Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in April 2017 to identify maintenance activities eligible for Caltrans' Bridge Preventive Maintenance Program (BPMP), dated December 2015, funding. Additional maintenance activities, if present, not eligible for BPMP funding were also noted. Maintenance recommendations, if noted in the most recent Caltrans Bridge Inspection Report (BIR), were confirmed.

Bridge Number: 55C0148

Bridge Name: Santa Ana River Channel (Warner Ave) **Year Built:** 1961

Facility Carried: Warner Avenue

The Santa Ana River Channel Bridge at Warner Avenue is a continuous six span cast-in-place reinforced concrete T-beam Bridge with pier wall and open-end diaphragm abutments supported on concrete piles. OCPW noted that the existing deck was treated during the widening.

Caltrans BIR recommendations:

- Repair pothole in the AC westbound departure lane

Field Inspection Observations

- Deck appears to have been treated, likely to address severe efflorescence in several bays (photo 1). No immediate action is required but the bridge soffit should continue to be monitored to determine if water is continuing to seep through the bridge deck.
- Pot hole in the approach (photo 2 & 3). Recommend covering utility opening, back filling the pothole, and replacing the AC.

Maintenance Needs Assessment

BPMP Assessment

- N/A – No eligible maintenance activities

General Maintenance – Non-BPMP

- Repair pot hole at abutment.

Proposed BPMP Construction Costs

- N/A

Construction Items Not Funded by BPMP

- AC pot hole in approach repair ≈$15,000, includes traffic control

APPENDIX A

Field Review Notes, Photos, and BIR

Photo 1:

Photo 2:

Photo 3:

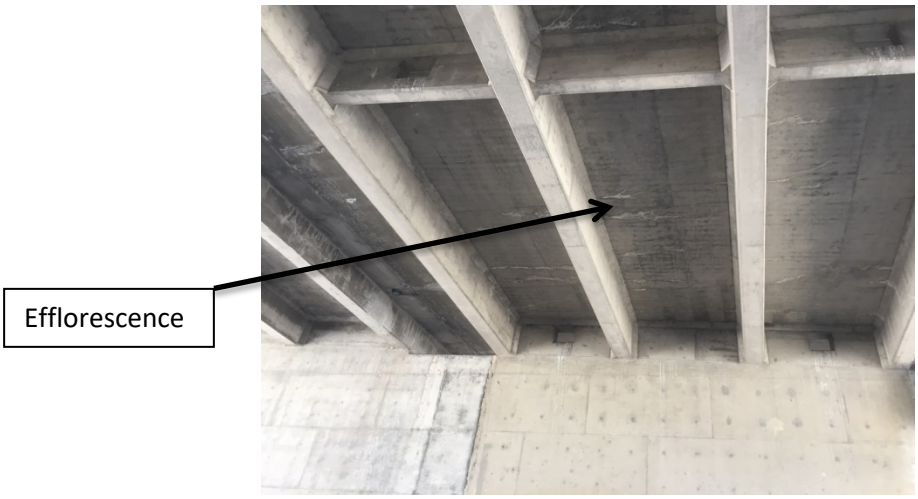

Photo 4: Bridge Soffit

Photo 5: Bridge Approach

Photo 6: Abutment Elevation

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0148
Facility Carried: WARNER AVENUE
Location : 0.1 MI W/O HARBOR BLVD
City :
Inspection Date : 10/24/2014

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: SANTA ANA RIVER CHANNEL (WARNER AVE)

CONSTRUCTION INFORMATION

Year Built : 1961
Year Widened: 1969
Length (m) : 77.4
Skew (degrees): 9
No. of Joints : 2
No. of Hinges : 2

Structure Description: Continuous six span CIP/RC T-beam (9 each) and widened 3 girders N and 2 girders S with RC pier walls and RC open end diaphragm abutments, all supported upon concrete piles. Wi

Span Configuration : (W) 10.4 m, 4 @ 14.0 m, 10.4 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20
Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: ASSIGNED (LFD)
Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: ASSIGNED (LFD)
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.3 m br, 1.5 m sw, 13.4 m, 2.4 m med, 12.3 m, 1.5 m sw, 0.3 m br (N)
Total Width: 31.6 m Net Width: 24.5 m No. of Lanes: 6 Speed: 45 mph
Min. Vertical Clearance: Unimpaired

Rail Code: 1111

Rail Type	Location	Length (ft)	Rail Modifications
Type 26	Right/Left	525	

DESCRIPTION UNDER STRUCTURE

Channel Description: RC trapezoidal.

