DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0130
Facility Carried: GLASSELL STREET
Location : 0.3 MI S/O ROUTE 91 FWY
City :
Inspection Date : 12/21/2013
Inspection Type
Routine FC Underwater Special Other
X

Bridge Inspection Report

STRUCTURE NAME: SANTA ANA RIVER CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1963
Year Widened: 2005
Length (m) : 293.5
Skew (degrees): 0
No. of Joints : 4
No. of Hinges : 4

Structure Description: 18 span continuous CIP RC "T" beam (12 each tota induding widening) supported by RC pier walls and open end RC diaphragm abutments on steel piles, except Pier 10 through Pier 18 of the east half widening which are RC column (4 each) bents on continuous RC footing and steel piles.
Widen: the bridge was widened 2 CIP/RC beam (2 each) at west and east ends.

Span Configuration : (S) 12.5 m, 16 @ 16.8 m, 12.5 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20
Inventory Rating: 33.5 metric tons Calculation Method: LOAD FACTOR
Operating Rating: 57.1 metric tons Calculation Method: LOAD FACTOR
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.35 m br; 1.5 m sw; 10.6 m; 1.2 m cu. med.; 10.6 m; 1.5 m sw; 0.35 m br (E).

Total Width: 26.1 m Net Width: 21.2 m No. of Lanes: 4 Speed: 45 mph
Min. Vertical Clearance: Unimpaired

Rail Code: 0000

Rail Type	Location	Length (ft)	Rail Modifications
Type 26	Right/Left	1938	

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural sandy earth trapezoidal with rock slope protection through the site.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The water in the channel was 0.9 m deep at spans 3 to 8; so no inspection was performed from span 3 to span 8. Channel degradation 12"-18" deep was noticed at spans 11 to 16 and the those spans were dry therefore the inspection of the substructure elements was performed.
Pedestrian access is through a vehicular access at NE gate.

REVISIONS

NBI #51 (Bridge Roadway Width) was modified from 20.4 m to 21.2 m.

INSPECTION COMMENTARY

NBI #52 (Deck Width out to out) was modified from 25.3 m to to 26.1 m.

The concrete deck cracks were methacrylated and the all spalls were patched, so ELI #358 (Deck Cracking) was upgraded from state 4 to state 1; and ELI #12 (Concrete Deck -Bare) was upgrade from state 2 to state 1.

ELI # 182(EQ Restrainer Cables): 2 each were moved to state 2.

The joints seal was changed from compression joint (type BB) to pourable joint (type AA) at hinge 3, 7 and 12. So ELI #302 (compression joint) was deleted from ELI list; and ELI 301 (Pourable joint) the total quantity was changed from 20 m to 88 m.

ELI #256 (Slope Protection) was changed from 4 to 3.

MISCELLANEOUS

Photo underside of this structure was taken and is included with this report.

DECK AND ROADWAY

The concrete deck cracks were methacrylated and deck spalls were patched.

The soffit exhibits:
* span #1: all bays under the traffic lanes (original bridge) has several transverse cracks with heavy white efflorescence;
* span #2: all bays under the traffic lanes (original bridge) has several transverse cracks with light white efflorescence mostly at south end; and
* at spans #8 to #18: few transverse cracks with light white efflorescence; these cracks mirror the deck cracks.

SUPERSTRUCTURE

Steel cables of the seismic retrofit have a sign of rust of some of them.

The concrete girders exhibit:
* in span 2: most original girders (south end) have few shear cracks (2 cracks at each girder) 1.0 mm wide;
* in span 9:
- 4 shear cracks (at each end) at each original girder;
- girder 3 exhibits 4 spalls +/- 12" X 4" X 1" at west fascia;
- girder 1 exhibits a spall 3" X 3" X 1" at west fascia at 15 ft from PW #10;
- girder #9 exhibits 2 spalls 5" X 5" X 1" at 5 ft north from intermediate diaphragm at both faces; and
- girder #10 exhibits a spall 5" X 5" X 1" at 5 ft north from intermediate diaphragm at west face.
* in span 10: a spall 4" X 4" X 1" at girder #9 at 2 ft from the intermediate diaphragm without any rebar exposed; girders 7, 8, 9 and 10 each has 8 vertical cracks up to 1.0 mm wide and 2.5 ft apart mostly at the middle 2/3rd of the span.
* in span 11: girder #10 (from west) has a spall 10" X 3" X 1" with rebar exposed and rusted at 5 ft north of intermediate diaphragm.

