

PONTIS BRIDGE INSPECTION MANUAL



INTRODUCTION

The purpose of the Pontis Bridge Inspection Manual is to provide condition state information on selected bridge elements to be used for asset management of bridges and culverts over 10 feet long in Michigan. The manual provides visual aid to the inspector and feasible actions for each element.

DECK/SLAB ELEMENT TABLE

Deck/Slab Elements	Units	Deck Element #	Pages
Concrete – Black Bars	ft ²	12	7,9
Concrete – Coated Bars	ft ²	26	7,9
Concrete – Stainless Bars	ft ²	24	7,9
Concrete – Nonmetallic Bars	ft ²	25	7,9
Concrete with Cathodic System	ft ²	27	7,9
Concrete with Rigid Overlay	ft ²	22	7,9
Concrete with Thin Epoxy Overlay	ft ²	18	7,9
Concrete with HMA Overlay (without Membrane)	ft ²	13	8,9
Concrete with HMA Overlay (with Membrane)	ft ²	14	8,9
Steel - Open Grid	ft ²	28	8,9
Steel - Concrete Filled Grid	ft ²	29	8,9
Steel - Corrugated/ Orthotropic/Etc.	ft ²	30	8,9
Timber (Bare)	ft ²	31	8,9
Timber with HMA Overlay	ft ²	32	8,9
Precast Deck with HMA Overlay (with Membrane)	ft ²	33	8,9

Note: Entire deck/slab quantity must be reported in one condition state.

Note: Former slab elements are now included as deck elements.

SUPERSTRUCTURE ELEMENT TABLE

Superstructure Elements	Units	Steel Unpainted		Steel Painted		P/S Concrete		Reinforced Conc.		Timber		Other	
		Elem #	Pages	Elem #	Page	Elem #	Page	Elem #	Page	Elem #	Page	Elem #	Page
Box Girder	Ft.	101	34,35	102	41,42	103*	47,48	105	50,51				
Precast Box Beam	Ft.					104	47,48						
Girder/Beam	Ft.	106	34,35	107	41,42	109	47,48	110	50,51	111	55,56		
Floor Beam	Ft.	151	34,35	152	41,42	154	47,48	155	50,51	156	55,56		
Pin & Hanger Assembly	EA	160	38	161	45								
Stringer(stringer – floor beam system)	Ft.	112	34,35	113	41,42	115	47,48	116	50,51	117	55,56		
Thru Truss (Bottom Chord)	Ft.	120	34,35	121	41,42								
Thru Truss (Excluding Bottom chord)	Ft.	125	34,35	126	41,42					135	55,56		
Deck Truss	Ft.	130	34,35	131	41,42					135	55,56		
Arch	Ft.	140	34,35	141	41,42			144	50,51	135	55,56	145	58
Cable (not embedded in concrete)	EA	146	37	147	44								

*Element 103 includes cast-in-place and segmental post-tensioned concrete girders only.

SUBSTRUCTURE ELEMENT TABLE

Substructure Elements	Units	Steel Unpainted		Steel Painted		P/S Concrete		Reinforced Conc.		Timber		Other	
		Elem #	Page	Elem #	Page	Elem #	Page	Elem #	Page	Elem #	Page	Elem #	Page
Column or Pile Extension	EA	201	34,35	202	41,42	204	47,48	205	50,51	206	55,56		
Pier Wall	Ft.							210	50,51			211	58
Abutment	Ft.							215	50,51	216	55,56	217	58
Cap	Ft.	230	34,35	231	41,42	233	47,48	234	50,51	235	55,56		
Culvert	Ft.	240	40					241	54	242	57	243	59
3 Sided Culvert	Ft.							244	54				
Rip-rap	Ft.											218	91

DECK JOINT ELEMENT TABLE

Miscellaneous Superstructure Elements	Units	Element #	Page
Strip Seal Expansion Joint	Lft	400	18
Pourable Joint Seal	Lft	401	20
Compression Joint Seal	Lft	402	22
Assembly Joint/Seal (Modular)	Lft	403	24
Open Expansion Joint	Lft	404	26
Miscellaneous Expansion Joint	Lft	405	28
Polymer Block Out Expansion Joint	Lft	410	30
Block Out Expansion Joint	Lft	411	32

***Each joint quantity must be reported in one condition state.**

MISCELLANEOUS ELEMENT TABLE (Bearing, Appr. Slab, Railing)

Misc. Superstructure/ Substructure Element	Units	Steel Unpainted		Steel Painted		P/S Concrete		Reinforced Conc.		Timber		Other	
		Elem #	Page	Elem #	Page	Elem #	Page	Elem #	Page	Elem #	Page	Elem #	Page
Elastomeric Bearing	EA											310	60
Movable Bearing (rocker, sliding, etc.)	EA											311	61
Enclosed/Concealed Bearing	EA											312	63
Fixed Bearing	EA											313	64
Pot Bearing	EA											314	66
Approach Slab	EA					320	67	321	67				
Bridge Railing	Ft.	330	68	334	69			331	71	332	73	333	74
Sidewalk	SFt.							72	50,51				

SMART FLAG TABLE

Smart Flags	Units	Element #	Page
Deck Cracking	EA	358	10
Deck Spalling (Bare Concrete Surface)	ft ²	365	11
Deck Spalling (with Protective Surface)	ft ²	366	13
Deck Bottom Surface (Former Soffit Cracking)	EA	359	14
False Decking (former Sheeting Under Deck)	EA	378	15
Deck Fascia	EA	379	16
Steel Fatigue	EA	356	75
Pack Rust	EA	357	77
Traffic Impact	EA	362	82
Section Loss	EA	363	84
Frozen or Deformed Pin and Hanger Assembly	EA	364	86
Beam End Contact	EA	380	87
Tack Welded Pins	EA	381	89
Settlement	EA	360	79
Scour	EA	361	81
Concrete Surface Coating	EA	367	90
Slag Aggregate- Deck	EA	382	92
Slag Aggregate- Substructure	EA	384	93
Appurtenances With Concrete Anchors	EA	383	97
Appurtenances With Adhesive Anchors	EA	385	95

Deck/Slab Elements

NAME	UNIT	DESCRIPTION	ELEMENT #
Concrete – Black Bars	ft ²	This element defines those concrete bridge decks with no surface protection of any type and constructed with uncoated “black” reinforcement.	12
Concrete – Coated Bars	ft ²	This element defines those concrete bridge decks constructed with epoxy coated or Galvanized reinforcement.	26
Concrete – Stainless Bars	ft ²	This element defines those concrete bridge decks constructed with stainless steel, stainless clad, or MMFX reinforcement.	24
Concrete – Nonmetallic Bars	ft ²	This element defines those concrete bridge decks constructed with nonmetallic reinforcement, such as fiberglass, aramid, or carbon composite reinforcement.	25
Concrete with Cathodic System	ft ²	This element defines those concrete bridge decks protected with a cathodic system.	27
Concrete with Rigid Overlay	ft ²	This element defines those concrete bridge decks protected with a rigid overlay (concrete, latex modified concrete, or silica fume concrete) that does not extend below the top layer of reinforcement.	22
Concrete with Thin Epoxy Overlay	ft ²	This element defines those concrete bridge decks protected with a thin epoxy overlay (flood coat).	18

Continued ↓

(2/07)

Deck/Slab Elements (Continued)

NAME	UNIT	DESCRIPTION	ELEMENT #
Concrete Deck with HMA Overlay (without Membrane)	ft ²	This element defines those concrete bridge decks with HMA overlay and no water proofing membrane	13
Concrete Deck with HMA Overlay (with Membrane)	ft ²	This element defines those concrete bridge decks with HMA overlay and a water proofing membrane	14
Steel - Open Grid	ft ²	This element defines those bridge decks that are constructed of steel grids that are open and unfilled	28
Steel – Concrete Filled Grid	ft ²	This element defines those bridge decks that are constructed of steel grids with either all of the openings or just those in the wheel track filled with concrete.	29
Steel -Corrugated/ Orthotropic/etc	ft ²	This element defines those bridge decks that are constructed of corrugated metal filled with Portland cement concrete or bituminous concrete. Orthotropic steel decks are also included.	30
Timber (Bare)	ft ²	This element defines those bridge decks that are constructed of timber and are not overlaid.	31
Timber - with HMA Overlay	ft ²	This element defines timber bridge decks with bituminous overlay.	32
Precast Deck with HMA Overlay (with Membrane)	ft ²	This element defines full depth precast bridge decks with HMA overlay with membrane.	33

Note: Entire deck/slab quantity must be reported in one condition state.

Note: Slab elements are now included as deck elements.

Deck/Slab Elements - Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” Correlates to Deck Top Surface NBI Ratings 7-9. The top surface of the deck or slab has no symptoms of distress. Any cracking that is present is only superficial.	• See Bridge Deck Preservation Matrix
2	“Fair” Correlates to Deck Top Surface NBI Ratings 6. The distressed area is 2% or less of the deck surface area.	• See Bridge Deck Preservation Matrix
3	“Fair” Correlates to Deck Top Surface NBI Ratings 5. The distressed area is between 2% and 10% of the deck surface area.	• See Bridge Deck Preservation Matrix
4	“Poor” Correlates to Deck Top Surface NBI Rating 4. The distressed area is between 10% and 25% of the deck surface area.	• See Bridge Deck Preservation Matrix
5	“Serious” Correlates to Deck top Surface NBI Ratings 0-3. The distressed area is more than 25% of the total deck surface area.	• See Bridge Deck Preservation Matrix

Note: Entire deck/slab quantity must be reported in one condition state.

