



DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0400
Facility Carried: EDINGER AVE
Location : 1.7 MI W/O BOLSA CHICA R
City :
Inspection Date : 03/30/2014

Bridge Inspection Report

Inspection Type
Routine FC Underwater Special Other

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STRUCTURE NAME: BOLSA CHICA CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1968 Skew (degrees): 50
Year Widened: 1988 No. of Joints : 0
Length (m) : 92.4 No. of Hinges : 0

Structure Description: Simply supported 15-span timber stringers (17 each) and a corrugated steel plate deck (Armco 12 gage) with 10-timber pile bents and 10-timber pile at west abutment and 11-timber pile at east abutment with timber sheathing walls.

Span Configuration : (W) 15 @ 6.1 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF=0.23 =>7.5 metric tons Calculation Method: LOAD FACTOR
Operating Rating: RF=0.38 =>12.3 metric tons Calculation Method: LOAD FACTOR
Permit Rating : XXXXX
Posting Load : Type 3: 7 U.S. Tons Type 3S2: 11 U.S. Tons Type 3-3: 14 U.S. Tons

DESCRIPTION ON STRUCTURE

Deck X-Section: (N) 0.4 m br, 7.5 m, 1.3 m sw, 0.3 m br (S).

Total Width: 9.0 m Net Width: 7.5 m No. of Lanes: 2 Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 0000

Rail Type	Location	Length (ft)	Rail Modifications
MBBR	Right/Left	3056	

DESCRIPTION UNDER STRUCTURE

Channel Description: Earth trapezoidal tidal channel with a rock slope at the westerly bank.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The water in the channel was about 12 ft deep through spans 2 to 10. Spans 3 and 4 were muddy and slippery. Only spans 1, 14 and 15 were fully inspected. The rest of the bridge was inspected by binocular.

REVISIONS

Element 111 (Timber Beams): the total quantity was modified as follows: from [St. 1 = 1540, St. 2 = 30] to [St. 1 = 1420, St. 2 = 150].

Element 235 (Timber Caps): the total quantity was modified as follows: from [St. 1 = 199] to [St. 1 = 186, St. 2 = 13].

DECK AND ROADWAY

No significant defects were found during this inspection.

INSPECTION COMMENTARY

SUPERSTRUCTURE

The exterior southerly girders in all spans were deteriorated because of weather and aging.

Span 1:

* stringers 3, 4, 13, 14 and 17 were deteriorated and show a 3 mm wide horizontal split.

Span 13:

* stringers 13 and 17 were deteriorated and show a 3 mm wide horizontal split.

Span 14:

* stringers 15 and 17 were deteriorated and show a 3 mm wide horizontal split.

Span 15:

* stringers 6, 9, 10, 14 and 17 were deteriorated and show a 3 mm wide horizontal split.

SUBSTRUCTURE

Bent cap #4 exhibits a horizontal split 3 mm wide at the west face.

SAFE LOAD CAPACITY

The load rating for this structure was calculated on 01/13/2011. An updated Load Rating Summary is archived on 10/07/2011. The Load rating Summary Sheet has verified the physical conditions assumed in the above referenced load rating calculation have not changed significantly.

UNDERWATER INSPECTION

The follow up the report dated 2/10/2011 base of the report of AECOM Transportation on behave of County of Orange dated May 10, 2010 and the revised the report on January 13, 2011.

The underwater inspection by AECOM results are that piles at Bents 12 through 14 are in poor condition. The inspection indicates pile section loss greater than 50 percent is severe condition at; three locations at Bent 12, six locations at Bent 13, and six locations at Bent 14; also it indicates pile section loss between 25-50 percent is major condition at; six locations at Bent 12, four locations at Bent 13, and three locations at Bent 14. Other locations show significant pile degradation due to borer activity. See the report dated May 10, 2010 for more detailed.

The underwater inspection by OSMI Underwater Team see the report dated April 7, 2011 for more detailed.

