Oregon Department of Transportation
Bridge Inspection Report

District :	2B	**Structure :**	Willamette River, Hwy 1 (Boone Bridge)	**Bridge ID :**	02254A
Fac Crossed :	WILLAMETTE RIVER	**Owner :**	State Highway Agency	**Fac Carried :**	I-5 (HWY 001)
Suff Rating :	80.1	**County :**	Clackamas	**Mile Point :**	283.11 mi
AC Depth :	0.00	**Record Type :**	1	**Insp Date :**	01/21/2020
Bridge Length :	1136.75 ft	**Insp Freq :**	24	**Inspector 1 :**	Noah Brennan (ODOT-833)
		Bridge Width :	119.50 ft	**Inspector 2 :**	ROBERT IWAI (267)

Signature: _____

Element Condition States (New AASHTO report)

Element	Structure Unit	Environment	Quantity	Units	CS 1	CS 2	CS 3	CS 4	Temp
12-Re Concrete Deck	**1**	**3**	**135747**	**(SF)**	**72167**	**41455**	**22125**	**0**	
1120-Efflorescence/Rust Staining	**1**	3	22625	(SF)	0	500	22125	0	
1130-Cracking (RC and Other)	**1**	3	39830	(SF)	0	39830	0	0	
1131-Soffit Cracking (RC, PSC)	**1**	3	1125	(SF)	0	1125	0	0	
513-Rigid Wearing Surface	**1**	3	131768	(SF)	131503	264	1	0	
107-Steel Opn Girder/Beam	**1**	**3**	**5200**	**(LF)**	**2740**	**2100**	**360**	**0**	
1000-Corrosion	**1**	3	1760	(LF)	0	1400	360	0	
1010-Cracking	**1**	3	700	(LF)	0	700	0	0	
518-Steel Paint	**1**	3	85643	(SF)	34643	34500	16500	0	
109-Pre Opn Conc Girder/Beam	**1**	**3**	**7631**	**(LF)**	**7609**	**22**	**0**	**0**	
1080-Delamination/Spall/Patched Area	**1**	3	7	(LF)	0	7	0	0	
1090-Exposed Rebar	**1**	3	15	(LF)	0	15	0	0	
113-Steel Stringer	**1**	**3**	**2600**	**(LF)**	**2340**	**260**	**0**	**0**	
1000-Corrosion	**1**	3	260	(LF)	0	260	0	0	
518-Steel Paint	**1**	3	13819	(SF)	12437	1382	0	0	
152-Steel Floor Beam	**1**	**3**	**1716**	**(LF)**	**346**	**1050**	**320**	**0**	
1000-Corrosion	**1**	3	1310	(LF)	0	990	320	0	

