasures.	Exceeds tolerable limits, but is less than the critical limits determined by scour evaluation and does not warrant structural review.	
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Masonry - Condition State Definitions				
Defect	**CS 1 – Good**	**CS 2 – Fair**	**CS 3 – Poor**	**CS 4 – Severe**
Delamination / Spall / Patched Area (1080)	None.	Delaminated. Spall 1 in. or less deep or 6 in. or less in diameter. Patched area that is sound.	Spall greater than 1 in. deep or greater than 6 in. diameter. Patched area that is unsound or showing distress. Does not warrant structural review.	The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge.
Efflorescence / Rust Staining (1120)	None.	Surface white without build-up or leaching without rust staining.	Heavy build-up with rust staining.	
Mortar Breakdown (1610)	None.	Cracking or voids in less than 10% of joints.	Cracking or voids in 10% or more of the of joints	
Split / Spall (1620)	None.	Block or stone has split or spalled with no shifting.	Block or stone has split or spalled with shifting but does not warrant a structural review.	
Patched Area (1630)	None.	Sound patch.	Unsound patch.	
Masonry Displacement (1640)	None.	Block or stone has shifted slightly out of alignment.	Block or stone has shifted significantly out of alignment or is missing but does not warrant structural review.	
Distortion (1900)	None.	Distortion not requiring mitigation or mitigated distortion.	Distortion that requires mitigation that has not been addressed but does not warrant structural review.	
Settlement (4000)	None.	Exists within tolerable limits or arrested with no observed structural distress.	Exceeds tolerable limits but does not warrant structural review.	
Scour (6000)	None	Exists within tolerable limits or has been arrested with effective countermeasures.	Exceeds tolerable limits, but is less than the critical limits determined by scour evaluation and does not warrant structural review.	
Damage (7000)	Not applicable	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Timber - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Connection (1020)	Connection is in place and functioning as intended.	Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended.	Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review.	The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge.
Decay / Section Loss (1140)	None.	Affects less than 10% of the member section.	Affects 10% or more of the member but does not warrant structural review.	
Check / Shake (1150)	Surface penetration less than 5% of the member thickness regardless of location.	Penetrates 5% - 50% of the thickness of the member and not in a tension zone.	Penetrates more than 50% of the thickness of the member or more than 5% of the member thickness in a tension zone. Does not warrant structural review.	
Crack (1160)	None.	Crack that has been arrested through effective measures.	Identified crack exists that is not arrested, but does not require structural review.	
Split / Delamination (1170)	None.	Length less than the member depth or arrested with effective actions taken to mitigate.	Length equal to or greater than the member depth, but does not require structural review.	
Abrasion / Wear (1180)	None or no measurable section loss.	Section loss less than 10% of the member thickness	Section loss 10% or more of the member thickness but does not warrant structural review.	
Distortion (1900)	None.	Distortion not requiring mitigation or mitigated distortion.	Distortion that requires mitigation that has not been addressed but does not warrant structural review.	
Settlement (4000)	None.	Exists within tolerable limits or arrested with no observed structural distress.	Exceeds tolerable limits but does not warrant structural review.	
Scour (6000)	None.	Exists within tolerable limits or has been arrested with effective countermeasures.	Exceeds tolerable limits, but is less than the critical limits determined by scour evaluation and does not warrant structural review.	
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Other Materials - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Corrosion (1000)	None.	Freckled Rust. Corrosion of the steel has initiated.	Section loss is evident or pack rust is present but does not warrant structural review.	The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge.
Cracking (1010)	None.	Crack that has self arrested or has been arrested with effective arrest holes, doubling plates, or similar.	Identified crack exists that is not arrested but does not warrant structural review.	
Connection (1020)	Connection is in place and functioning as intended.	Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended.	Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review.	
Delamination / Spall / Patched Area (1080)	None.	Delaminated. Spall 1 in. or less deep or 6 in. or less in diameter. Patched area that is sound.	Spall greater than 1 in. deep or greater than 6 in. diameter. Patched area that is unsound or showing distress. Does not warrant structural review.	
Efflorescence / Rust Staining (1120)	None	Surface white without build-up or leaching without rust staining.	Heavy build-up with rust staining.	