Note: For detailed description of NBI condition states for deck surface, see BSIR inspection rating guidance.

DECK CRACKING

NAME	UNIT	DESCRIPTION	ELEMENT #
Deck Cracking (Concrete & Latex decks only)	EA	This condition state language addresses deck cracking. The purpose of this smart flag is to identify bridge decks for crack sealing or epoxy overlays. Once a deck begins to show other distress more significant than cracking (spalling/delamination) the status of this Smart Flag is probably not important.	358

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The surface of the deck is cracked, but the cracks are either filled/sealed or insignificant in size and density to warrant repair activities.	
2	Unsealed cracks greater than 0.010 inch wide and spaced more than 8' apart .	<ul style="list-style-type: none"> • Seal Cracks
3	Unsealed cracks greater than 0.010 inch wide and spaced between 4' and 8' apart .	<ul style="list-style-type: none"> • Seal Cracks • Epoxy Overlay
4	Unsealed cracks greater than 0.010 inch wide and spaced less than 4' apart .	<ul style="list-style-type: none"> • Seal Cracks • Epoxy Overlay

Note: Report entire quantity as "1" in appropriate condition state.

(2/07)

Deck Spalling (Bare Concrete Surface)

NAME	UNIT	DESCRIPTION	ELEMENT #
Deck Spalling (Bare Concrete Surface)	ft ²	This condition state language addresses deck delaminations and spalling in the top surface of bare concrete bridge decks, or bridge decks having rigid overlays. The purpose of this smart flag is to identify bridge decks for patching, and it can be used along with other element conditions to identify bridge decks for overlays.	365

Condition State Descriptions and Feasible Actions

CONDITION STATE ACTIONS	UNIT	DESCRIPTION	FEASIBLE ACTIONS
1	ft ²	Deck surface area in good condition .	
2	ft ²	Deck surface area having delaminations . Delaminated areas can not be seen. Area must be measured by sounding the bridge deck. Perimeter of delaminated area is often marked with spray paint.	
3	ft ²	Deck surface area spalled , having concrete patches in poor condition, or bituminous patches.	• Patch Deck*

*Patch deck when the 90% plus portion of the other areas of the deck are in good condition, or to maintain ride quality, until a more extensive fix can be done.

(2/07)



Condition State 2 - "Delaminated"



Condition State 3 - "Spalled with Bit. Patch."

Deck Spalling (with Protective Surface)

NAME	UNIT	DESCRIPTION	ELEMENT #
Deck Spalling (with Protective Surface)	ft ²	This condition state language addresses distress in the protective surface (HMA or epoxy overlays) of concrete bridge decks. It also addresses delaminations and spalling in the top surface of the concrete surface. The purpose of this smart flag is to identify bridge decks for repair or replacement of the protective surface and patching of the concrete surface, and it can be used along with other element conditions to identify bridge decks for rigid overlays.	366

Condition State Descriptions and Feasible Actions

CONDITION STATE ACTIONS	UNIT	DESCRIPTION	FEASIBLE ACTIONS
1	ft ²	Deck surface area in good condition.	
2	ft ²	Deck surface area having deteriorated, delaminated or worn away protective surface (protective surfaces include bituminous overlays or epoxy overlays).	• Repair or replace protective surface
3	ft ²	Deck surface area having delaminations of the concrete. Delaminated areas can not be seen. Area must be measured by sounding the bridge deck. Perimeter of delaminated area is often marked with spray paint.	
4	ft ²	Deck surface area spalled , having concrete patches in poor condition, or bituminous patches.	• Patch Deck.

(2/07)

DECK BOTTOM SURFACE

NAME	UNIT	DESCRIPTION	ELEMENT #
Deck Bottom Surface	EA	This condition state language addresses distress of the deck bottom surface. The condition of the deck bottom surface will determine if the deck should be replaced or if a rigid overlay can be done.	359

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” Correlates to Deck Bottom Surface NBI Ratings 7-9. The bottom surface of the deck or slab has no symptoms of distress. Any cracking that is present is only superficial.	• See Bridge Deck Preservation Matrix
2	“Fair” Correlates to Deck Bottom Surface NBI Ratings 6. Cracking and efflorescence on the bottom surface is light. The distressed area is 2% or less of the underside area.	• See Bridge Deck Preservation Matrix
3	“Fair” Correlates to Deck Bottom Surface NBI Ratings 5. Cracking and efflorescence on the bottom surface is moderate. The distressed area is between 2% and 10% of the underside area.	• See Bridge Deck Preservation Matrix
4	“Poor” Correlates to Deck Bottom Surface NBI Rating 4. Light to moderate rust staining and/or spalling on the bottom surface of the deck indicates that active corrosion is occurring in the deck. Cracking and/or efflorescence is heavy. The distressed area is between 10% and 25% of the underside area.	• See Bridge Deck Preservation Matrix
5	“Serious” Correlates to Deck Bottom Surface NBI Ratings 0-3. Heavy to severe rust staining and/or spalling on the bottom surface of the deck indicates that active corrosion is occurring in the deck. Cracking and/or efflorescence on the under-surface is severe. The distressed area is more than 25% of the total underside area.	• See Bridge Deck Preservation Matrix

Note: Report entire quantity as "1" in appropriate condition state.

(2/07)

FALSE DECKING

NAME	UNIT	DESCRIPTION	ELEMENT #
False Decking	EA	This condition state language addresses presence, adequacy, and condition of false decking (typically plywood sheathing supported by timber) placed under the deck and supported from the beam's bottom flange, to prevent spalled concrete from falling on traffic underneath the bridge.	378

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	False decking is in place, in good condition, and provides adequate protection for traffic.	
2	False decking is beginning to show minor signs of distress but still provides adequate traffic protection.	
3	False decking is showing signs of serious distress or there is a significant need for new or additional false decking under the deck.	• Repair or Replace
4	False decking is in danger of collapse, or there is an immediate need for new or additional sheathing under the deck.	• Replace

Note: Report entire quantity as "1" in appropriate condition state.

(2/07)

DECK FASCIA

NAME	UNIT	DESCRIPTION	ELEMENT #
Deck Fascia	EA	This condition state language addresses distress of concrete deck fascia.	379

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	Fair condition - Minor cracking or spalling of the fascia is observed but there is no effect on the strength of the railing and there is no danger of large spalls dropping off the bridge.	
2	Poor condition - The fascia has significant cracking and/or spalling. The deteriorating fascia has potential for compromising the strength of the railing and/or dropping large spalls off the bridge.	<ul style="list-style-type: none">• Sound fascia and remove all loose concrete.
3	Serious condition - Deterioration of the fascia is serious and the strength of the railing system has been reduced and/or there is serious danger of large spalls dropping off the bridge.	<ul style="list-style-type: none">• Sound fascia and remove all loose concrete.• Rehab Element

Note: Report entire quantity as "1" in appropriate condition state.

(2/07)



Condition State 1



Condition State 2



Condition State 3

STRIP SEAL EXPANSION JOINT

NAME	UNIT	DESCRIPTION	ELEMENT #
Strip Seal Expansion Joint	Ft.	This element defines expansion joint devices which utilize a neoprene type waterproof gland with steel extrusion (rail) to anchor the gland.	400

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The element shows minimal deterioration. There is no leakage at any point along the joint. Gland is secure and has no defects. Debris in joint is not causing any problems. The adjacent deck and/or header is sound.	
2	The joint is leaking. The gland may be punctured ripped or partially pulled out of the extrusion (rail). Significant debris is in all or part of the joint. Minor spalls in the deck and/or header may be present adjacent to the joint.	<ul style="list-style-type: none"> • Clean debris from joint. • Repair gland
3	Major deterioration and leakage at the joint and the surrounding concrete in the top and bottom of the deck. The gland has major tears or has pulled out of the extrusion (rail). Major spalls may be present in the deck and/or header adjacent to the joint.	<ul style="list-style-type: none"> • Replace joint.

NOTE: For each joint type report entire quantity in one condition state.

(2/07)



Condition State 1



Condition State 2

POURABLE JOINT SEAL

NAME	UNIT	DESCRIPTION	ELEMENT #
Pourable Joint Seal	Ft.	This element defines only those joints when opening or saw cut if filled with hot rubber or silicone. Example in use: Hot poured rubber, silicone seal and end joints.	401

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The element shows minimal deterioration. Adhesion is sound with no signs of leakage. There are no cohesion cracks. The adjacent deck and/or header is sound.	
2	The joint is leaking. Minor adhesion and/or cohesion failures may be present. The joint may be slightly impacted with debris. Minor spalls in deck and/or headers may be present adjacent to the joint.	<ul style="list-style-type: none"> • Clean debris from joint. • Reseal Joint
3	Major deterioration and leakage at the joint and the surrounding concrete in the top and bottom of the deck. Joint may be heavily impacted with debris and/or stones. Major spalls may be present in the deck and/or header adjacent to the joint over greater than 30 percent of the joint length.	<ul style="list-style-type: none"> • Replace joint.