7000-Damage	**1**	3	60	(LF)	0	60	0	0
518-Steel Paint	**1**	3	16630	(SF)	5655	8300	2675	0
161-Stl Pin Pin/Han both	**1**	**3**	**16**	**(EA)**	**6**	**8**	**2**	**0**
1000-Corrosion	**1**	3	10	(EA)	0	8	2	0
518-Steel Paint	**1**	3	276	(SF)	71	180	25	0
210-Re Conc Pier Wall	**1**	**3**	**731**	**(LF)**	**372**	**326**	**33**	**0**
1080-Delamination/Spall/Patched Area	**1**	3	17	(LF)	0	0	17	0
1090-Exposed Rebar	**1**	3	16	(LF)	0	0	16	0
1190-Abrasion(PSC/RC)	**1**	3	326	(LF)	0	326	0	0
215-Re Conc Abutment	**1**	**3**	**239**	**(LF)**	**219**	**12**	**8**	**0**
1120-Efflorescence/Rust Staining	**1**	3	20	(LF)	0	12	8	0
302-Compressn Joint Seal	**1**	**3**	**478**	**(LF)**	**0**	**0**	**418**	**60**
2310-Leakage	**1**	3	475	(LF)	0	0	415	60
2360-Adjacent Deck or Header	**1**	3	3	(LF)	0	0	3	0
303-Assem Jnt With Seal	**1**	**3**	**239**	**(LF)**	**9**	**120**	**32**	**78**
2310-Leakage	**1**	3	60	(LF)	0	0	0	60
2350-Debris Impaction	**1**	3	120	(LF)	0	120	0	0
2360-Adjacent Deck or Header	**1**	3	32	(LF)	0	0	32	0
2370-Metal Deterioration or Damage	**1**	3	17	(LF)	0	0	0	17
306-Other Joint	**1**	**3**	**1615**	**(LF)**	**239**	**0**	**1376**	**0**
2310-Leakage	**1**	3	1376	(LF)	0	0	1376	0
310-Elastomeric Bearing	**1**	**3**	**165**	**(EA)**	**165**	**0**	**0**	**0**
314-Pot Bearing	**1**	**3**	**32**	**(EA)**	**32**	**0**	**0**	**0**
321-Re Conc Approach Slab	**1**	**3**	**4719**	**(SF)**	**4109**	**610**	**0**	**0**
1080-Delamination/Spall/Patched Area	**1**	3	10	(SF)	0	10	0	0
1130-Cracking (RC and Other)	**1**	3	600	(SF)	0	600	0	0
513-Rigid Wearing Surface	**1**	3	4719	(SF)	3126	1593	0	0
331-Re Conc Bridge Railing	**1**	**3**	**3410**	**(LF)**	**3410**	**0**	**0**	**0**
390-Ptd Bridge Element	**1**	**3**	**116368**	**(SF)**	**0**	**116368**	**0**	**0**
980-Approach Roadway Embank	**1**	**3**	**1**	**(EA)**	**1**	**0**	**0**	**0**

990-Miscellaneous Elements	**1**	**3**	**1**	**(EA)**	**1**	**0**	**0**	**0**
999-Roadway Impact	**1**	**3**	**1**	**(EA)**	**0**	**0**	**1**	**0**

Appraisal

Appraisal	NBI #	Rating
Scour	113	7 Countermeasures
Bridge Rail	36A	1 Meets Standards
Transitions	36B	1 Meets Standards
Approach Rail	36C	1 Meets Standards
Rail Ends	36D	1 Meets Standards
Structural	67	6 Equal Min Criteria
Deck	68	9 Above Desirable Crit
Clearance	69	N Not applicable (NBI)
Waterway	71	8 Equal Desirable
Approach Alignment	72	8 Equal Desirable Crit

NBI Category

Category	NBI #	Rating
Deck Condition	58	6 Satisfactory
Superstructure	59	6 Satisfactory
Substructure	60	6 Satisfactory
Channel	61	7 Minor Damage
Culvert/Retaining Walls	62	N N/A (NBI)

Remarks

12-Re Concrete Deck

1120-Efflorescence/Rust Staining
Soffit cracks with rust staining in Spans 3, 4 and 5 between Girders 5 and 6. Soffit cracks with rust staining in Spans 3 and 4 between Girders 7 and 8. Soffit cracks with rust staining in Span 5 between Girders 3 and 4. Soffit cracks with rust staining in Span 5 in the West overhangs. There's soffit cracking with efflorescence in span 7 near Bent 7.

1130-Cracking (RC and Other)
There are cracks that are of moderate size and density above Bents 4 and 5 and throughout the entire South bound A and B lanes.

1131-Soffit Cracking (RC, PSC)
Soffit cracks in Span 5 in the East overhangs.

513-Rigid Wearing Surface
A 1 ½" Microsilica overlay was placed over the deck in 2000. ----- There are patches around the joints. There is a 1 SF spall in the SB left shoulder.

107-Steel Opn Girder/Beam
See the Fracture Critical & Fatigue Prone Inspection reports for additional information.

1000-Corrosion
Some moderate to heavy surface and freckled rust on the exterior girders. Rust on wind tongues. There's minor pack rust in the built-up flanges of the steel girders, especially the exterior east side girder. There's minor pack rust between hanger plates in Span 4 on Girders 5, 6, 7 and 8. There's moderate pack rust in Spans 3, 4 and 5 in Girder 5 near Bents 4 and 5.

