



DEPARTMENT OF TRANSPORTATION  
Structure Maintenance & Investigations

Bridge Number : 02C0016  
Facility Carried: SALMON RIVER ROAD  
Location : 13.2 MI W/O SAWYERS BAR  
City :  
Inspection Date : 08/15/2017 ✓ sw ✓  
Inspection Type  
Routine  FC Underwater Special Other

Bridge Inspection Report

STRUCTURE NAME: SALMON RIVER

CONSTRUCTION INFORMATION

Year Built : 1966 Skew (degrees): 8  
Year Modified: N/A No. of Joints : 2  
Length (m) : 123.8 No. of Hinges : 0

Structure Description: Spans 1 and 4: Simple span steel multi-beam (3). Spans 2 and 3: continuous welded steel girder (3). Superstructure is composite with RC deck supported on RC single column piers and RC diaphragm abutments with monolithic wingwalls. Pier 3 is founded on steel H piles. The remaining substructure elements are founded on spread footings.

Span Configuration : 1 @ 75.1 ft, 2 @ 145.0 ft, 1 @ 41.0 ft

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20  
Inventory Rating: RF=1.24 =>40.2 metric tons Calculation Method: LOAD FACTOR  
Operating Rating: RF=2.07 =>67.1 metric tons Calculation Method: LOAD FACTOR  
Permit Rating : P P P P P ✓  
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: 1.6 ft br/cu, 24.0 ft, 1.6 ft br/cu  
Total Width: 8.4 m Net Width: 7.3 m No. of Lanes: 2 Speed: 35 mph  
Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 inches  
Rail Code: 1000

Rail Type	Location	Length (ft)	Rail Modifications
Type 15	Right/Left	830	

DESCRIPTION UNDER STRUCTURE

Channel Description: Gravel and rocks.

NOTICE

The bridge inspection condition assessment used for this inspection is based on the American Association of State Highway and Transportation Officials (AASHTO) Bridge Element Inspection Manual 2013 as defined in Moving Ahead for Progress in the 21st Century (MAP-21) federal law. The new element inspection methodology may result in changes to related condition and appraisal ratings on the bridge without significant physical changes at the bridge.

The element condition information contained in this report represents the current condition of the bridge based on the most recent routine and special inspections. Some of the notes presented below may be from an inspection that occurred prior to the date noted in this report. Refer to the Scope and Access section of this inspection report for a description of which portions of the bridge were inspected on this date.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The river was flowing swiftly at a maximum depth of 3 feet under Spans 2 and 3 at the time of this investigation. Pier 3 was partially submerged in up to 3 feet of water.

INSPECTION COMMENTARY

Swift water prevented a wade and probe inspection of the submerged portion of the Pier 3 column. The remainder of the Pier 3 column was inspected from the river banks. The most recent inspection of the submerged portion of the Pier 3 column appears to have taken place during the 09/06/15 routine inspection. A complete inspection of all remaining visible elements was performed.

A fracture critical member inspection was performed on 04/26/2016 by Val Ianev and Shujun Wang from the Office of Specialty Investigations. The investigation was conducted in accordance with the Fracture Critical Member Inspection Plan, dated 04/22/2014. Findings from the 04/26/2016 fracture critical investigation are included within the appropriate elements of this report.

## SAFE LOAD CAPACITY

The load rating for this structure is being reviewed by SM&I Ratings Branch under work request number 7833 to account for distress in the Pier 3 column. An updated Load Rating Summary Sheet will be archived when this review is complete. The current rating is based on VIRTIS 6.3.0 AASHTO software output dated 06/27/2012.

## RECOMMENDATIONS

Rehab the Pier 3 column around the distressed area. Continued concrete abrasion and corrosion of the exposed reinforcing from streamflow will further deteriorate the distressed area. Refer to element defect 205-1090 for information on the Pier 3 column distress.

STEEL INVESTIGATIONS

This structure qualifies for an in-depth Steel investigation because it possesses the following fracture critical or fatigue prone details:

Girder (Built-Up): FC Members with Category E Welds, High Strength Steel,  
Beam(Rolled): FC Members with Category E Welds

Fracture Critical: Yes                      Inspection Freq.: 24                      Next Inspection: 04/26/2018

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each State	Condition	State
							St. 1	St. 2	St. 3 St. 4
12			Deck-RC	2	1040	sq.m	0	1040	0 0
	1120		Efflorescence/Rust Staining	2	10		0	10	0 0
	1130		Cracking (RC and Other)	2	50		0	50	0 0
	1190		Abrasion (PS Conc./RC)	2	980		0	980	0 0

(12)

There are 2 to 4 inch diameter patches throughout the bridge deck.