NOTE: For each joint type report entire quantity in one condition state.

(2/06)



Condition State 1



Condition State 2



Condition State 3

COMPRESSION JOINT SEAL

NAME	UNIT	DESCRIPTION	ELEMENT #
Compression Joint Seal	Ft.	This element defines joints filled with a pre-formed compression type seal. Example in use: Genie seal and regular compression seal.	402

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The element shows minimal deterioration. Adhesion is sound with no signs of leakage. There are no cohesion cracks. The adjacent deck and/or header is sound. If joint is armored, there are no signs of anchorage looseness.	
2	The joint is leaking. There may be small adhesion failures. The gland may show signs of abrasion or minor tearing. Significant debris is in all or part of the joint. Minor spalls in the deck and/or headers may be present adjacent to the joint. If joint is armored, looseness of the anchorage may be present.	<ul style="list-style-type: none"> • Replace joint.
3	Major deterioration and leakage at the joint and the surrounding concrete in the top and bottom of the deck. The gland possibly has failed from abrasion or tearing. Major spalls may be present in the deck and/or header adjacent to the joint. If joint is armored, the anchorage may have failed.	<ul style="list-style-type: none"> • Replace joint.

NOTE: For each joint type report entire quantity in one condition state.

(2/06)



Condition State 1



Condition State 2



Condition State 3

ASSEMBLY JOINT SEAL (MODULAR)

NAME	UNIT	DESCRIPTION	ELEMENT #
Assembly Joint Seal (Modular)	Ft.	This element defines modular and other large joints such as finger joints that accommodate expansion warrants greater than 4" (0.1m). Example in use: Modular joint.	403

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The element shows little or no deterioration or damage. The anchors are tight. There are no broken welds. The adjacent deck and/or header is sound. The paint system, if it is present, is sound and functioning as intended to protect the metal.	
2	The joint is leaking. The element shows minor deterioration or damage. The paint system, if present, may show some corrosion with slight pitting. There may be minor weld cracking. Looseness of the anchorage system may be present. Minor spalls in the deck and/or header may be present adjacent to the joint. Signs of seepage along the joint may be present.	<ul style="list-style-type: none"> • Replace joint.
3	Major deterioration and leakage at the joint and the surrounding concrete in the top and bottom of the deck. Corrosion is advanced. The joint anchorage system has failed. Major spalls may be present in the deck and/or header adjacent to the joint.	<ul style="list-style-type: none"> • Replace joint.

NOTE: For each joint type report entire quantity in one condition state.



Condition State 1



Condition State 2



Condition State 3

STEEL ARMOR EXPANSION JOINTS (OPEN)

NAME	UNIT	DESCRIPTION	ELEMENT #
Open Expansion Joint	Ft.	This element defines joints similar in construction to sliding plate joints except that the opening between the joints is provided with hot poured rubber. The joint movement is less than 4". Example in use: Sliding plate joints, finger joint, armored angles except strip seal joints.	404

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The element shows minimal deterioration. Joint armor, if present, is secure and there are no bent, misaligned or broken fingers. The adjacent deck and/or header is sound.	
2	The joint is leaking. There may be deck cracking indicating armor anchor loosening. Minor spalls in the deck and/or header may be present adjacent to the joint. There may be corrosion on joint armor steel plates. Bent or misaligned fingers are observed.	<ul style="list-style-type: none"> • Replace joint.
3	Major deterioration and leakage at the joint and the surrounding concrete in the top and bottom of the deck. There may be advanced corrosion of joint armor or steel plates. Major spalls may be present in the deck and/or header adjacent to the joint. Armor anchors have failed. There are missing or broken fingers.	<ul style="list-style-type: none"> • Replace joint.

NOTE: For each joint type report entire quantity in one condition state.



Condition State 1



Condition State 2



Condition State 3

MISCELLANEOUS EXPANSION JOINT

NAME	UNIT	DESCRIPTION	ELEMENT #
Miscellaneous Expansion Joint	Ft.	This element defines joints that cannot be identified in any other category. Example in use: Joints covered with bituminous surfacing.	405

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The joint shows minimal deterioration.	
2	The joint is leaking and there is wetness observed on elements beneath the deck. There may be deck cracking and minor spalling adjacent to the joint.	• Replace joint.
3	Major deterioration and leakage at the joint and the surrounding concrete in the top and bottom of the deck. Deck cracking is significant or ride quality is severely reduced. Deterioration of elements beneath the deck may be observed.	• Replace joint.

NOTE: For each joint type report entire quantity in one condition state.



Condition State 2



Condition State 3

POLYMER BLOCK OUT EXPANSION JOINT

NAME	UNIT	DESCRIPTION	ELEMENT #
Polymer Block Out Expansion Joint	Ft.	This element defines those expansion joint devices which utilize a block out in the concrete deck for later installation of polymer concrete, metal extrusion, and gland. The joint is identified by difference in color or use of fibers in the polymer concrete. Example in use: Delcrete, Wabocrete, PC-92 (Jeene)	410

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	There is no leakage at any point along the joint. Gland is secure and has no defects. Debris in joint is not causing any problems. Surrounding polymer concrete is not delaminated or spalled.	
2	The joint is leaking due to punctured or ripped or gland that will require replacement of the gland. Cracked polymer concrete or cracks and/or delaminations in the adjacent deck concrete.	<ul style="list-style-type: none"> • Clean debris from joint. • Repair gland
3	Major deterioration and leakage at the joint and the surrounding concrete in the top and bottom of the deck.	<ul style="list-style-type: none"> • Replace joint.

NOTE: For each joint type report entire quantity in one condition state.

(02/07)



Condition State 1



Condition State 2



Condition State 3

BLOCK OUT EXPANSION JOINT

NAME	UNIT	DESCRIPTION	ELEMENT #
Block Out Expansion Joint	Ft.	This element defines those expansion joint devices which utilize a block out with rubber pads or aluminum rails filled with epoxy. Example in use: Alustrip, General Tire, Elasto-flex, Wabo flex, Felspan	411

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	There is no leakage at any point along the joint. Gland is secure and has no defects. Debris in joint is not causing any problems. Surrounding polymer concrete is not delaminated or spalled. Rubber pads are securely bolted.	
2	The joint is leaking. Minor leakage due to punctured or ripped or gland. Loose anchors in aluminum rubber pads cracks and/or delaminations in the adjacent deck concrete. Any deterioration of concrete at the bottom of the slab is insignificant.	<ul style="list-style-type: none">• Replace joint.
3	Major deterioration and leakage at the joint or major deterioration of surrounding concrete at top and bottom of the deck.	<ul style="list-style-type: none">• Replace joint.

NOTE: For each joint type report entire quantity in one condition state.

(02/07)



Condition State 1



Condition State 2



Condition State 3

UNPAINTED STEEL

NAME	UNIT	DESCRIPTION	ELEMENT #
Box Girder	ft	This element defines steel box girders that are not painted.	101
Girder/Beam	ft	This element defines steel girder/beams that are not painted. This element includes two girder systems as well as rolled beams on multiple beam spans.	106
Stringer	ft	This element defines all unpainted steel stringers which support the deck in a stringer-floor beam system.	112
Thru Truss (Bottom Chord)	ft	This element defines the bottom chord of unpainted steel trusses. This element includes thru trusses and pony trusses.	120
Thru Truss (Excluding Bottom Chord)	ft	This element defines all truss elements except the bottom chord. This element includes thru trusses and pony trusses.	125
Deck Truss	ft	This element defines all members of unpainted steel deck trusses.	130
Arch	ft	This element defines steel arch ribs that are not painted.	140
Floor Beam	ft	This element defines steel floor beams that are not painted.	151
Column or Pile Extension	ft	This element defines columns or pile extensions that are unpainted.	201
Pier Cap	ft	This element defines steel pier caps that are not painted.	230

(2/07)

Unpainted Steel Elements - Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“ Good ” There is little or no corrosion of the unpainted steel. Weathering steel is coated uniformly and remains in excellent condition. Oxide film is tightly adhered.	
2	“ Fair ” Surface rust, surface pitting, has formed or is forming on the unpainted steel. Weathering steel has not corroded beyond design limits.	
3	“ Poor ” Steel has measurable sect. loss due to corrosion but does not warrant structural analysis.	<ul style="list-style-type: none"> • Clean and Paint
4	“ Serious ” Corrosion is advanced. Oxide film has a laminar texture with thin sheets of rust. Section loss may be sufficient to warrant structural analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge.	<ul style="list-style-type: none"> • Structural Repair then Clean and Paint

(2/07)



Condition State 1



Condition State 2



Condition State 3



Condition State 4

CABLE UNCOATED

NAME	UNIT	DESCRIPTION	ELEMENT #
Cable (not embedded in concrete)	EA	This element defines only those uncoated steel cables not embedded in concrete.	146

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is little or no corrosion of uncoated steel. Strand and anchor sockets show no signs of distress.	
2	“Fair” Surface or freckled rust has formed or is forming. Strand and anchor sockets show no signs of distress.	<ul style="list-style-type: none">• Clean and Paint
3	“Poor” Corrosion may be present but any section loss is incidental and does not affect the strength or serviceability of either the element or the bridge. Cable banding, if any, may show some loosening or slipping. Cable anchor devices may be loosening.	<ul style="list-style-type: none">• Repair/tighten banding and anchorages.• Clean and Paint
4	“Serious” Corrosion is advanced. Cable strands or wires may be broken or severely abraded. Anchors may show signs of slippage. Section loss or other deterioration may be sufficient warrant analysis for strength and/or serviceability of either the element and the bridge.	<ul style="list-style-type: none">• Replace Cable

NOTE: For each joint type report entire quantity in one condition state.

