**DEPARTMENT OF TRANSPORTATION**
Structure Maintenance & Investigations

**Bridge Number : 55C0123**
Facility Carried: BREA CANYON BLVD.
Location : 0.8 MI N/O CENTRAL AVENU
City :
Inspection Date : 11/01/2017

# Bridge Inspection Report

Inspection Type

| Routine | FC | Underwater | Special | Other |
|---|---|---|---|---|
| X | | | | |

**STRUCTURE NAME: BREA CANYON CHANNEL**

## CONSTRUCTION INFORMATION

Year Built : 1939
Year Modified: N/A
Length (m) : 28
Skew (degrees): 60
No. of Joints : 0
No. of Hinges : 0

Structure Description: Simply supported 3-span CIP/RC T-beam (5 each) with RC pier walls and with RC open end diaphragm abutments, all supported upon concrete piles.

Span Configuration : (W) 3 @ 30.00 ft (E)

## SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF= 0.69 Calculation Method: (LRFR) LD & RES FACT RATING
Operating Rating: RF= 0.89 Calculation Method: (LRFR) LD & RES FACT RATING
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

## DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 1.00 ft br, 0.67 ft cu, 30.00 ft, 0.67 ft cu, 1.00 ft br (N).

Total Width: 10.1 m Net Width: 9.1 m No. of Lanes: 2 Speed: 55 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 3.0 inches

Rail Code: 0000

| Rail Type | Location | Length (ft) | Rail Modifications |
|---|---|---|---|
| Concrete Baluster | Right/Left | 242 | |

## DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal, RC rectangular through the site.

## 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 inspection was performed by walking on shoulder and under the bridge. There was about 1-2 feet of water in all spans. A full visual inspection is performed for the visible substructure elements. Inspection access to the under of the bridge is from northwest

## INSPECTION COMMENTARY

quadrant. A rain boots and binocular is used to perform this inspection.

MISCELLANEOUS

Ten year routine underside photograph was taken during this inspection and is included with this report. (see the attached photo no. 6)

DECK AND ROADWAY

The AC approach roadway is settled 2 inches at eastbound lane.

SUBSTRUCTURE

There were two spalls sized +/- 12 inches X 3 inches X 1 inch with exposed rebars at the northwest wing wall. (see the attached photo no. 3)

SAFE LOAD CAPACITYA

Load Rating Summary Sheet dated 8/28/2015 is on file for this structure. While this report does not include a check of that analysis, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis. The current rating is based on LRFR calculation.

## 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 | 283 | sq.m | 278 | 2 | 3 | 0 |
| | **1080** | | **Delamination/Spall/Patched Area** | 2 | 5 | | 0 | 2 | 3 | 0 |
| | **510** | | **Deck Wearing Surface-Asphalt** | 2 | 255 | sq.m | 240 | 15 | 0 | 0 |
| | | **3220** | **Cracking-AC (WS)** | 2 | 15 | | 0 | 15 | 0 | 0 |
| (16-1080) There are ten spalls at the north edge of the deck with exposed rusted rebars mostly at spans 2 and 3, the average size was 8 inches x 6 inches x 1 inch. (see the attached photos no. 7 & 8) | | | | | | | | | | |
| (16-510-3220) AC overlay exhibits Longitudinal crack 30 feet long and 0.5 inches wide at eastbound lane. | | | | | | | | | | |
| **110** | | | **Girder/Beam-RC** | 2 | 140 | m | 136 | 0 | 4 | 0 |
| | **1080** | | **Delamination/Spall/Patched Area** | 2 | 4 | | 0 | 0 | 4 | 0 |
| (110-1080) There was four spalls 16 inches X 10 inches X 1 inch with exposed rebars at the bottom of both exterior girders at spans 1 and 3 and at span 2 north exterior girder. (see the attached photos no. 4 & 5) | | | | | | | | | | |
| **210** | | | **Pier Wall-RC** | 2 | 40 | m | 38 | 2 | 0 | 0 |
| | **1130** | | **Cracking (RC and Other)** | 2 | 2 | | 0 | 2 | 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| (210) | | | | | | | | | | |
| There were no significant defects noted. | | | | | | | | | | |
| (210-1130) | | | | | | | | | | |
| Pierwalls 2 has three vertical cracks, up to 0.04 inches wide. | | | | | | | | | | |
| Pierwalls 3 has three vertical cracks, up to 0.04 inches wide. | | | | | | | | | | |
| **215** | | | **Abutment-RC** | 2 | 52 | m | 52 | 0 | 0 | 0 |
| (215) | | | | | | | | | | |
| There were no significant defects noted. | | | | | | | | | | |
| **227** | | | **Pile-RC** | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (227) | | | | | | | | | | |
| 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. | | | | | | | | | | |
| **331** | | | **Railing-RC** | 2 | 56 | m | 36 | 10 | 10 | 0 |
| | **1080** | | **Delamination/Spall/Patched Area** | 2 | 20 | | 0 | 10 | 10 | 0 |
| (331-1080) | | | | | | | | | | |
| The concrete balusters at both rails have been cracked or spalled +/- 15 inches X 3 inches X 1 inch in many locations. | | | | | | | | | | |