The load rating calculation result of two options:

First option is to reduce the load limit to:

7 TON PER VEHICLE

11 TON PER SEMI-TRAILER COMBINATION

14 TON PER FULL TRUCK AND FULL TRAILER

The second option is to reduce the traffic lane to one lane for both directions.

The first option was adopted by the county.

Safe Load Capacity

Load capacity calculation dated 1/13/2011 indicate the safe load carrying capacity is

7 TON PER VEHICLE

11 TON PER SEMI-TRAILER COMBINATION

INSPECTION COMMENTARY

14 TON PER FULL TRUCK AND FULL TRAILER

EXISTING SIGNS

A silhouette type sign showing the existing posting is in place at both approaches of the bridge.

ELEMENT INSPECTION RATINGS									
Elem		Total			Qty in each Condition State				
No.	Element Description	Env	Qty	Units	St. 1	St. 2	St. 3	St. 4	St. 5
30	Steel Deck - Corrugated/Orthotropic/Etc.	3	693	sq.m	693	0	0	0	0
111	Timber Open Girder/Beam	3	1570	m.	1420	150	0	0	
206	Timber Column or Pile Extension	4	161	ea.	111	20	15	15	
216	Timber Abutment	4	28	m.	28	0	0	0	0
235	Timber Cap	3	199	m.	186	13	0	0	
256	Slope Protection	3	1	ea.	1	0	0	0	0
337	Metal Railing (W6X25 Posts)	3	185	m.	0	185	0	0	0

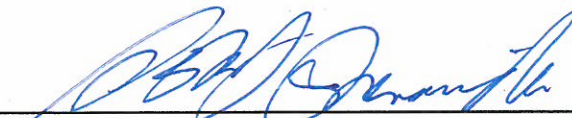
WORK RECOMMENDATIONS

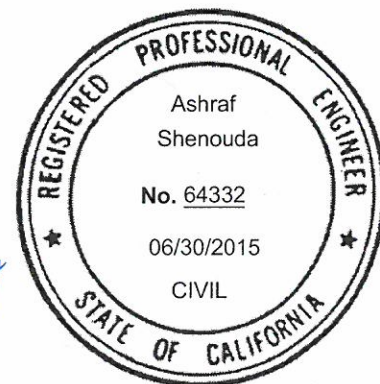
RecDate: 02/10/2011
 Action : Sub-Replace
 Work By: LOCAL AGENCY
 Status : PROPOSED

EstCost:
 StrTarget: 2 YEARS
 DistTarget:
 EA:

Replace all damaged and deteriorated piles as being indicated by AECOM report dated 1/13/2011 to restore the safe load capacity. As a consequence of these revisions, the calculated Sufficiency Rating is 31.6 and since the bridge is also "Structurally Deficient", it may qualify to be in the list for replacement within the Highway Bridge Rehabilitation and Replacement Program.

Team Leader : Ashraf Shenouda
 Report Author : Ashraf Shenouda
 Inspected By : A.Shenouda/KD.Henderson

 6/10/2014
 Ashraf Shenouda (Registered Civil Engineer) (Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

***** IDENTIFICATION *****

(1) STATE NAME- CALIFORNIA 069
 (8) STRUCTURE NUMBER 55C0400
 (5) INVENTORY ROUTE (ON/UNDER) - ON 150000000
 (2) HIGHWAY AGENCY DISTRICT 12
 (3) COUNTY CODE 059 (4) PLACE CODE 00000
 (6) FEATURE INTERSECTED- BOLSA CHICA CHANNEL
 (7) FACILITY CARRIED- EDINGER AVE
 (9) LOCATION- 1.7 MI W/O BOLSA CHICA RD
 (11) MILEPOINT/KILOMETERPOINT 0
 (12) BASE HIGHWAY NETWORK- NOT ON NET 0
 (13) LRS INVENTORY ROUTE & SUBROUTE
 (16) LATITUDE 33 DEG 43 MIN 46.61 SEC
 (17) LONGITUDE 118 DEG 04 MIN 12.58 SEC
 (98) BORDER BRIDGE STATE CODE % SHARE %
 (99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- WOOD OR TIMBER
 TYPE- STRINGER/MULTI-BEAM OR GDR CODE 702
 (44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
 TYPE- OTHER/NA CODE 000
 (45) NUMBER OF SPANS IN MAIN UNIT 15
 (46) NUMBER OF APPROACH SPANS 0
 (107) DECK STRUCTURE TYPE- CORRUGATED STEEL CODE 6
 (108) WEARING SURFACE / PROTECTIVE SYSTEM:
 A) TYPE OF WEARING SURFACE- BITUMINOUS CODE 6
 B) TYPE OF MEMBRANE- NONE CODE 0
 C) TYPE OF DECK PROTECTION- NONE CODE 0