UNPAINTED PIN & HANGER ASSEMBLY

NAME	UNIT	DESCRIPTION	ELEMENT #
Unpainted Pin & Hanger Assembly	EA	This element defines steel pin and hanger assemblies that are not painted.	160

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is little or no corrosion of the unpainted steel. Weathering steel is coated uniformly and remains in excellent condition. Oxide film is tightly adhered.	
2	“Fair” Surface rust, surface pitting, has formed or is forming on the unpainted steel. Weathering steel has not corroded beyond design limits.	
3	“Poor” Steel has measurable section loss due to corrosion but does not warrant structural analysis.	<ul style="list-style-type: none"> • Clean and Paint
4	“Serious” Corrosion is advanced. Oxide film has a laminar texture with thin sheets of rust. Section loss may be sufficient to warrant structural analysis to ascertain the impact on the ultimate strength and/or serviceability of either the	<ul style="list-style-type: none"> • Replace all Pin and Hanger Assemblies on structure.

NOTE: Any deformation or restriction of the pin and hanger should be identified with a smart flag.

(02/07)



Condition State 1



Condition State 2



Condition State 3

METAL CULVERT

NAME	UNIT	DESCRIPTION	ELEMENT #
Metal Culvert	Ft.	This element defines all metal (steel, aluminum, galvanized) culverts, including pipes (round or elliptical) and arch shaped culverts.	240

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows little or no deterioration. Some discoloration or surface corrosion may exist but there is no metal pitting. There is little or no deterioration or separation of seams.	
2	“Fair” There may be minor to moderate corrosion and pitting, especially at the barrel invert. Little or no distortion exists. There may be minor deterioration and/or separation of seams.	
3	“Poor” Significant corrosion, deep pitting or some holes in the invert may exist. Minor to moderate distortion and deflection may exist. Minor cracking or abrasion of the metal may exist. There may be considerable deterioration and/or separation of seams.	<ul style="list-style-type: none"> • Rehab Element.
4	“Serious” Major corrosion, extreme pitting or holes in the barrel may exist. Major distortion, deflection, or settlement may be evident. Major cracking or abrasion of the metal may exist. Major separation of seams may have occurred.	<ul style="list-style-type: none"> • Replace Element

(02/07)

PAINTED STEEL

NAME	UNIT	DESCRIPTION	ELEMENT #
Box Girder	ft	This element defines steel box girders that are painted.	102
Girder/Beam	ft	This element defines steel girder/beams that are painted. This element includes two girder systems as well as rolled beams on multiple beam spans.	107
Stringer	ft	This element defines painted steel stringers which support the deck in a stringer-floor beam system.	113
Thru Truss (Bottom Chord)	ft	This element defines the bottom chord of painted steel trusses. This element includes thru trusses and pony trusses.	121
Thru Truss (Excluding Bottom Chord)	ft	This element defines painted steel truss elements except the bottom chord. This element includes thru trusses and pony trusses.	126
Deck Truss	ft	This element defines all members of painted steel deck trusses.	131
Arch	ft	This element defines steel arch ribs that are painted.	141
Floor Beam	ft	This element defines steel floor beams that are painted.	152
Column or Pile Extension	ft	This element defines columns or pile extensions that are painted.	202
Pier Cap	ft	This element defines steel pier caps that are painted.	231

(2/07)

Painted Steel Elements - Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“ Good ” There is no evidence of active corrosion and the paint system is sound and functioning as intended to protect the metal surface.	
2	“ Fair ” There is little or no active corrosion. Surface or freckled rust has formed or is forming. The paint system may be chalking, peeling, curling or showing other early evidence of paint system distress but there is no exposure of metal.	
3	“ Paint Failure ” Surface or freckled rust is prevalent. There may be exposed metal but there is no active corrosion which is causing loss of section.	<ul style="list-style-type: none"> • Clean and Paint
4	“ Paint Failure with Steel Corrosion ” Corrosion may be present but any section loss due to active corrosion does not yet warrant structural analysis of either the element or the bridge.	<ul style="list-style-type: none"> • Clean and Paint
5	“ Major Section Loss ” Corrosion has caused section loss and may be sufficient to warrant structural analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge.	<ul style="list-style-type: none"> • Structural Repair then Clean and Paint

(2/06)



Condition State 2



Condition State 3



Condition State 4



Condition State 5

PAINTED/COATED CABLE

NAME	UNIT	DESCRIPTION	ELEMENT #
Cable (not embedded in concrete)	EA	This element defines painted/coated steel cables not embedded in concrete.	147

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is little or no evidence of active corrosion. Protective coating is sound and functioning as intended to protect the metal surface. Strand and anchor sockets show no signs of distress.	
2	“Fair” There is little or no evidence of active corrosion. Surface or freckled rust has formed or is forming. The protective coating may be peeling, chalking, curling, or showing other early evidence of distress but there is no exposure of metal. Strand and anchor sockets show no signs of distress.	
3	“Paint Failure” Surface or freckled rust is prevalent. There may be exposed metal but there is no active corrosion which is causing loss of section. Protective system is no longer effective. Strand and anchor sockets show no signs of distress.	<ul style="list-style-type: none"> • Clean and Paint
4	“Paint Failure with Steel Corrosion” Corrosion may be present but any section loss is incidental and does not affect the strength or serviceability of either the element or the bridge. Cable banding, if any, may show some loosening or slippage. Cable anchor devices may be loosening.	<ul style="list-style-type: none"> • Repair/tighten banding and anchorages. • Clean and Paint
5	“Major Section Loss” Corrosion is advanced. Cable strands or wires may be broken or severely abraded. Anchors may show signs of slippage. Section loss or other deterioration may be sufficient to warrant analysis for strength and/or serviceability of either the element or the bridge.	<ul style="list-style-type: none"> • Replace Cable

NOTE: For each joint type report entire quantity in one condition state.

(02/07)

PAINTED PIN & HANGER ASSEMBLY

NAME	UNIT	DESCRIPTION	ELEMENT #
Painted Pin & Hanger Assembly	EA	This element defines steel pin and hanger assemblies that are painted.	161

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is no evidence of active corrosion and the paint system is sound and functioning as intended to protect the metal surface.	
2	“Fair” There is little or no active corrosion. Surface or freckled rust has formed or is forming. The paint system may be chalking, peeling, curling or showing other early evidence of paint system distress but there is no exposure of metal.	
3	“Paint Failure” Surface or freckled rust is prevalent. There may be exposed metal but there is no active corrosion which is causing loss of section.	• Clean and Paint
4	“Paint Failure with Steel Corrosion” Corrosion may be present but any section loss due to active corrosion does not yet warrant structural analysis of either the element or the bridge	• Clean and Paint
5	“Major Section Loss” Corrosion has caused section loss and may be sufficient to warrant structural analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge.	• Replace all Pin and Hanger Assemblies on structure.

Note: Any deformation or restriction of the pin and hanger should be identified with a smart flag.

(02/07)



Condition State 5

PRESTRESSED CONCRETE

NAME	UNIT	DESCRIPTION	ELEMENT #
Box Girder	ft	This element defines post-tensioned box girders that are segmental or cast in place construction.	103
Precast Box Beam	ft	This element defines precast prestressed box beams.	104
Girder/Beam	ft	This element defines prestressed concrete girders/beams. This includes precast, prestressed concrete I Beams	109
Stringer	ft	This element defines stringers that support the deck in a stringer-floor beam system.	115
Floor Beam	ft	This element defines prestressed concrete floor beams.	154
Column or Pile Extensions	EA	This element defines prestressed concrete columns or pile extensions.	204
Cap	ft	This element defines prestressed concrete pier caps.	233

(2/07)

Prestressed Concrete Elements - Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	<p>“Good” The element shows little or no deterioration. There may be discoloration, efflorescence, and/or superficial cracking but without affect on strength and/or serviceability.</p>	
2	<p>“Fair” Minor cracks and spalls may be present and there may be exposed reinforcing with no evidence of corrosion. There is no exposure of the prestress system.</p>	
3	<p>“Poor” Some delaminations and/or spalls may be present. There may be minor exposure but no deterioration of the prestress system. Corrosion of non-prestressed reinforcement may be present but loss of section is incidental and does not significantly affect the strength and/or serviceability of either the element or the bridge.</p>	<ul style="list-style-type: none"> • Clean steel and patch (and/or seal)
4	<p>“Serious” Delaminations, spalls and corrosion of non-prestressed reinforcement are prevalent. There may also be exposure and deterioration of the prestress system (manifested by loss of bond, broken strands or wire, failed anchorages, etc). There may be sufficient concern to warrant an analysis to ascertain the impact on the strength and/or serviceability of either the element or the bridge.</p>	<ul style="list-style-type: none"> • Replace strands by splicing, patch concrete • Rehab Element • Replace Element

