## 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:** 55C0637

**Bridge Name:** Arroyo Trabuco **Year Built:** 2005

**Facility Carried:** Crown Valley PKWY

The Arroyo Trabuco Bridge at Oso Parkway is a continuous four span cast-in-place prestressed concrete box girder with reinforced concrete (RC), 2 column bents and RC closed end cantilever abutments supported on CIDH concrete piles.

### Caltrans BIR recommendations:

- Weld back the sheared off middle steel bar of the joint seal assembly. (From 2013 BIR, although not repaired not in 2015 BIR).
- Clean out all dirt and debris in all joint seals.

### Field Inspection Observations

- There is efflorescence visible on soffit near the soffit opening cover plate which is heavily corroded. Water leaking/dripping in span 1, this appears to be a water line.
- Torn joint seal (photo 1).

### Maintenance Needs Assessment

#### BPMP Assessment

- Repair joint seal assembly.

#### General Maintenance – Non-BPMP

- Recommend contacting utility owner of water line. Note this will not eligible for BPMP funds but should be covered by the utility owner.

### Proposed BPMP Construction Costs

- Joint Seal Assembly = 168 ft * $200/LF ≈ $ 34,000
- Traffic Control = $10,000
- Estimated Total Construction Cost (with engineering, mobilization and contingency) ≈ $50,000

### Construction Items Not Funded by BPMP

- Utility repair should be funded by utility company
- Soffit cover plate replacement

# APPENDIX A

## Photos and BIR

**Photo 1:**

**Photo 2:**

**Photo 3:**

**Photo 4:**

**Photo 5:**

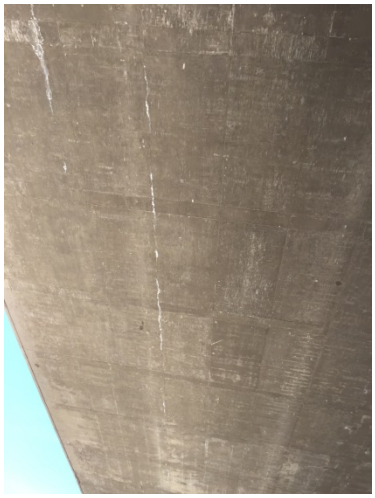

**Photo 6:**

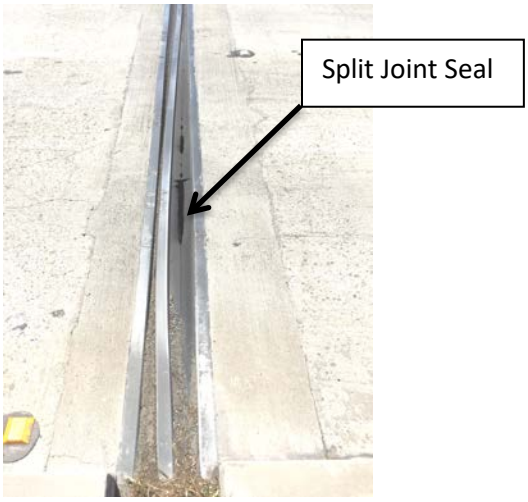


Photo 7: Joint Seal

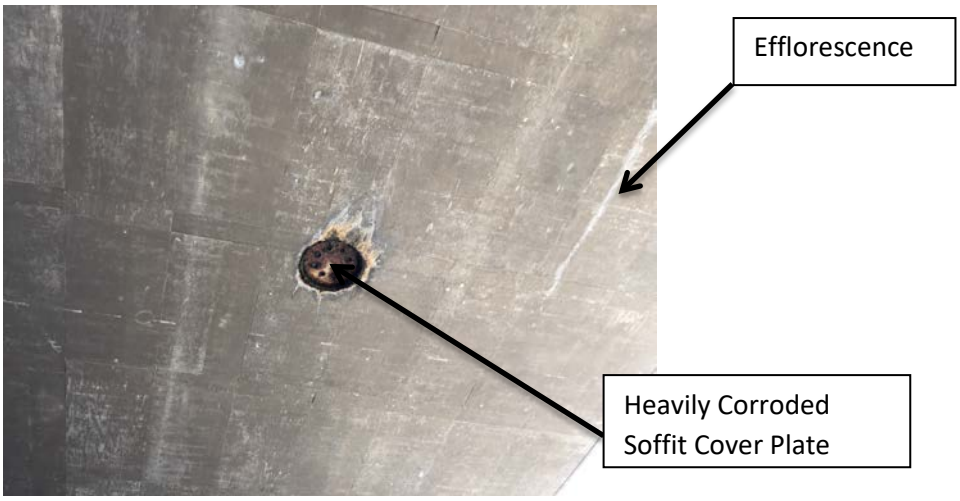


Photo 8: Bridge Soffit

**DEPARTMENT OF TRANSPORTATION**
Structure Maintenance & Investigations

Bridge Number : 55C0637
Facility Carried: CROWN VALLEY PKWY
Location : 0.5 MI E/O MARGUERITE PW
City :
Inspection Date : 01/29/2015

# Bridge Inspection Report

Inspection Type
Routine FC Underwater Special Other
[X]

**STRUCTURE NAME:** ARROYO TRABUCO

## CONSTRUCTION INFORMATION

Year Built : 2000
Year Widened: 2005
Length (m) : 238
Skew (degrees): 0
No. of Joints : 2
No. of Hinges : 0

Structure Description: Continuous 4-span CIP/PS concrete box girder (5 cells) with RC 2-column bents and RC closed end backfilled cantilever abutments, all supported upon 610 mm diameter (abutments) and 3050 mm diameter (bents) CIDH concrete piles.
Widen (North side): Continuous 4-span CIP/PS concrete box girder (3 cells) with RC 1-column bents and RC closed end backfilled cantilever abutments.