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 dry at inspection time. All elements were visually inspected.

DECK AND ROADWAY
There is a hole (18" x 8" x 12") in the AC westbound departure lane #1.

INSPECTION COMMENTARY

REVISIONS
The bridge name was revised to include the road carried name.
Old name: SANTA ANA RIVER CHANNEL.
New name: SANTA ANA RIVER CHANNEL (WARNER AVE).

SAFE LOAD CAPACITY
A load Rating Summary sheet is included with this bridge inspection report. This load rating was assigned in accordance with current SM&I procedures.

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
12		**Deck-RC**	2	688	sq.m	688	0	0	0
(12)									
There were no significant defects noted.									
16		**Top Flange-RC**	2	1757	sq.m	1757	0	0	0
	511	**Deck Wearing Surface-Concrete**	2	1571	sq.m	1571	0	0	0
(16)									
There were no significant defects noted.									
(16-511)									
There were no significant defects noted.									
109		**Girder/Beam-PS Conc.**	2	387	m	387	0	0	0
(109)									
There were no significant defects noted.									
110		**Girder/Beam-RC**	2	697	m	697	0	0	0
(110)									
There were no significant defects noted.									
182		**EQ Restrainer Cable-Other**	2	18	ea.	18	0	0	0
(182)									
There were no significant defects noted.									
210		**Pier Wall-RC**	2	155	m	155	0	0	0
(210)									
There were no significant defects noted.									
215		**Abutment-RC**	2	64	m	64	0	0	0
(215)									
There were no significant defects noted.									
256		**Slope Protection**	2	2	ea.	2	0	0	0
(256)									
There were no significant defects noted.									
302		**Joint-Compression Seal**	2	56	m	56	0	0	0
(302)									
There were no significant defects noted.									
312		**Bearing-Enclosed**	2	2	each	2	0	0	0

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4
(312)										
There were no significant defects noted.										
331			**Railing-RC**	2	155	m	155	0	0	0
(331)										
There were no significant defects noted.										

WORK RECOMMENDATIONS

RecDate: 10/24/2014
Action : Appr. Roadway-Repair
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

Repair the hole (18" x 8" x 12") in the AC westbound departure (west) lane #1.

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

11/13/14

Mikhael T. Zaarour (Registered Civil Engineer) (Date)

STRUCTURE INVENTORY AND APPRAISAL REPORT

********** IDENTIFICATION **********

(1)	STATE NAME- CALIFORNIA	069
(8)	STRUCTURE NUMBER	**55C0148**
(5)	INVENTORY ROUTE(ON/UNDER)- ON	140000000
(2)	HIGHWAY AGENCY DISTRICT	12
(3)	COUNTY CODE 059 (4) PLACE CODE	00000
(6)	FEATURE INTERSECTED-	SANTA ANA RIVER CHANNEL
(7)	FACILITY CARRIED-	WARNER AVENUE
(9)	LOCATION-	0.1 MI W/O HARBOR BLVD
(11)	MILEPOINT/KILOMETERPOINT	0
(12)	BASE HIGHWAY NETWORK- PART OF NET	1
(13)	LRS INVENTORY ROUTE & SUBROUTE	000000000000
(16)	LATITUDE	33 DEG 42 MIN 51.96 SEC
(17)	LONGITUDE	117 DEG 55 MIN 18.68 SEC
(98)	BORDER BRIDGE STATE CODE % SHARE	%
(99)	BORDER BRIDGE STRUCTURE NUMBER	