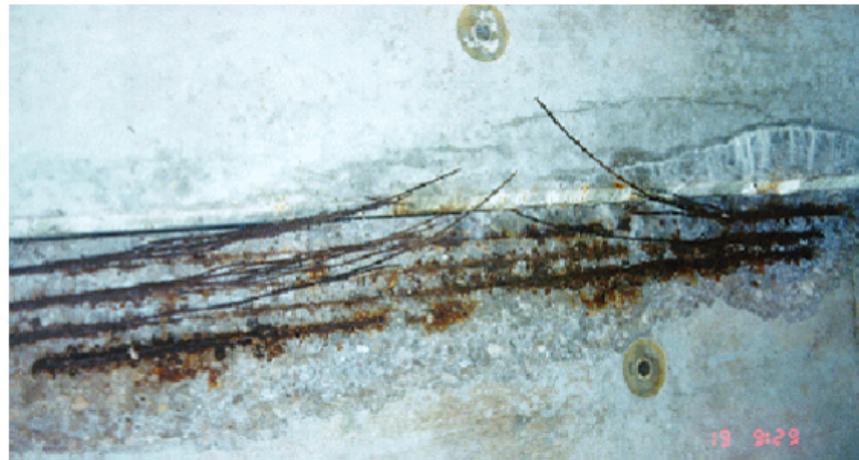
(2/07)



Condition State 2



Condition State 3



Condition State 4

REINFORCED CONCRETE

NAME	UNIT	DESCRIPTION	ELEMENT #
Box Girder	ft	This element defines reinforced concrete box girders	105
Girder/Beam	ft	This element defines reinforced concrete girders/beams this includes reinforced concrete tee beams	110
Stringer	ft	This element defines reinforced concrete stringers that support the deck in a stringer-floor beam system.	116
Arch	ft	This element defines reinforced concrete arch ribs.	144
Floor Beam	ft	This element defines reinforced concrete floor beams	155
Column or Pile	EA	This element defines reinforced concrete columns or pile extensions.	205
Pier Wall	ft	This element defines reinforced concrete pier walls that extend from the bearings to the footing.	210
Abutment	ft	This element defines reinforced concrete abutments.	215
Pier Cap	ft	This element defines reinforced concrete pier caps.	234

(2/06)

Reinforced Concrete Elements - Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows little or no deterioration. There may be discoloration, efflorescence, and/or superficial cracking but without affect on strength and/or serviceability.	
2	“Fair” Minor cracks and spalls may be present but there is no exposed reinforcing or surface evidence of rebar corrosion.	
3	“Poor” Some delaminations and/or spalls may be present and some reinforcing may be exposed. Corrosion of rebar may be present but loss of section is incidental and does not significantly affect the strength and/or serviceability of either the element or the bridge.	<ul style="list-style-type: none"> • Clean rebar and patch/repair concrete
4	“Serious” Advanced deterioration. Corrosion of reinforcement and/or loss of concrete section may be sufficient to warrant analysis to ascertain the impact on the strength and/or serviceability of either the element or the bridge.	<ul style="list-style-type: none"> • Replace or repair rebar and patch/repair concrete

(2/07)



Condition State 2



Condition State 3



Condition State 4



Condition State 2



Condition State 3



Condition State 4

CONCRETE CULVERT

NAME	UNIT	DESCRIPTION	ELEMENT #
Concrete Culvert	Ft.	This element defines all precast and cast-in-place (conventional or prestressed) concrete arch, pipe, slab and box culverts.	241
3 Sided Concrete Culvert	Ft.	This element defines all precast and cast-in-place (conventional or prestressed) 3 sided concrete culverts.	244

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” Superficial cracks and spalls may be present, but there is no exposed reinforcing or evidence of rebar corrosion. There is little or no deterioration or separation of joints.	
2	“Fair” Deterioration, minor chloride contamination, minor abrasion, minor cracking and/or leaching may have begun. There may be deterioration and separation of joints.	
3	“Poor” There may be moderate to major deterioration, abrasion, extensive cracking and/or leaching and large areas of spalls. Minor to moderate distortion, settlement, or misalignment may have occurred. There may be considerable deterioration and separation of joints.	<ul style="list-style-type: none"> • Rehab Element.
4	“Serious” Major deterioration, abrasion, spalling, cracking, major distortion, deflection settlement, misalignment of the barrel may be in evidence. Major separation of joints may have occurred. Holes may exist in floors and walls.	<ul style="list-style-type: none"> • Replace Element

TIMBER

NAME	UNIT	DESCRIPTION	ELEMENT #
Girder/Beam	ft	This element defines girders/beams. This can include either solid timber beams or glue-lam girders.	111
Stringer	ft	This element defines timber stringers that support the deck in a stringer-floor beam system.	117
Truss/Arch	ft	This element defines all members of timber trusses and arches.	135
Floor Beam	ft	This element defines timber floor beams.	156
Column or Pile Extension	EA	This element defines timber columns or pile extensions.	206
Abutment	ft	This element defines timber abutments.	216
Pier Cap	ft	This element defines pier caps that are constructed of timber.	235

(2/06)

Timber Elements - Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“ Good ” Investigation indicates no decay. There may be superficial cracks, splits and checks having no affect on strength or serviceability.	
2	“ Fair ” Decay, insect/marine borer infestation, abrasion, splitting, cracking, checking or crushing may exist but none is sufficiently advanced to affect strength or serviceability of the element.	
3	“ Poor ” Decay, insect/marine borer infestation, abrasion, splitting, cracking or crushing has produced loss of strength or deflection of the element but not of a sufficient magnitude to affect the serviceability of the bridge.	<ul style="list-style-type: none"> • Clean rebar and patch/repair concrete
4	“ Serious ” Advanced deterioration. Decay, insect/marine borer infestation, abrasion, splits, cracks or crushing may have produced loss of strength or deflection may affect the serviceability of the bridge.	<ul style="list-style-type: none"> • Replace or repair rebar and patch/repair concrete

(2/07)

TIMBER CULVERT

NAME	UNIT	DESCRIPTION	ELEMENT #
Timber Culvert	Ft.	This element defines all timber box culverts.	242

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The timber and fasteners are in sound condition.	
2	“Fair There may be minor decay and weathering. Corrosion at fasteners and connections may have begun.	
3	“Poor There is little or no distortion and/or deflection. There may be significant decay, weathering and warped or broken timbers. Significant decay and corrosion at fasteners and connections may be evident. Minor to moderate distortion of the culvert may exist.	<ul style="list-style-type: none"> • Rehab Element.
4	“Serious” There may be major decay and many warped, broken or missing timbers. There is major decay and corrosion at fasteners and connectors. Major distortion or deflection of the culvert may exist.	<ul style="list-style-type: none"> • Replace Element

(02/07)

OTHER MATERIALS

NAME	UNIT	DESCRIPTION	ELEMENT #
Arch	Ft.	This element defines arch ribs made of masonry or any other material except steel, concrete, or timber.	145
Pier Wall	Ft.	This element defines pier walls that extend from the bearings to the footing and are constructed of material other than reinforced concrete. This includes masonry pier walls.	211
Abutment	Ft.	This element defines abutments made of masonry or any other material except concrete or timber.	217

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is little or no deterioration. Surface defects only are in evidence.	
2	“Fair” There may be minor deterioration, cracking and weathering. Mortar in joints may show minor deterioration.	
3	“Poor” Moderate to major deterioration and cracking. Major deterioration of joints.	<ul style="list-style-type: none"> • Rehab Element.
4	“Serious” Major deterioration, splitting, or cracking of materials may be affecting the structural capacity of the element.	<ul style="list-style-type: none"> • Replace Element

(02/07)

OTHER MATERIAL CULVERT

NAME	UNIT	DESCRIPTION	ELEMENT #
Other Material Culvert	Ft.	This element defines all culverts not included under steel, concrete or timber culverts. It will include masonry, aluminum and combinations of other materials.	243

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is little or no deterioration. Surface defects only are in evidence. There are no misalignment problems.	
2	“Fair” There may be minor deterioration, abrasion, cracking and misalignment.	
3	“Poor” Moderate to major deterioration, abrasion, cracking and/or minor to moderate distortion or deflection has occurred.	<ul style="list-style-type: none"> • Rehab Element.
4	“Serious” Major cracking, abrasion, distortion, deflection, settlement or misalignment and/or major deterioration affecting structural integrity may have occurred.	<ul style="list-style-type: none"> • Replace Element

(02/07)

ELASTOMERIC BEARINGS

NAME	UNIT	DESCRIPTION	ELEMENT #
Elastomeric Bearing	EA	This element defines bridge bearings that are constructed primarily of elastomers, with or without fabric or metal reinforcement.	310

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows little or no deterioration. Shear deformations are correct for existing temperatures.	
2	“Fair Minor cracking, splitting or other deterioration may be present. Shear deformation may be slightly excessive. Strength and/or serviceability are not affected.	
3	“Poor/Serious” Advanced deterioration. Shear deformations may be excessive. Top and bottom surfaces may no longer be parallel. Loss of bearing may be imminent.	<ul style="list-style-type: none"> • Replace Element.