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

(27) YEAR BUILT 1968
 (106) YEAR RECONSTRUCTED 1988
 (42) TYPE OF SERVICE: ON- HIGHWAY 1
 UNDER- WATERWAY 5
 (28) LANES:ON STRUCTURE 02 UNDER STRUCTURE 00
 (29) AVERAGE DAILY TRAFFIC 1529
 (30) YEAR OF ADT 2007 (109) TRUCK ADT 3 %
 (19) BYPASS, DETOUR LENGTH 199 KM

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

(48) LENGTH OF MAXIMUM SPAN 6.1 M
 (49) STRUCTURE LENGTH 92.4 M
 (50) CURB OR SIDEWALK: LEFT 0.3 M RIGHT 1.2 M
 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 7.5 M
 (52) DECK WIDTH OUT TO OUT 9.0 M
 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 14.0 M
 (33) BRIDGE MEDIAN- NO MEDIAN 0
 (34) SKEW 50 DEG (35) STRUCTURE FLARED NO
 (10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
 (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 7.5 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 = 11.6
 STATUS STRUCTURALLY DEFICIENT
 HEALTH INDEX 96.4
 PAINT CONDITION INDEX = N/A

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

(112) NBIS BRIDGE LENGTH- YES Y
 (104) HIGHWAY SYSTEM- NOT ON NHS 0
 (26) FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16
 (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- CITY OR MUNICIPAL HIGHWAY AGENCY 04
 (22) OWNER- CITY OR MUNICIPAL HIGHWAY AGENCY 04
 (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5

***** CONDITION ***** CODE

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

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

(31) DESIGN LOAD- UNKNOWN 0
 (63) OPERATING RATING METHOD- LOAD FACTOR 1
 (64) OPERATING RATING- 12.3
 (65) INVENTORY RATING METHOD- LOAD FACTOR 1
 (66) INVENTORY RATING- 7.5
 (70) BRIDGE POSTING- > 39.9% BELOW 0
 (41) STRUCTURE OPEN, POSTED OR CLOSED- P
 DESCRIPTION- POSTED FOR LOAD

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

(67) STRUCTURAL EVALUATION 2
 (68) DECK GEOMETRY 4
 (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
 (71) WATER ADEQUACY 4
 (72) APPROACH ROADWAY ALIGNMENT 6
 (36) TRAFFIC SAFETY FEATURES 0000
 (113) SCOUR CRITICAL BRIDGES 5

***** PROPOSED IMPROVEMENTS *****

(75) TYPE OF WORK- REPLACE FOR DEFICIENCY CODE 31
 (76) LENGTH OF STRUCTURE IMPROVEMENT 92.4 M
 (94) BRIDGE IMPROVEMENT COST \$1,922,800
 (95) ROADWAY IMPROVEMENT COST \$384,560
 (96) TOTAL PROJECT COST \$3,230,304
 (97) YEAR OF IMPROVEMENT COST ESTIMATE 2009
 (114) FUTURE ADT 2606
 (115) YEAR OF FUTURE ADT 2029

***** INSPECTIONS *****

(90) INSPECTION DATE 03/14 (91) FREQUENCY 12 MO
 (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
 A) FRACTURE CRIT DETAIL- NO MO A)
 B) UNDERWATER INSP- YES 60 MO B) 04/11
 C) OTHER SPECIAL INSP- NO MO C)