******** STRUCTURE TYPE AND MATERIAL *********

(43)	STRUCTURE TYPE MAIN:MATERIAL-	CONCRETE CONT
	TYPE- TEE BEAM	CODE 204
(44)	STRUCTURE TYPE APPR:MATERIAL-	OTHER/NA
	TYPE- OTHER/NA	CODE 000
(45)	NUMBER OF SPANS IN MAIN UNIT	6
(46)	NUMBER OF APPROACH SPANS	0
(107)	DECK STRUCTURE TYPE- CIP CONCRETE	CODE 1
(108)	WEARING SURFACE / PROTECTIVE SYSTEM:	
A)	TYPE OF WEARING SURFACE- CONCRETE	CODE 1
B)	TYPE OF MEMBRANE- NONE	CODE 0
C)	TYPE OF DECK PROTECTION- NONE	CODE 0

********** AGE AND SERVICE **********

(27)	YEAR BUILT	1961
(106)	YEAR RECONSTRUCTED	1969
(42)	TYPE OF SERVICE: ON- HIGHWAY	1
	UNDER- WATERWAY	5
(28)	LANES:ON STRUCTURE 06 UNDER STRUCTURE	00
(29)	AVERAGE DAILY TRAFFIC	25000
(30)	YEAR OF ADT 2008 (109) TRUCK ADT	1 %
(19)	BYPASS, DETOUR LENGTH	2 KM

********** GEOMETRIC DATA **********

(48)	LENGTH OF MAXIMUM SPAN	14.0 M
(49)	STRUCTURE LENGTH	77.4 M
(50)	CURB OR SIDEWALK: LEFT 0.0 M	RIGHT 1.5 M
(51)	BRIDGE ROADWAY WIDTH CURB TO CURB	24.5 M
(52)	DECK WIDTH OUT TO OUT	31.6 M
(32)	APPROACH ROADWAY WIDTH (W/SHOULDERS)	25.7 M
(33)	BRIDGE MEDIAN- CLOSED (NO BARRIER)	2
(34)	SKEW 9 DEG (35) STRUCTURE FLARED	NO
(10)	INVENTORY ROUTE MIN VERT CLEAR	99.99 M
(47)	INVENTORY ROUTE TOTAL HORIZ CLEAR	13.4 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- NOT APPLICABLE	CODE N
(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 =	91.5
	STATUS	
	HEALTH INDEX	100.0
	PAINT CONDITION INDEX =	N/A

********** CLASSIFICATION ********** CODE

(112)	NBIS BRIDGE LENGTH- YES	Y
(104)	HIGHWAY SYSTEM- ROUTE ON NHS	1
(26)	FUNCTIONAL CLASS- OTHER PRIN ART URBAN	14
(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 ********** CODE

(58)	DECK	8
(59)	SUPERSTRUCTURE	8
(60)	SUBSTRUCTURE	8
(61)	CHANNEL & CHANNEL PROTECTION	8
(62)	CULVERTS	N

********* LOAD RATING AND POSTING ********* CODE

(31)	DESIGN LOAD- MS-18 OR HS-20	5
(63)	OPERATING RATING METHOD- ASSIGNED (LFD)	A
(64)	OPERATING RATING-	54.1
(65)	INVENTORY RATING METHOD- ASSIGNED (LFD)	A
(66)	INVENTORY RATING-	32.4
(70)	BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS	5
(41)	STRUCTURE OPEN, POSTED OR CLOSED-	A
	DESCRIPTION- OPEN, NO RESTRICTION	

********** APPRAISAL ********** CODE

(67)	STRUCTURAL EVALUATION	8
(68)	DECK GEOMETRY	5
(69)	UNDERCLEARANCES, VERTICAL & HORIZONTAL	N
(71)	WATER ADEQUACY	9
(72)	APPROACH ROADWAY ALIGNMENT	7
(36)	TRAFFIC SAFETY FEATURES	1111
(113)	SCOUR CRITICAL BRIDGES	8

********** 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	57703
(115)	YEAR OF FUTURE ADT	2031

********** INSPECTIONS **********

(90)	INSPECTION DATE 10/14	(91) FREQUENCY	48	MO
(92)	CRITICAL FEATURE INSPECTION:		(93) CFI DATE	
A)	FRACTURE CRIT DETAIL-	NO	MO	A)
B)	UNDERWATER INSP-	NO	MO	B)
C)	OTHER SPECIAL INSP-	NO	MO	C)