(02/07)

MOVABLE BEARINGS

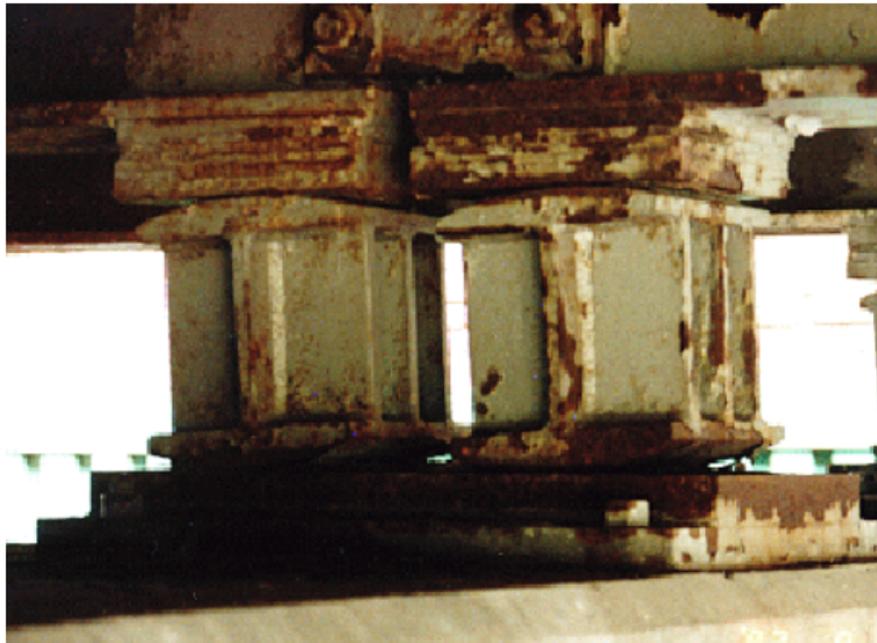
NAME	UNIT	DESCRIPTION	ELEMENT #
Movable Bearing (rocker, sliding, etc.)	EA	This element defines bridge bearings which provide for both deflection and longitudinal movement by means of roller, rocker, or sliding mechanisms.	311

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows little or no deterioration. If a paint system is present, it is sound and functioning as intended. Bearing support member is sound. Any lubrication system is functioning properly.	
2	“Fair” The paint system, if present, may show moderate to heavy corrosion with some pitting but still functioning as intended. The assemblies may have moved enough to cause minor cracking in the supporting concrete. Debris buildup is affecting bearing movement. Bearing alignment is still tolerable.	<ul style="list-style-type: none"> • Clean & paint or reset bearing and/or rehab.
3	“Poor/Serious” Advanced corrosion with section loss. There may be loss of section of the supporting member sufficient to warrant supplemental supports or load restrictions. Bearing alignment may be beyond tolerable limits. Shear keys may have failed. The lubrication system, if any, may have failed.	<ul style="list-style-type: none"> • Replace Element.

NOTE: Any deformation or restriction of the pin and hanger should be identified with a smart flag.

(02/07)



Condition State 2



Condition State 3

ENCLOSED/CONCEALED BEARINGS

NAME	UNIT	DESCRIPTION	ELEMENT #
Enclosed/Concealed Bearing	EA	This element defines bridge bearings that are enclosed so that they are not open for detailed inspection.	312

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows little or no deterioration. There are no vertical or horizontal offsets. There is no cracking of support members. The supported member is stable under traffic.	
2	“Fair Both vertical and horizontal offsets are within the capability of the bearings and are not yet significant. The supported member may exhibit minimal vertical movement under traffic. Cracking of support members is not yet significant. There may be insignificant reduction of bearing due to superstructure shortening.	<ul style="list-style-type: none"> • Clean & paint or reset bearing and/or rehab.
3	“Poor/Serious” Vertical and/or horizontal offsets are significant indicating bearing failures. There may be significant vertical movement under traffic. Cracking of the support members may be significant. There may be significant reduction of bearing due to superstructure shortening.	<ul style="list-style-type: none"> • Replace Element.

(03/06)

FIXED BEARINGS

NAME	UNIT	DESCRIPTION	ELEMENT #
Fixed Bearing	EA	This element defines bridge bearings that provide for rotation only.	313

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows little or no deterioration. If a paint system is present, it is sound and functioning as intended to protect the metal. Vertical and horizontal alignment are within limits. Bearing support member is sound.	
2	“Fair” The paint system, if present, may show moderate to heavy corrosion with pitting but still functioning as intended. The assemblies may have moved enough to cause minor cracking in the supporting concrete.	<ul style="list-style-type: none"> • Clean & paint or reset bearing and/or rehab.
3	“Poor/Serious” Advanced corrosion with section loss. There may be loss of section of the supporting member sufficient to warrant supplemental supports or load restrictions. Shear keys may have failed.	<ul style="list-style-type: none"> • Replace Element.

(03/06)



Condition State 1



Condition State 2



Condition State 3

POT BEARINGS

NAME	UNIT	DESCRIPTION	ELEMENT #
Pot Bearing	EA	This element defines high load bearings with confined elastomer. The bearing may be fixed against horizontal movement, guided to allow movement in one direction, or floating to allow sliding in any direction.	314

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows minimal deterioration. The paint or other anti-corrosion system is sound and functioning as intended to protect the metal. The bearing has minimal debris and corrosion. Vertical and horizontal alignment are within limits. Bearing support member is sound. Any lubrication system is functioning properly.	
2	“Fair The anti-corrosion system may show some corrosion with minor pitting. Debris buildup is affecting bearing movement. Bearing alignment and load carrying capacity are still tolerable.	<ul style="list-style-type: none"> • Clean & paint or reset bearing and/or rehab.
3	“Poor/Serious” Corrosion is advanced. Bearing alignment and load carrying capacity may be beyond limits. Shear keys and the lubrication system, if any, may have failed. Elastomer may be actively extruding from the device.	<ul style="list-style-type: none"> • Replace Element.

(02/07)

APPROACH SLABS

NAME	UNIT	DESCRIPTION	ELEMENT #
Prestressed Concrete Approach Slab	EA	This element defines prestressed concrete approach slabs between the abutment and approach pavement. This includes approach slabs with or without a bituminous overlay.	320
Reinforced Concrete Approach Slab	EA	This element defines reinforced concrete approach slabs between the abutment and approach pavement. This includes approach slabs with or with out a bituminous overlay.	321

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The slab has not settled and shows no sign of deterioration other than superficial surface cracks.	
2	“Fair” Minor cracking, spalls may be present but they do not affect the ability of the slab to carry traffic. Settlement may be occurring which increases the traffic impact on the bridge.	<ul style="list-style-type: none"> • Patch Pavement • Seal Cracks • Perform mudjacking
3	“Poor” Cracking may extend completely through the slab cross-section, but the slab does not act as if it is broken. Spalls may be heavy but they do not affect the structural integrity of the slab. Settlement may be occurring which increases the traffic impact on the bridge.	<ul style="list-style-type: none"> • Patch Pavement • Seal Cracks • Perform mudjacking
4	“Serious” The slab is broken or rocks under traffic loads. Settlement is excessive and cannot be corrected without increasing the size of the slab.	<ul style="list-style-type: none"> • Replace Element.

UNCOATED METAL BRIDGE RAILING

NAME	UNIT	DESCRIPTION	ELEMENT #
Bridge Railing – Uncoated Metal	ft	This element defines all types and shapes of uncoated/unpainted metal bridge railing. Steel, aluminum, metal beam, rolled shapes, etc., will all be considered part of this element. The element is neither coated or painted.	330

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is no evidence of active corrosion of the uncoated metal. Concrete anchorage is in good condition.	
2	“Fair” Minor cracking, spalls, decay of timber portions or corrosion of metal may be present. Surface or freckled rust has formed or is forming on the uncoated metal of rail, post and anchor bolts. Concrete anchorage is in good condition.	<ul style="list-style-type: none"> • Rehab element
3	“Poor” Corrosion on rail, post and anchor bolts may be present but any section loss due to active corrosion is measurable and does not affect the strength or serviceability of the element. Concrete anchorage may be cracked, delaminated or spalled.	<ul style="list-style-type: none"> • Clean and paint • Patch concrete anchorage.
4	“Serious” Corrosion on rail, post and anchor bolts is advanced. Section loss and/or concrete anchorage deterioration is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of the element.	<ul style="list-style-type: none"> • Replace element

(02/07)

COATED METAL BRIDGE RAILING

NAME	UNIT	DESCRIPTION	ELEMENT #
Bridge Railing	ft	This element defines all types and shapes of coated/painted/galvanized metal bridge railing..	334