1010-Cracking
Many cracks in the tack welds were found most have cracked through and self-arrested. It appears that the tack welds were used during construction to hold member in place before the bolts were installed. A 1.5 inch crack in the tack weld on the vertical stiffener for Girder 7, Span 3, between floor beams 7 and 8 (near area on bridge labeled splice 51). A small crack in the tack weld on the vertical stiffener on Girder 5 in Span 4 was also noted. Girders 3 and 4 in Span 4 have small cracks in the tack welds on the compression-pin nuts.

109-Pre Opn Conc Girder/Beam
Spans 1 and 2 have 15 lines of prestressed girders. Spans 6 and 7 have 18 lines of prestressed girders.

1090-Exposed Rebar
Three girders in Span 1 have minor spalls with exposed rebar.

113-Steel Stringer
There are four lines of steel stringers in Spans 3, 4 and 5 (NB Side).

1000-Corrosion
Some moderate corrosion on the stringer flanges and freckled surface rust on the webs.

152-Steel Floor Beam
There are a total of 33 lines of floor beams (66 separate cross frames) in Spans 3, 4 and 5 (NB Side). Each cross frame beam between girders is approximately 26' long. See the Fracture Critical & Fatigue Prone Inspection reports for additional information.

1000-Corrosion
There is pack rust in the built-up flanges of the floor beams, especially at the connection to Girder 8.

7000-Damage
Some floor beams have minor dents.

161-Stl Pin Pin/Han both
See the Fracture Critical & Fatigue Prone Inspection reports for additional information.

1000-Corrosion
Some of the steel pins were ground but not repainted and rust is forming. Some pack rust between the plates.

210-Re Conc Pier Wall
See the current Underwater Inspection report for additional information.

1080-Delamination/Spall/Patched Area
On Pier 2 the joint between the old and new pier has spalled concrete that measures 23 ft. high by 12 ft. wide. Pier 3 has a 5 ft. area of spalling at the northeast corner of the pier shaft, about 20' above the water surface, with 6 vertical bars and one hoop exposed. The concrete is poor condition at the spalled area.

1090-Exposed Rebar
On Pier 2 there are several bars exposed in an area 5 ft. high by 6 ft. wide and the rebar is rusty and has minor section loss. On Pier 3 has 6 ft. of rusty rebar exposed on the South side at the block out between the old and new pier. There's 4 ft. of rusted rebar exposed with minor section loss at the downstream end of the pier

1190-Abrasion(PSC/RC)
The full length of Piers 2 and 3 have loss of fines and coarse aggregate is exposed.

302-Compressn Joint Seal
Bents 3, 6 and both locations of the Pin & Hangers in Span 4 have polyfoam joints.

2310-Leakage
Bent 3 joint has missing seal about 12" long in 6 locations and about half of the remaining joint has adhesion failure of the seal. Bent 6 joint has adhesion failure of the seal in the SB lanes. The joints at the Pin & Hanger in Span 4 are leaking more than a drip and less than free flow.

2360-Adjacent Deck or Header
Bent 6 joint has a broken header about 18" long in 2 locations at the wheel ruts.

303-Assem Jnt With Seal
The assembly joints are at Bents 3 and 6.

2360-Adjacent Deck or Header
Both Bents 3 and 6 have damaged headers in the wheel ruts and spalls propagating out.

2370-Metal Deterioration or Damage
The Bent 3 (South End) joint was been retrofitted by the Bridge maintenance crew in 2011. During 2020 inspection there were four failed dampener supports.gain. The Bent 6 (North End) joint had 17 failed dampener supports.. Loose bars and loud banging noise at both joints.

306-Other Joint
Bent 1, Bent 8 and the 1,137 foot long longitudinal joint near the center of the bridge are "Other" joints.

2310-Leakage
The Bent 1 joint has failed; water is leaking more than a drip and less than free flow. The Bent 8 joint has failed; water is leaking more than a drip and less than free flow. The longitudinal joint has failed; water is leaking more than a drip and less than free flow.

310-Elastomeric Bearing
Bents 2 and 7 have three elastomeric bearings pads under each girder line. Bents 1, 3, 6, 8 have one bearing pad under each girder line.

314-Pot Bearing
There are eight pot bearings each at Bents 3, 4, 5 and 6. There are some vertical cracks in the bearing pedestals at Bent 6.