Cracking (1130)	Width less than 0.012 in. or spacing greater than 3.0 ft.	Width 0.012–0.05 in. or spacing of 1.0–3.0 ft.	Width greater than 0.05 in. or spacing of less than 1 ft.	
Deterioration (1220)	None.	Initiated breakdown or deterioration.	Significant deterioration or breakdown, but does not warrant structural review.	
Distortion (1900)	None.	Distortion not requiring mitigation or mitigated distortion.	Distortion that requires mitigation that has not been addressed but does not warrant structural review.	
Settlement (4000)	None.	Exists within tolerable limits or arrested with no observed structural distress.	Exceeds tolerable limits but does not warrant structural review.	
Scour (6000)	None.	Exists within tolerable limits or has been arrested with effective countermeasures.	Exceeds tolerable limits, but is less than the critical limits determined by scour evaluation and does not warrant structural review.	
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Joints - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Leakage (2310)	None.	Minimal. Minor dripping through the joint.	Moderate. More than a drip and less than free flow of water.	Free flow of water through the joint.
Seal Adhesion (2320)	Fully Adhered.	Adhered for more than 50% of the joint height.	Adhered 50% or less of joint height but still some adhesion.	Complete loss of adhesion.
Seal Damage (2330)	None.	Seal abrasion without punctures.	Punctured or ripped or partially pulled out.	Punctured completely through, pulled out, or missing.
Seal Cracking (2340)	None.	Surface crack.	Crack that partially penetrates the seal.	Crack that fully penetrates the seal.
Debris Impaction (2350)	No debris to a shallow cover of loose debris may be evident but does not affect the performance of the joint.	Partially filled with hard-packed material, but still allowing free movement.	Completely filled and impacts joint movement.	Completely filled and prevents joint movement.
Adjacent Deck or Header (2360)	Sound. No spall, delamination or unsound patch.	Edge delamination or spall 1 in. or less deep or 6 in. or less in diameter. No exposed rebar. Patched Area that is sound.	Spall greater than 1 in. deep or greater than 6 in. diameter. Exposed rebar. Delamination or unsound patched Area that makes the joint loose.	Spall, delamination, unsound patched Area or loose joint anchor that prevents the joint from functioning as intended.
Metal Deterioration or Damage (2370)	None.	Freckled rust, metal has no cracks, or impact damage. Connection may be loose but functioning as intended.	Section loss, missing or broken fasteners, cracking of the metal or impact damage but joint still functioning.	Metal cracking, section loss, damage or connection failure that prevents the joint from functioning as intended.
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

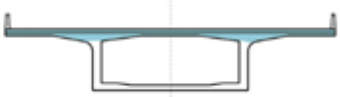
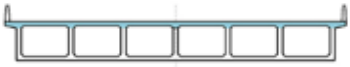
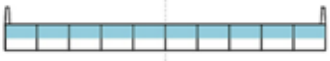
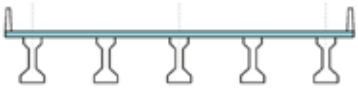
Concrete Reinforcing Steel Protective Systems				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Effectiveness (3600)	Fully effective.	Substantially effective.	Limited effectiveness.	The protective system has failed or is no longer effective.
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

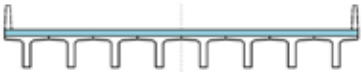
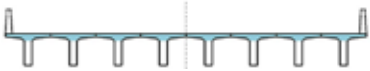
Bearings - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Corrosion (1000)	None.	Freckled Rust. Corrosion of the steel has initiated.	Section loss is evident or pack rust is present but does not warrant structural review.	The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge.
Connection (1020)	Connection is in place and functioning as intended.	Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended.	Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review.	
Movement (2210)	Free to move.	Minor restriction.	Restricted but not warranting structural review.	
Alignment (2220)	Lateral and vertical alignment is as expected for the temperature conditions.	Tolerable lateral or vertical alignment that is inconsistent with the temperature conditions.	Approaching the limits of lateral or vertical alignment for the bearing but does not warrant a structural review.	
Bulging, Splitting or Tearing (2230)	None.	Bulging less than 15% of the thickness.	Bulging 15% or more of the thickness. Splitting or tearing. Bearing's surfaces are not parallel. Does not warrant structural review.	