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is no evidence of active corrosion. Protective coating and anchorage is sound and functioning as intended to protect the element.	
2	“Fair There is little or no active corrosion. Surface or freckled rust has formed or is forming. Protective coating may have minor areas of deterioration. Concrete anchorage is in good condition.	
3	“Paint Failure” Surface or freckled rust is prevalent. Protective coating is no longer effective. There may be exposed metal but there is no active corrosion causing loss of section. Concrete anchorage is in fair/good condition.	<ul style="list-style-type: none"> • Clean and Paint
4	“Paint Failure with Steel Corrosion” Corrosion on rail, post and anchor both may be present but any section loss due to active corrosion is measurable and does not affect the strength or serviceability of the element. Concrete anchorage may be cracked, delaminated or spalled	<ul style="list-style-type: none"> • Clean and Paint • Patch and repair concrete anchorage.
5	“Major Section Loss” Corrosion on rail, post and anchor bolts is advanced. Section loss and/or anchorage deterioration may be sufficient to warrant analysis is to ascertain the impact on the ultimate strength and/or serviceability of the element.	<ul style="list-style-type: none"> • Replace Element

(02/07)



Condition State 1



Condition State 2



Condition State 3

REINFORCED CONCRETE BRIDGE RAILING

NAME	UNIT	DESCRIPTION	ELEMENT #
Bridge Railing – Reinforced Concrete	ft	This element defines all types and shapes of reinforced concrete bridge railing. All elements of the railing must be concrete. Concrete barriers with decorative metal rails are included here. Example in use: Open concrete parapet with metal rail, Solid concrete parapet rail.	331

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows little or no deterioration. There may be discoloration, efflorescence, and/or superficial cracking but without effect on strength and/or serviceability.	
2	“Fair” Minor cracks, surface scaling or spalls may be present but there is no exposed reinforcing or surface evidence of rebar corrosion.	<ul style="list-style-type: none"> • Patch concrete • Seal cracks
3	“Poor” Some delaminations and/or spalls may be present and some reinforcing may be exposed. Corrosion of rebar may be present but loss of section incidental and does not significantly affect the strength and/or serviceability of the element.	<ul style="list-style-type: none"> • Clean rebar and patch/repair concrete
4	“Serious” Advanced deterioration. Corrosion of reinforcement and/or loss of concrete section may be sufficient to warrant analysis to ascertain the impact on the strength and/or serviceability of the element.	<ul style="list-style-type: none"> • Replace or repair rebar and patch/repair concrete.

(03/06)



Condition State 1



Condition State 2



Condition State 3



Condition State 4

TIMBER BRIDGE RAILING

NAME	UNIT	DESCRIPTION	ELEMENT #
Bridge Railing – Timber	ft	This element defines all types and shapes of timber bridge railing. All elements of the railing must be timber.	332

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” There is no decay. There may be minor cracks, splits and/or checks.	
2	“Fair There may be decay with or without splitting, cracking, checking or crushing but none is sufficiently advanced to affect serviceability.	<ul style="list-style-type: none"> • Rehab and/or apply surface treatment
3	“Poor/Serious” Advanced deterioration. Decay, splits, cracks or crushing has produced loss of strength that may affect the serviceability of the element.	<ul style="list-style-type: none"> • Replace element

(03/06)

MISCELLANEOUS BRIDGE RAILING

NAME	UNIT	DESCRIPTION	ELEMENT #
Bridge Railing – Misc.	ft	This element defines all types and shapes of bridge railing except those defined as metal, concrete or timber. This element may include combinations of materials. Such as thrie beam retrofit and concrete post and metal panel rail.	333

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The element shows little or no deterioration. There may be minor cracking, corrosion and/or other minor deterioration having no affect on strength or serviceability.	
2	“Fair Minor cracking, spalls, decay of timber portions or corrosion of metal may be present.	<ul style="list-style-type: none"> • Rehab element
3	“Poor/Serious” Advanced deterioration. Corrosion, decay or loss of section may be sufficient to warrant analysis to ascertain the impact on the serviceability or strength of the element.	<ul style="list-style-type: none"> • Replace element

(02/07)

STEEL – FATIGUE

NAME	UNIT	DESCRIPTION	ELEMENT #
Steel - Fatigue	ft	This flag exists only on those bridges with steel elements which are already showing fatigue damage. It should not be applied to steel bridges prior to fatigue damage becoming apparent.	356

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“ Good ” Fatigue damage to the bridge has been repaired or arrested. The bridge may still be fatigue prone.	
2	“ Fair ” Fatigue damage exists which is not arrested (normally, this condition state would be used the first time the element is identified and at any other time when additional fatigue damage occurs.)	<ul style="list-style-type: none"> • Monitor fatigue damage. • Retrofit detail.
3	“ Poor/Serious ” Fatigue damage exists which warrants analysis of the element to ascertain the serviceability of the element or the bridge.	<ul style="list-style-type: none"> • Analyze structure. • Replace element

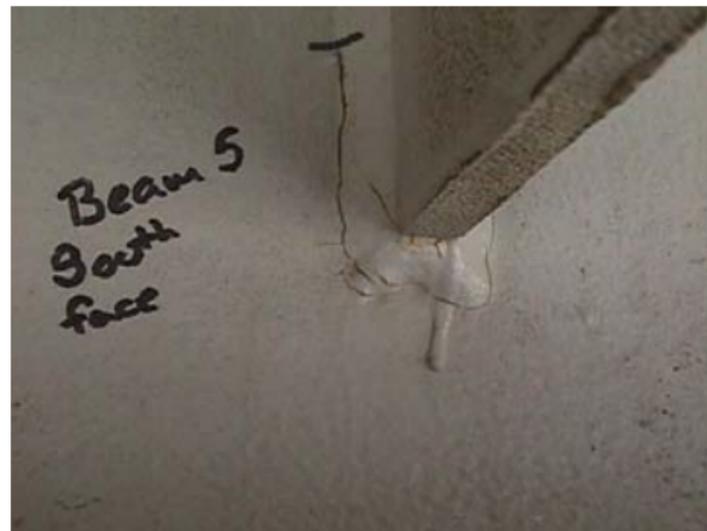
(02/07)



Condition State 1



Condition State 2



Condition State 3

PACK RUST

NAME	UNIT	DESCRIPTION	ELEMENT #
Pack Rust	EA	This flag defines connections(including shapes in contact in built-up members) of steel bridges which are already showing signs of rust packing between steel plates.	357

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The connection is showing signs of rusting between plates. Seams of the connections exhibit rust staining.	
2	Rusting between plates is beginning to distress the connection. Minor swelling exists.	<ul style="list-style-type: none">• Rehab element
3	Rusting between plates has caused serious distress to the connection. The plates may be badly distorted, however all connectors (rivets/bolts) are still functioning.	<ul style="list-style-type: none">• If pack rust is widespread, schedule bridge for replacement.
4	Rusting between plates has caused serious distress to the connection which warrants analysis of the bridge to ascertain the impact on the serviceability of the bridge. Some rivets or other connectors may have popped or are no longer effective.	<ul style="list-style-type: none">• Provide temporary supports, replace elements.• If pack rust is widespread, schedule bridge for replacement.

Note: For smart flags report entire quantity as "1" in appropriate condition state.

(02/07



Condition State 2



Condition State 3



Condition State 4

SETTLEMENT

NAME	UNIT	DESCRIPTION	ELEMENT #
Settlement	EA	This condition state language addresses substructure settlement distresses which are evident during visual inspections. Its primary purpose is to identify bridges that are experiencing settlement and to provide some measure of the magnitude of that settlement.	360

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	Some of the bridge supporting elements are showing signs of visible settlement or rotation but due to earlier repairs or other signs, the settlement appears to have stabilized.	<ul style="list-style-type: none"> • Monitor.
2	Settlement or rotation of the bridge supporting elements show signs of continuing and if left un-arrested could cause adverse impacts to the bridge.	<ul style="list-style-type: none"> • Monitor and analyze cause. • Bridge or substructure element may need to be scheduled for replacement.
3	Settlement or rotation of the bridge supporting elements is significant enough to warrant analysis of the bridge.	<ul style="list-style-type: none"> • Monitor and analyze cause. • Bridge or substructure element may need to be scheduled for replacement.

Note: For smart flags report entire quantity as "1" in appropriate condition state.

(02/07)



Condition State 2



Condition State 3

SCOUR

NAME	UNIT	DESCRIPTION	ELEMENT #
Scour	EA	This condition state language addresses scour distresses which are evident during visual inspections. Its primary purpose is to identify bridges that are experiencing scour and to provide some measure of the magnitude of the scour.	361

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	Scour exists at the structure site but is of little concern to the structural integrity of the bridge.	<ul style="list-style-type: none"> • Monitor.
2	Scour exists at the structure site and if left unchecked could adversely impact the structural integrity of the bridge.	<ul style="list-style-type: none"> • Monitor and analyze cause. • Provide scour retrofit.
3	Scour is significant enough to warrant analysis of the structure.	<ul style="list-style-type: none"> • Monitor and analyze cause. • Provide scour retrofit. • Bridge or substructure element may need to be scheduled for replacement.

Note: For smart flags report entire quantity as "1" in appropriate condition state.

(02/07)

TRAFFIC IMPACT

NAME	UNIT	DESCRIPTION	ELEMENT #
Traffic Impact	EA	This condition state language addresses distress of any elements (mainly superstructure) due to traffic impact damage.	362

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	Impact damage has occurred and has been repaired. Prestressing system is covered by patch concrete. Steel has been straightened or repaired.	
2	Impact damage has occurred. Prestressing system is exposed, but is not impaired. Steel strength does not threaten the serviceability of the bridge.	<ul style="list-style-type: none">• Schedule for repairs.
3	Impact damage has occurred and strength of the member is impaired. Analysis is warranted to ascertain the serviceability of the bridge.	<ul style="list-style-type: none">• Schedule for emergency repairs.