321-Re Conc Approach Slab

1080-Delamination/Spall/Patched Area
There's cracking and minor spalling in the approach slabs mainly in the SB lanes at the North end of the structure.

513-Rigid Wearing Surface
A 1 1/2" Microsilica overlay was placed over the approach slabs in 2000.

390-Ptd Bridge Element
Some moderate to heavy surface and freckled rust on the exterior girders. Rust on wind tongues. There's minor pack rust in the built-up flanges of the steel girders, especially the exterior east side girder. There's minor pack rust between hanger plates in Span 4 on Girders 5, 6, 7 and 8. There's moderate pack rust in Span 4 Girders 6 and 7 in the built-up flanges, up to 0.5 inch. There's severe pack rust in Span 4 Girder 7 near Bent 4 in the built-up flanges, up to 0.75 inch. Some moderate corrosion on the stringer flanges and freckled surface rust on the webs. There is pack rust in the built-up flanges of the floor beams, especially at the connection to Girder 8. Some of the steel pins were ground but not repainted and rust is forming. Some pack rust between the plates.

990-Miscellaneous Elements
A conduit (abandoned) is loose and hanging at the SE corner of the bridge. Collision damage in the SB approach guardrail about 100 ft. from the N. end of the bridge. Drains are plugged. Navigational light bulbs were replaced in 1/11/2014. There is a leak in the water pipe at the North East corner of the bridge. Miscellaneous items include seismic retrofits, metal catwalks, signs, navigational lights, sewer and water pipes.

Notes

Inspection Notes

This structure is a seven span bridge. The superstructure in Spans 1, 2, 6 and 7 are prestressed girders. The length of Spans 1, 2, 6 and 7 are 110.75', 110', 120' and 120' respectively. The superstructure in Spans 3, 4 and 5 are steel girders. The lengths of Spans 3, 4 and 5 are 200', 250' and 200' respectively. Access to the underside of the deck is thru manholes located either near the NE and SE corners of the bridge. The access covers in the manholes were tack welded.

Bridge Notes

Detour map added and length changed by Erick Cain 03/21/2011.

Bridge Hydraulics Notes

Maintenance Recommendations

As of: 8/4/2020

Priority	Crew	Wrk Cnd	Notes	Est.cost	Status	Rec Date
Routine/Schedule	Not Assigned	12 RC Deck Seal Concrete	Seal the cracks in the deck wearing surface, especially in the SB lanes. 1/06, 1/08.	10000	Unknown	01/05/2006
Routine/Schedule	Not Assigned	107 Steel Open Girder/Beam Paint Steel	Repair and repaint pack rust on the bottom flanges of Girders 5, 6, 7 and 8 in Spans 3, 4 and 5.	60000	Unknown	03/25/2011
Routine/Schedule	Not Assigned	107 Steel Open Girder/Beam Spot Paint	Spot paint areas with moderate to heavy corrosion . 1/06.	15000	Unknown	01/05/2006
Routine/Schedule	Not Assigned	113 Steel Stringer (Stringer/Floorbeam System) Spot Paint	Spot paint areas of corrosion.		Unknown	05/08/2014
Routine/Schedule	Not Assigned	152 Steel Floorbeam Spot Paint	Spot paint areas with heavy corrosion & pack rust.	25000	Unknown	05/08/2014

Priority	Crew	Wrk Cnd	Notes	Est.cost	Status	Rec Date
Routine/Schedule	Not Assigned	161 Steel Pin and Pin & Hanger Assemblies Wash/Clean	Clean pack rust from hanger plates span 4 girders 5,6,7,8, but especially #8.	2500	Approved	01/07/2008
Routine/Schedule	Not Assigned	210 RC Pier Wall Patch Concrete	Patch spalled areas with exposed rusty rebar.	50000	Unknown	05/08/2014
Routine/Schedule	Not Assigned	302 Joints Compression Seal Reseal Joint	Repair headers & replace joint seals.	2500	Unknown	01/07/2008
Monitor	Region 1 Inspectors	303 Joints Modular Joint Assembly Other	Monitor repair: Repaired with nelson studs only the damaged areas.		Approved	03/25/2011
Routine/Schedule	Not Assigned	303 Joints Modular Joint Assembly Other	Repair damaged headers.	200000	Unknown	05/08/2014
Routine/Schedule	Not Assigned	306 Joints Other Joint Joint Replace	Repair headers & replace joint seals.	15000	Unknown	01/05/2006
Routine/Schedule	Not Assigned	990 Misc Element Other	Brush North end of the bridge.	0	Unknown	01/19/2018