Span Configuration : (W) 51.3 m, 67.0 m, 67.0 m, 51.3 m (E) c/c

## SAFE LOAD CAPACITY AND RATINGS

Design Live Load: HL 93
Inventory Rating: RF= 1.00 Calculation Method: ASSIGNED (LRFD)
Operating Rating: RF= 1.30 Calculation Method: ASSIGNED (LRFD)
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

## DESCRIPTION ON STRUCTURE

Deck X-Section: (N) 0.3 m br, 1.5 m sw, 16.7 m, 1.5 m median, 16.8 m; 1.5 m sw, 0.3 m br (S)
Total Width: 38.3 m Net Width: 33.5 m No. of Lanes: 7 Speed: 55 mph
Min. Vertical Clearance: Unimpaired AC Thickness: 0.0 Inches

Rail Code: 0110

| Rail Type | Location | Length (ft) | Rail Modifications |
|---|---|---|---|
| Type 26 | Right/Left | 1640 | |

## DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth canyon.

## 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 channel was dry ot time of inspection, all elements have been visually inspected.

SAFE LOAD CAPACITY

INSPECTION COMMENTARY

A Load Rating Summary Sheet dated 03/19/2013 is on file for this structure. The current rating has been assigned in accordance with SMI procedures.

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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | | | Top Flange-RC | 2 | 9115 | sq.m | 9115 | 0 | 0 | 0 |
| (16) There were no significant defects noted. | | | | | | | | | | |
| 104 | | | Box Girder-PS Conc. | 2 | 476 | m | 468 | 8 | 0 | 0 |
| | 1110 | | Cracking (PS Conc.) | 2 | 8 | | 0 | 8 | 0 | 0 |
| (104-1110) There are few longitudinal cracks in the soffit of the box girder in span #4. | | | | | | | | | | |
| 205 | | | Column-RC | 2 | 9 | each | 9 | 0 | 0 | 0 |
| (205) There were no significant defects noted. | | | | | | | | | | |
| 215 | | | Abutment-RC | 2 | 90 | m | 90 | 0 | 0 | 0 |
| (215) There were no significant defects noted. | | | | | | | | | | |
| 252 | | | Pile-CIDH | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (252) 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. | | | | | | | | | | |
| 256 | | | Slope Protection | 2 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) There were no significant defects noted. | | | | | | | | | | |
| 303 | | | Joint-Assembly w/ Seal | 2 | 76 | m | 76 | 0 | 0 | 0 |
| (303) There were no significant defects noted. | | | | | | | | | | |
| 312 | | | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (312) There were no significant defects noted. | | | | | | | | | | |
| 321 | | | Approach Slab-RC | 2 | 555 | sq.m | 555 | 0 | 0 | 0 |
| (321) There were no significant defects noted. | | | | | | | | | | |
| 331 | | | Railing-RC | 2 | 476 | m | 476 | 0 | 0 | 0 |
| (331) There were no significant defects noted. | | | | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 02/10/2013
Action : Super-Misc.
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

The county has to check the utility pipes inside the box cells where the soffit access is leaking water and the cover place is heavily rusted and corroded in span 4.

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson


Mikhael T. Zaarour (Registered Civil Engineer) 3/30/15 (Date)

# STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **55C0637**
(5) INVENTORY ROUTE(ON/UNDER)- ON 150000000
(2) HIGHWAY AGENCY DISTRICT 12
(3) COUNTY CODE 059 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- ARROYO TRABUCO
(7) FACILITY CARRIED- CROWN VALLEY PKWY
(9) LOCATION- 0.5 MI E/O MARGUERITE PWY
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- PART OF NET 1
(13) LRS INVENTORY ROUTE & SUBROUTE 000000000000
(16) LATITUDE 33 DEG 33 MIN 46.01 SEC
(17) LONGITUDE 117 DEG 39 MIN 10.4 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- PRSTR CONC CONT
TYPE- BOX BEAM OR GIRDER - MULTI CODE 605
(44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
TYPE- OTHER/NA CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 4
(46) NUMBER OF APPROACH SPANS 0
(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 2000
(106) YEAR RECONSTRUCTED 2005
(42) TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5
UNDER- WATERWAY 5
(28) LANES:ON STRUCTURE 07 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 33160
(30) YEAR OF ADT 2011 (109) TRUCK ADT 1 %
(19) BYPASS, DETOUR LENGTH 20 KM

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

(48) LENGTH OF MAXIMUM SPAN 67.0 M
(49) STRUCTURE LENGTH 238.0 M
(50) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 33.5 M
(52) DECK WIDTH OUT TO OUT 38.3 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 33.5 M
(33) BRIDGE MEDIAN- CLOSED NON-MOUNTABLE 3
(34) SKEW 0 DEG (35) STRUCTURE FLARED YES
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 16.8 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 = 84.0
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 9
(62) CULVERTS N

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

(31) DESIGN LOAD- HL 93 A
(63) OPERATING RATING METHOD- ASSIGNED (LRFD) F
(64) OPERATING RATING- RF= 1.30
(65) INVENTORY RATING METHOD- ASSIGNED (LRFD) F
(66) INVENTORY RATING- RF= 1.00
(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 9
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 9
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0110
(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 60565
(115) YEAR OF FUTURE ADT 2035

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

(90) INSPECTION DATE 01/15 (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)