Loss of Bearing Area (2240)	None.	Less than 10%.	10% or more but does not warrant structural review.	
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Concrete Protective Coating - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Wear (3510)	None.	Underlying concrete not exposed, coating showing wear from UV exposure, friction course missing.	Underlying concrete is not exposed, thickness of the coating is reduced.	Underlying concrete exposed, treated cracks are exposed.
Effectiveness (3540)	Fully effective.	Substantially effective.	Limited effectiveness.	The protective system has failed or is no longer effective.
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Steel Protective Coating - Condition State Definitions				
Defect	**CS 1 - Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Chalking (3410)	None.	Surface Dulling.	Loss of Pigment.	Not Applicable.
Peeling / Bubbling / Cracking (3420)	None.	Finish coats only.	Finish and primer coats.	Exposure of bare metal.
Oxide Film Degradation Color / Texture Adherence (weathering steel patina) (3430)	Yellow-orange or light brown for early development. Chocolate-brown to purple-brown for fully developed. Tightly adhered, capable of withstanding hammering or vigorous wire brushing.	Granular texture.	Small flakes, less than 1/2 in. diameter.	Dark black color. Large flakes, 1/2 in. diameter or greater or laminar sheets or nodules.
Effectiveness (3440)	Fully effective.	Substantially effective.	Limited effectiveness.	Failed, no protection of the underlying metal
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Wearing Surface - Condition State Definitions				
Defect	**CS 1 – Good**	**CS 2 - Fair**	**CS 3 - Poor**	**CS 4 - Severe**
Delamination / Spall / Patched Area / Pothole (3210)	None.	Delaminated. Spall less than 1 in. deep or less than 6 in. diameter. Patched area that is sound. Partial depth pothole.	Spall 1 in. deep or greater or 6 in. diameter or greater. Patched area that is unsound or showing distress. Full depth pothole.	The wearing surface is no longer effective.
Crack (3220)	Width less than 0.012 in. or spacing greater than 3.0 ft.	Width 0.012–0.05 in. or spacing of 1.0–3.0 ft.	Width of more than 0.05 in. or spacing of less than 1.0 ft.	
Effectiveness (3230)	Fully effective. No evidence of leakage or further deterioration of the protected element.	Substantially effective. Deterioration of the protected element has slowed.	Limited effectiveness. Deterioration of the protected element has progressed.	
Damage (7000)	Not applicable.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry.	The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry.

Typical Cross Section	Deck/Slab Element			Superstructure Element
Box Girder	With Concrete Topping		Reinforced Concrete Deck (12)	Prestressed Concrete Girder (104) or Reinforced Concrete Girder (105)
			Prestressed Concrete Deck (13)	
	Without Concrete Topping		Reinforced Concrete Top Flange (16)	
			Prestressed Concrete Top Flange (15)	
Plank	With Concrete Topping		Reinforced Concrete Deck (12)	Prestressed Concrete Girder (104) or Reinforced Concrete Girder (105)
			Prestressed Concrete Deck (13)	
	Without Concrete Topping		Reinforced Concrete Top Flange (16)	
			Prestressed Concrete Top Flange (15)	
I-Girder	Without Concrete Topping		Reinforced Concrete Deck (12)	Prestressed Concrete Girder (109)
			Prestressed Concrete Deck (13)	

Typical Cross Section	Deck/Slab Element			Superstructure Element
Single Tee Beam	With Concrete Topping		Reinforced Concrete Deck (12)	Prestressed Concrete Girder (109)
			Prestressed Concrete Deck (13)	
	Without Concrete Topping		Reinforced Concrete Top Flange (16)	
			Prestressed Concrete Top Flange (15)	
Double Tee Beam	With Concrete Topping		Reinforced Concrete Deck (12)	Prestressed Concrete Girder (109)
			Prestressed Concrete Deck (13)	
	Without Concrete Topping		Reinforced Concrete Top Flange (16)	
			Prestressed Concrete Top Flange (15)	
Tee Beam	Without Concrete Topping		Reinforced Concrete Top Flange (16)	Reinforced Concrete Girder (110)
Slab	Without Concrete Topping		Reinforced Concrete Slab (38)	n/a