*Completed items not included on default search

Load Rating

Rating Date :	07/25/2002	**Posting Req :**	5 At/Above Legal Loads
Design Load :	5 MS 18 (HS 20)	**Posting Status :**	A Open, no restriction
Operating Load :	50 ton	**OR Method :**	1 LF Load Factor
Inventory Rating :	29 ton	**IR Method :**	1 LF Load Factor

Truck	Rating Factor	% Below	Posting Required	Controlling Member	Actual Posting	Posting Date
Type 3	1.92	5 At/Above Legal Loads	No	PS Gird Ext SB, span 1 of 7 +M at 0.5L		
Type 3S-2	1.52	5 At/Above Legal Loads	No	PS Gird Ext SB, span 1 of 7 +M at 0.5L		
Type 3-3	1.36	5 At/Above Legal Loads	No	PS Gird Ext SB, span 1 of 7 +M at 0.5L		
SU4						
SU5						
SU6						
SU7						
EV2						
EV3						

Load Rating Notes

Load Rating Condition Comparison Chart

Category	NBI #	Rating Condition	Current Condition
Traffic Impact		7 Good	CS3
Deck Condition	58	6	6
Superstructure	59	7	6
Substructure	60	7	6
Temporary Repairs	103		
Wearing Surface Thickness		0.00	0.00

Inspection Schedule

Activity	Conducted On	Frequency	Next Inspection
Routine Inspection	01/21/2020	24	01/01/2022
Underwater	09/28/2018	36	09/28/2021
X-Channel	02/16/2012	120	02/16/2022
Fracture Critical	01/21/2020	24	01/01/2022
Fatigue Prone	01/21/2020	48	01/01/2024

Oregon Department of Transportation

Structure Inventory and Appraisal Report

Suff Rating: 80.1

Bridge NO: 02254A
Insp Date: 01/21/2020

(2) Highway District	District 2B	(42A) Type Service On	1	(75) Type of Work	
(3) County	Clackamas	(42B) Type Service Under	5	(76) Improvement Length	
(4) City	00000	**(43) Struct Main**	**3 Steel 03 Girder-Floorbeam**	(90) Inspection Date	01/21/2020
(5) Inventory Route	111000050	(44) Struct Appr	5 Prestressed Concrete 02 Stringer/Girder	(91) Inspection Frequency	24
(6) Feature INT	WILLAMETTE RIVER	(45) Number Main Spans	3	(92) Critical Feat Insp (A) Fracture Critical (B) Underwater Insp	 Y 24 01/21/2020 Y 36 09/28/2018
(7) Facility Carried	I-5 (HWY 001)	(46) Number Appr Spans	4	(94) Cost of Improvement	
(8) Structure Number	02254A001 28311	(47) Horizontal Clearance	60.79 ft	(95) Roadway Improvement	
(9) Location	AT WILLAMETTE RIVER	(48) Maximum Span Length	250.00 ft	(96) Project Improvement	0
(10) Vert Clearance	99.99 ft	(49) Structure Length	1136.75 ft	(97) Year of Improvement	
(11) Mile Post	283.11 mi	(50A) Sidewalk Width LT	0.00 ft	(98) Border BRST-Code	
(12) Base Highway Network	1	(50B) Sidewalk Width RT	0.00 ft	**(100) Defense Highway**	**1**