* most original girders exhibit few shear cracks up to 0.5 mm wide at both ends.

SUBSTRUCTURE

INSPECTION COMMENTARY

Pier walls exhibit:
Pier wall #2 exhibits 2 vertical cracks 1.0 mm wide.
Pier wall #3 exhibits one vertical crack 0.5 mm wide.
Pier wall #10 exhibits one vertical crack at the west portion 1.0 mm wide.
Pier wall #11 exhibits one vertical crack 1.0 mm wide; and 2 spalls 3" X 3" X 1" at north face.
Pier wall #12 exhibits 2 vertical cracks up to 1.0 mm wide at the westerly portion.
Pier wall #14 exhibits 2 vertical crack 1.0 mm wide.
Pier wall #15 exhibits one vertical crack 1.0 mm wide at the westerly portion and one horizontal crack 1.0 mm wide at the east portion of the pier wall.
Pier wall #16 exhibits one vertical crack 1.0 mm wide.

Homeless shelters were found at PW#2 (north face) in span 2.

ELEMENT INSPECTION RATINGS

Elem No.	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4	St. 5
12	Concrete Deck - Bare	2	5988	sq.m.	5988	0	0	0	0
110	Reinforced Conc Open Girder/Beam	2	3524	m.	3424	100	0	0	
182	Other Type EQ Restrainer Cable	2	4	ea.	2	2	0	0	
210	Reinforced Conc Pier Wall	2	400	m.	396	4	0	0	
215	Reinforced Conc Abutment	2	36	m.	36	0	0	0	0
225	Unpainted Steel Submerged Pile	2	1	ea.	1	0	0	0	0
256	Slope Protection	2	3	ea.	3	0	0	0	0
301	Pourable Joint Seal	2	88	m.	0	88	0	0	0
312	Enclosed/Concealed Bearing	2	4	ea.	4	0	0	0	0
331	Reinforced Conc Bridge Railing	2	591	m.	591	0	0	0	0
358	Deck Cracking	2	1	ea.	1	0	0	0	
359	Soffit of Concrete Deck or Slab	2	1	ea.	0	0	1	0	0

WORK RECOMMENDATIONS - NONE

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

2/10/14

Ashraf Shenouda (Registered Civil Engineer) (Date)

CC: City of Orange
City of Anaheim

STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER 55C0130
(5) INVENTORY ROUTE(ON/UNDER)- ON 150000000
(2) HIGHWAY AGENCY DISTRICT 12
(3) COUNTY CODE 059 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- SANTA ANA RIVER CHANNEL
(7) FACILITY CARRIED- GLASSELL STREET
(9) LOCATION- 0.3 MI S/O ROUTE 91 FWY
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- PART OF NET 1
(13) LRS INVENTORY ROUTE & SUBROUTE 000000000000
(16) LATITUDE 33 DEG 50 MIN 38.14 SEC
(17) LONGITUDE 117 DEG 51 MIN 10.93 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 18
(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 1963
(106) YEAR RECONSTRUCTED 2005
(42) TYPE OF SERVICE: ON- HIGHWAY 1
UNDER- WATERWAY 5
(28) LANES:ON STRUCTURE 04 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 22000
(30) YEAR OF ADT 2003 (109) TRUCK ADT 1 %
(19) BYPASS, DETOUR LENGTH 5 KM

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

(48) LENGTH OF MAXIMUM SPAN 16.8 M
(49) STRUCTURE LENGTH 293.5 M
(50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 21.2 M
(52) DECK WIDTH OUT TO OUT 26.1 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 21.2 M
(33) BRIDGE MEDIAN- CLOSED NON-MOUNTABLE 3
(34) SKEW 0 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 10.6 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

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SUFFICIENCY RATING = 91.8
STATUS
HEALTH INDEX 99.4
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- CITY OR MUNICIPAL HIGHWAY AGENCY 04
(22) OWNER- CITY OR MUNICIPAL HIGHWAY AGENCY 04
(37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5

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

(58) DECK 6
(59) SUPERSTRUCTURE 6
(60) SUBSTRUCTURE 7
(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- LOAD FACTOR 1
(64) OPERATING RATING- 57.1
(65) INVENTORY RATING METHOD- LOAD FACTOR 1
(66) INVENTORY RATING- 33.5
(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 6
(68) DECK GEOMETRY 9
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 9
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0000
(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 44887
(115) YEAR OF FUTURE ADT 2029

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

(90) INSPECTION DATE 12/13 (91) FREQUENCY 24 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)