(12-1120)

There are several randomly spaced transverse cracks with efflorescence throughout the soffit.

(12-1130)

There are randomly spaced transverse cracks, up to 0.04 inches wide, throughout approximately 5 percent of the deck.

(12-1190)

There is abrasion throughout the concrete deck. The aggregate remains secure in the concrete.

107			Girder/Beam-Steel	2	372	m	347	25	0 0
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**ELEMENT INSPECTION RATINGS AND COMMENTARY**

Elem No.	Defect /Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each State	Condition	State
							St. 1	St. 2	St. 3 St. 4
1000		Corrosion		2	25		0	25	0 0
515		Steel Coating-Paint		2	1838	sq.m	1828	0	0 10
	3440	Effectiveness (Steel PC)		2	10		0	0	0 10
(107)									
There is a boulder, approximately 3 feet in diameter, bearing on Girder 1 near Abutment 1 (Photo 1).									
04/26/2016 FCI: No fractures or cracks were found.									
(107-1000)									
There are random areas of surface corrosion along the bottom flanges typically adjacent to the deck drains.									
(107-515-3440)									
Refer to element defect 107-1000.									
205		Column-RC		2	3	each	2	0	0 1
1090		Exposed Rebar (PS Conc./RC)		2	1		0	0	0 1
(205-1090)									
The upstream nose of the Pier 3 column is covered with a corrugated metal shell and was not visible for inspection. Previous bridge inspection reports indicate the full circumference of the column was covered with a corrugated metal wrap prior to the 05/20/1981 routine inspection. A portion of the corrugated metal wrap along the downstream nose was somehow removed prior to the current investigation.									
There is abrasion, up to 2 inches deep, extending vertically approximately 2 to 10 feet from the channel bottom along the downstream nose of the Pier 3 column. The total visible abraded area is approximately 25 square feet. There is approximately 20 exposed vertical reinforcing bars and several fractured stirrup reinforcing. The abraded area also exposes a portion of a lap splice for the primary reinforcement (Photo 2). Exposed reinforcing in the Pier 3 column was first documented in the 11/04/1971 routine inspection report.									
215		Abutment-RC		2	34	m	34	0	0 0
(215)									
There were no significant defects noted.									
220		Pile Cap/Footing-RC		2	7	m	7	0	0 0
(220)									
There were no significant defects noted.									
225		Pile-Steel		2	1	ea.	1	0	0 0
(225)									
The pile element is included to indicate the presence of piles on this structure. The piles were not exposed for visual inspection. No indication of pile distress was noted in any substructure element.									
234		Pier Cap-RC		2	17	m	17	0	0 0
(234)									
There were no significant defects noted.									
308		Joint-Steel Sliding Plates		2	18	m	18	0	0 0
(308)									
There were no significant defects noted.									
311		Bearing-Moveable		2	6	each	6	0	0 0

**ELEMENT INSPECTION RATINGS AND COMMENTARY**

Elem No.	Defect /Prot	Element Description	Env	Total Qty	Units	Qty in each Condition State			
						St. 1	St. 2	St. 3	St. 4
(311) There were no significant defects noted.									
313		Bearing-Fixed	2	15	each	15	0	0	0
(313) There were no significant defects noted.									
330		Railing-Metal	2	248	m	248	0	0	0
(330) There were no significant defects noted.									

**WORK RECOMMENDATIONS**

RecDate: 09/06/2015      EstCost:      Rehab the distressed area in the Pier 3  
Action : Sub-Patch spalls      StrTarget: 2 YEARS      column.  
Work By: LOCAL AGENCY      DistTarget:  
Status : PROPOSED      EA:

RecDate: 09/18/2013      EstCost:      Remove the boulder bearing on the Girder  
Action : Bridge-Misc      StrTarget: 1 YEAR      1 flange near Abutment 1.  
Work By: LOCAL AGENCY      DistTarget:  
Status : PROPOSED      EA:

Team Leader : Trevor J. Oppezzo

Report Author : Trevor J. Oppezzo

Inspected By : TJ.Oppezzo/G.Claggett

  
Trevor J. Oppezzo (Registered Civil Engineer)      10/10/17 (Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