## WORK RECOMMENDATIONS

| | | |
|---|---|---|
| RecDate: 05/06/2010<br>Action : Sub-Patch spalls<br>Work By: LOCAL AGENCY<br>Status : PROPOSED | EstCost:<br>StrTarget: 2 YEARS<br>DistTarget:<br>EA: | Repair the three spalls +/- 12 inches X 3 inches X 1 inch with exposed rebars at the northwest wing wall. |
| RecDate: 05/06/2010<br>Action : Railing-Repair<br>Work By: LOCAL AGENCY<br>Status : PROPOSED | EstCost:<br>StrTarget: 2 YEARS<br>DistTarget:<br>EA: | Repair the spalls +/- 15 inches X 3 inches X 1 inch in both concrete baluster railings. Revised by A. Shenouda 5/9/2018 |
| RecDate: 05/30/2007<br>Action : Super-Patch spalls<br>Work By: LOCAL AGENCY<br>Status : PROPOSED | EstCost:<br>StrTarget: 2 YEARS<br>DistTarget:<br>EA: | Repair and patch the four spalls 16 inches X 10 inches X 1 inch with exposed rebars at the bottom of both exterior girders at spans 1 and 3 and at span 2 north exterior girder. |

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

5/11/18

Ashraf Shenouda (Registered Civil Engineer) (Date)

# STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **55C0123**
(5) INVENTORY ROUTE(ON/UNDER)- ON 140000000
(2) HIGHWAY AGENCY DISTRICT 12
(3) COUNTY CODE 059 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- BREA CANYON CHANNEL
(7) FACILITY CARRIED- BREA CANYON BLVD.
(9) LOCATION- 0.8 MI N/O CENTRAL AVENUE
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- NOT ON NET 0
(13) LRS INVENTORY ROUTE & SUBROUTE
(16) LATITUDE 33 DEG 56 MIN 27.32 SEC
(17) LONGITUDE 117 DEG 53 MIN 15.24 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- CONCRETE
TYPE- STRINGER/MULTI-BEAM OR GDR CODE 102
(44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
TYPE- OTHER/NA CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 3
(46) NUMBER OF APPROACH SPANS 0
(107) DECK STRUCTURE TYPE- CIP CONCRETE CODE 1
(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 1939
(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 19000
(30) YEAR OF ADT 2009 (109) TRUCK ADT 2 %
(19) BYPASS, DETOUR LENGTH 2 KM

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

(48) LENGTH OF MAXIMUM SPAN 9.1 M
(49) STRUCTURE LENGTH 28.0 M
(50) CURB OR SIDEWALK: LEFT 0.2 M RIGHT 0.2 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 9.1 M
(52) DECK WIDTH OUT TO OUT 10.1 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 8.2 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 60 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 9.1 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 = 63.9
STATUS
HEALTH INDEX 98.1
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- COUNTY HIGHWAY AGENCY 02
(22) OWNER- COUNTY HIGHWAY AGENCY 02
(37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5