(13) LRS Inventory Route	000100200S00	**(51) Bridge Roadway Width**	**113.58 ft**	(101) Parallel Structure	N
(16) Latitude	45° 17' 30.31"	(52) Deck Width	119.50 ft	(102) Direction of Traffic	2
(17) Longitude	122° 46' 9.56"	**(53) Vert Clear Over Deck**	**99.99 ft**	(103) Temporary Structure	
(19) Bypass Detour	**12.70 mi**	(54) Vert Clear Under Deck	N 0.00 ft	(104) Highway System	1
(20) TOLL	3 On free road	(55) Min Lat Underclear CD	N 0.00 ft	(105) Federal Lands HWY	0
(21) Custodian	State Highway Agency	(56) Min Lat Underclear	L 0.00 ft	(106) Year Reconstructed	1970
(22) Owner	State Highway Agency	**(58) Deck**	**6**	(107) Deck Structure	1
(26) Func Class	11 Urban Interstate	**(59) SuperStructure**	**6**	(108) Wearing Surface	300
(27) Year Built	1953	**(60) SubStructure**	**6**	(109) Truck ADT	14%
(28) Lanes	**on: 7 / under: 0**	(61) Channel	7	(110) Designated National Network	1
(29) Average Daily Traffic	**131700**	**(62) Culvert**	**N**	(111) Pier Protection	5
(30) Year of ADT	2018	(63) Oper Rating Method	1	(112) NBIS Bridge Length	Y
(31) Design Load	5 MS 18 (HS 20)	(64) Operating Rating	50.00 ton	(113) Scour Critical Bridge	7
(32) Approach Roadway	**113.58 ft**	(65) Inv Rating Method	1	(114) Future ADT	150200
(33) Bridge Median	3 Closed Med w/Barriers	**(66) Inventory Rating**	**29.00 ton**	(115) Year of Future ADT	2038
(34) Skew	0°	**(67) Structure Condition**	**6**	(116) Vert-Lift Clearance	
(35) Structure Flared	0 No flare	**(68) Deck Geometry**	**9**	(117) Est Maint Cost	
(36) Traffic Safety Feature	**1111**	**(69) Underclearance**	**N**	(118) Culvert Length	
(37) Historical Significance	5	(70) Posting	5	(119) Culvert Inside Height	
(38) Navigation Control	1	**(71) Waterway Adequacy**	**8**	(120) Inspector	Noah Brennan (ODOT-833)
(39) Navigation Vert Clear	75.00 ft	**(72) APPR RDWY Alignment**	**8**	(122) Highway/CO RD	001
(40) Navigation Horz Clear	240.00 ft			(125) Embankment Erosion	5
(41) Open Status	A				

Quality Assurance:

WS Depth	0.00	(52) Deck Width	119.50 ft	(70) Posting	5
(28) Lanes	on: 7 / under: 0	(53) Vert Clear Over Deck	99.99 ft	(71) Waterway Adequacy	8
(32) Approach Roadway	113.58 ft	(58) Deck	6	(72) APPR RDWY Alignment	8
(41) Open Status	A	(59) SuperStructure	6	(95) Roadway Improvement	
(43) Struct Main	3 Steel	(60) SubStructure	6	(103) Temporary Structure	
(44) Struct Appr	5 Prestressed Concrete	(61) Channel	7	(108) Wearing Surface	300

(46) Number Appr Spans	4	(62) Culvert	N	(113) Scour Critical Bridge	7
(51) Bridge Roadway Width	113.58 ft			(125) Embankment Erosion	5

Bridge Clearance Documents: Not Available
Bridge Detours Maps: Not Available
Bridge Images: IM02254A_A1.JPG IM02254A_A10.JPG IM02254A_A11.JPG IM02254A_A12.JPG IM02254A_A13.JPG IM02254A_A2.JPG IM02254A_A3.JPG IM02254A_A4.JPG IM02254A_A5.JPG IM02254A_A6.JPG IM02254A_A7.JPG IM02254A_A8.JPG IM02254A_A9.JPG
Job Hazard Assessment: JHA02254A.PDF
Cross Channel Documents: XC02254A_12.pdf
Gusset Plate Documents: Not Available
Fracture Critical Inspection Documents: FC02254A_20.pdf
Fatigue Prone Assessment: FP02254A_20.pdf
Under Water: UW02254A.pdf
Scour Plan Of Action: Not Available
Timber Boring: Not Available
Pin Hanger: Not Available
Deck Surveys: Not Available
Draw Bridges: Not Available
Supplemental: Not Available
Critical Findings: Not Available
Tunnel Maps: Not Available
Tunnel Access: Not Available