IDENTIFICATION

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER 02C0016
(5) INVENTORY ROUTE (ON/UNDER) - ON 140000000
(2) HIGHWAY AGENCY DISTRICT 02
(3) COUNTY CODE 093 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- SALMON RIVER
(7) FACILITY CARRIED- SALMON RIVER ROAD
(9) LOCATION- 13.2 MI W/O SAWYERS BAR R
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- NOT ON NET 0
(13) LRS INVENTORY ROUTE & SUBROUTE
(16) LATITUDE 41 DEG 22 MIN 27.37 SEC
(17) LONGITUDE 123 DEG 25 MIN 47.23 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE MAIN:MATERIAL- STEEL CONT
TYPE- STRINGER/MULTI-BEAM OR GDR CODE 402
(44) STRUCTURE TYPE APPR:MATERIAL- STEEL
TYPE- STRINGER/MULTI-BEAM OR GDR CODE 302
(45) NUMBER OF SPANS IN MAIN UNIT 2
(46) NUMBER OF APPROACH SPANS 2
(107) DECK STRUCTURE TYPE- CIP CONCRETE CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE- NONE CODE 0
B) TYPE OF MEMBRANE- NONE CODE 0
C) TYPE OF DECK PROTECTION- NONE CODE 0

AGE AND SERVICE

(27) YEAR BUILT 1966
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON- HIGHWAY 1
UNDER- WATERWAY 5
(28) LANES:ON STRUCTURE 02 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 210
(30) YEAR OF ADT 2011 (109) TRUCK ADT 2 %
(19) BYPASS, DETOUR LENGTH 199 KM

GEOMETRIC DATA

(48) LENGTH OF MAXIMUM SPAN 44.2 M
(49) STRUCTURE LENGTH 123.8 M
(50) CURB OR SIDEWALK: LEFT 0.4 M RIGHT 0.4 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 7.3 M
(52) DECK WIDTH OUT TO OUT 8.4 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 7.3 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 8 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 7.3 M
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M
(54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M
(55) MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M
(56) MIN LAT UNDERCLEAR LT 0.0 M

NAVIGATION DATA

(38) NAVIGATION CONTROL- NO CONTROL CODE 0
(111) PIER PROTECTION- CODE
(39) NAVIGATION VERTICAL CLEARANCE 0.0 M
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR M
(40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M

SUFFICIENCY RATING = 72.3

STATUS
HEALTH INDEX 81.0
PAINT CONDITION INDEX = 99.5

CLASSIFICATION

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- MAJOR COLLECTOR RURAL 07
(100) DEFENSE HIGHWAY- NOT STRAHNET 0
(101) PARALLEL STRUCTURE- NONE EXISTS N
(102) DIRECTION OF TRAFFIC- 2 WAY 2
(103) TEMPORARY STRUCTURE-
(105) FED.LANDS HWY- NOT APPLICABLE 0
(110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0
(20) TOLL- ON FREE ROAD 3
(21) MAINTAIN- COUNTY HIGHWAY AGENCY 02
(22) OWNER- COUNTY HIGHWAY AGENCY 02
(37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5

CONDITION

(58) DECK 5
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 4
(61) CHANNEL & CHANNEL PROTECTION 6
(62) CULVERTS N

LOAD RATING AND POSTING

(31) DESIGN LOAD- MS-18 OR HS-20 5
(63) OPERATING RATING METHOD- LOAD FACTOR 1
(64) OPERATING RATING- 67.1
(65) INVENTORY RATING METHOD- LOAD FACTOR 1
(66) INVENTORY RATING- 40.2
(70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5
(41) STRUCTURE OPEN, POSTED OR CLOSED- A
DESCRIPTION- OPEN, NO RESTRICTION

APPRAISAL

(67) STRUCTURAL EVALUATION 5
(68) DECK GEOMETRY 5
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 8
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 1000
(113) SCOUR CRITICAL BRIDGES 5

PROPOSED IMPROVEMENTS

(75) TYPE OF WORK- CODE
(76) LENGTH OF STRUCTURE IMPROVEMENT M
(94) BRIDGE IMPROVEMENT COST
(95) ROADWAY IMPROVEMENT COST
(96) TOTAL PROJECT COST
(97) YEAR OF IMPROVEMENT COST ESTIMATE
(114) FUTURE ADT 299
(115) YEAR OF FUTURE ADT 2035

INSPECTIONS

(90) INSPECTION DATE 08/17 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL- YES 24 MO A) 04/16
B) UNDERWATER INSP- NO MO B)
C) OTHER SPECIAL INSP- NO MO C)



Photo No. 1

Boulder bearing on Girder 1 near Abutment 1.



Photo No. 2

Pier 3 column distress.