Note: For smart flags report entire quantity as "1" in appropriate condition state.

(02/07)



Condition State 2 – Concrete



Condition State 2 – Steel



Condition State 3 – Concrete



Condition State 3 - Steel

SECTION LOSS

NAME	UNIT	DESCRIPTION	ELEMENT #
Section Loss	EA	This condition state language addresses section loss in areas of steel members which warrant analysis (e.g., beam/ girder web in high shear areas, beam/girder flanges in high moment areas, bottom chords of through trusses, etc.). This flag should be used when a steel element reaches condition state 4, or for those elements having section loss but have been repaired or cleaned and painted over.	363

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	Section loss to the element has been repaired or cleaned and painted over.	
2	Section loss to the element exists and has not been repaired or painted over. Structural analysis is not yet warranted.	
3	Measurable section loss to the element exists which warrants analysis to determine the serviceability of the element or the bridge. An analysis has been done and it has been determined that serviceability has not been affected.	<ul style="list-style-type: none"> • Schedule for repairs.
4	Section loss has affected the load carrying capacity or serviceability of the bridge. (Code this condition state only after a structural analysis.)	<ul style="list-style-type: none"> • Place temporary supports. • Schedule for emergency repairs.

Note: For smart flags report entire quantity as "1" in appropriate condition state.

(02/07)



Condition State 1



Condition State 2



Condition State 3



Condition State 4

FROZEN OR DEFORMED PIN & HANGER ASSEMBLY

NAME	UNIT	DESCRIPTION	ELEMENT #
Frozen or Deformed Pin & Hanger Assembly	EA	This condition state language addresses distress of pin & hanger assemblies.	364

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	Assembly may be frozen or deformed but any damage to deck or substructure elements is insignificant.	<ul style="list-style-type: none"> • Monitor
2	Assembly is frozen or deformed and minor damage has occurred to deck or substructure elements.	<ul style="list-style-type: none"> • Schedule for repairs.
3	Significant damage to deck or substructure elements has occurred. Backwall may be breaking up and/or pulling away from abutment. Impact damage has occurred and strength of the member is impaired. Immediate repairs or replacement may be necessary.	<ul style="list-style-type: none"> • Schedule for emergency repairs.

Note: For smart flags report entire quantity as "1" in appropriate condition state.

(02/07)

BEAM END CONTACT

NAME	UNIT	DESCRIPTION	ELEMENT #
Beam End Contact	EA	This condition state language addresses beam ends contact at supports and pin and hanger assemblies.	380

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	Vertical ends of beams in contact. No visible distressed observed on beam webs and flanges.	• Monitor
2	Diagonal portion of beam webs at pin and hanger are in contact but vertical portion of beam ends are not in contact. No visible distress observed on either beam webs and flanges.	• Monitor
3	Diagonal portion of beam webs at pin and hanger are in contact but vertical portion of beam ends are not in contact. Visible distress observed on either beam webs or flanges.	• Schedule for pin and hanger replacement.

Note: For smart flags report entire quantity as "1" in appropriate condition state.

(02/07)



Condition State 1



Condition State 2



Condition State 3

TACK WELDED PINS

NAME	UNIT	DESCRIPTION	ELEMENT #
Tack Welded Pins	EA	This condition state language addresses tack welded pins and washers at the pin and hanger assemblies. Usually when pins are tack welded, no cotter pins are used.	381

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	Tack welded washers are in good condition. No evidence of tack weld deterioration.	<ul style="list-style-type: none">• Monitor
2	Tack weld and washer are corroded or there is evidence of pack rust.	<ul style="list-style-type: none">• Schedule for pin and hanger replacement.
3	Tack weld is broken, washer loose or missing, link plate out of position.	<ul style="list-style-type: none">• Schedule for emergency pin and hanger replacement.

Note: For smart flags report entire quantity as "1" in appropriate condition state.

(02/07)

CONCRETE SURFACE COATING

NAME	UNIT	DESCRIPTION	ELEMENT #
Concrete Coating	EA	This condition state language addresses the condition of protective coatings placed on concrete beams, barriers, or substructure units. If a structure has a concrete coating on any element, include this smart flag. Concrete coatings typically are acrylic coatings that provide a uniform appearance or add color to the concrete surface.	367

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	“Good” The concrete coating is sound and functioning as intended.	
2	“Fair” The surface of the concrete coating is beginning to fade. There may be areas of minor chalking, peeling, or curling.	
3	“Coating Failure” There is extensive areas of chalking, peeling, or curling resulting in the concrete surface to be exposed and unprotected.	<ul style="list-style-type: none"> • Clean and recoat

Note: Report entire quantity as “1” in appropriate condition state.

(02/07)

RIP-RAP

NAME	UNIT	DESCRIPTION	ELEMENT #
Rip-Rap	Lft	This condition state language addresses the condition of riprap used to armor river piers and abutments as a scour countermeasure. The riprap should extend both upstream and downstream from the structure. It should extend approximately 10' from the abutment or pier. Plain riprap should be natural angular stone, interlocking with a minimum size of approximately 8"-12" in diameter. Heavy riprap should be natural angular stone, interlocking with a minimum size of approximately 12"-24" in diameter. In both cases the riprap should be well graded. The condition of the individual stone should be assessed to determine if weathering or breaking up of the stone is occurring. Also the inspector should note if the geotextile fabric is exposed.	218

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The rip-rap is placed and functioning as designed.	
2	The rip-rap is not accessible to be inspected because of water depth or other reasons.	• Underwater inspection
3	Portions of the rip-rap may have shifted or there are gaps between the larger stones exposing structural elements and/or geotextile fabric (filter). The individual stones may be of inadequate size or the stones may be weathered or beginning to break up.	• Repair or rehab • Have rip-rap reviewed by hydraulics engineer
4	The rip-rap has extensive areas that are displaced, stones that are broken up by heavy weathering, or missing (washed away).	• Replace

(02/07)

SLAG AGGREGATE- DECK

NAME	UNIT	DESCRIPTION	ELEMENT #
Slag Aggregate-Deck	EA	This smart flag identifies slag aggregate in bridge deck concrete. Slag aggregate is identified by examining pieces of concrete taken from the deck. This can be done by examining a concrete spall, chipping away a piece of concrete or coring. The concrete sample should be taken from the deck bottom surface if the top surface has received a rigid overlay that would be of different material. Concrete having slag aggregate will fracture through the aggregate. Slag aggregate is very porous and voids or "pin holes" will easily be seen. The color of slag aggregate can be light grey to dark brown, and the aggregate is typically highly angular.	382

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The deck has been checked and it does not contain slag aggregate	
2	The deck concrete contains slag aggregate.	<ul style="list-style-type: none">• Do detailed inspection of deck bottom surface and fascia periodically for loose concrete• Place false decking over traveled lanes• Replace Deck

(02/07)

SLAG AGGREGATE- SUBSTRUCTURE

NAME	UNIT	DESCRIPTION	ELEMENT #
Slag Aggregate-Subst	EA	This smart flag identifies slag aggregate in bridge substructure concrete. Slag aggregate is identified by examining pieces of concrete taken from the deck. This can be done by examining a concrete spall, chipping away a piece of concrete or coring. Concrete having slag aggregate will fracture through the aggregate Slag aggregate is very porous and voids or "pin holes" will easily be seen. The color of slag aggregate can be light grey to dark brown, and the aggregate is typically highly angular.	384

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	The substructure has been checked and it does not contain slag aggregate	
2	The substructure concrete contains slag aggregate.	<ul style="list-style-type: none"> • Do detailed inspection of concrete surface and periodically for loose concrete • Replace Substructure



Slag Aggregate



Slag Aggregate

APPURTENANCES WITH CONCRETE ANCHORS

NAME	UNIT	DESCRIPTION	ELEMENT #
Concrete Anchors	EA	This flag pertains to appurtenant items that are attached to concrete bridge elements using concrete anchors. Appurtenant items include, but are not limited to, suspended utilities, traffic signals, and sign supports. Use the Utilities field on the BSIR to describe the extent of any distress/actions taken. The unit of measure, each, is per appurtenance.	383

Condition State Descriptions and Feasible Actions

CONDITION STATE	DESCRIPTION	FEASIBLE ACTIONS
1	All anchors are holding the item tight to the concrete with minimal gaps between the concrete and the connected plate.	
2	At least one anchor has a 1/8" to 1/4" gap between the concrete and the connected plate.	• Replace anchors
3	At least one anchor has a 1/4" to 1/2" gap between the concrete and the connected plate.	• Replace anchors, high priority
4	At least one anchor has more than a 1/2" gap between the concrete and the connected plate.	• Replace anchors, high priority

(02/07)



Example of sign support in Condition State 1

Any comments or suggestions on improvement can be directed to:

Robert Kelley
Bridge Management Engineer
Construction and Technology
Michigan Department of Transportation

(517) 322-1398