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

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION 8
(62) CULVERTS N

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

(31) DESIGN LOAD- UNKNOWN 0
(63) OPERATING RATING METHOD- (LRFR) LD & RES FA 8
(64) OPERATING RATING- RF= 0.89
(65) INVENTORY RATING METHOD- (LRFR) LD & RES FA 8
(66) INVENTORY RATING- RF= 0.69
(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 5
(68) DECK GEOMETRY 3
(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- SUP/SUB REHAB CODE 35
(76) LENGTH OF STRUCTURE IMPROVEMENT 28 M
(94) BRIDGE IMPROVEMENT COST $282,000
(95) ROADWAY IMPROVEMENT COST $56,400
(96) TOTAL PROJECT COST $473,760
(97) YEAR OF IMPROVEMENT COST ESTIMATE 2017
(114) FUTURE ADT 41217
(115) YEAR OF FUTURE ADT 2035

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

(90) INSPECTION DATE 11/17 (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)

# BREA CANYON CHANNEL



119 - PHOTO-Rail-Damage/Deterioration

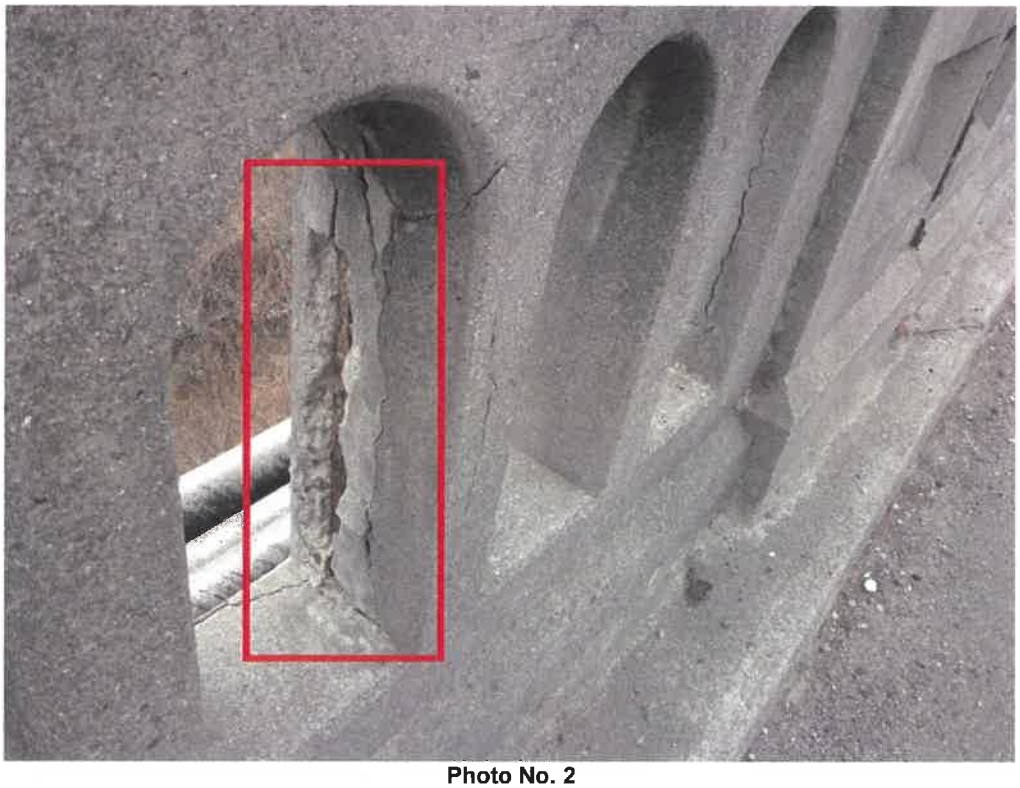

Photo No. 2

Spalls at the concrete balusters.

113 - PHOTO-Sub-Damage/Deterioration

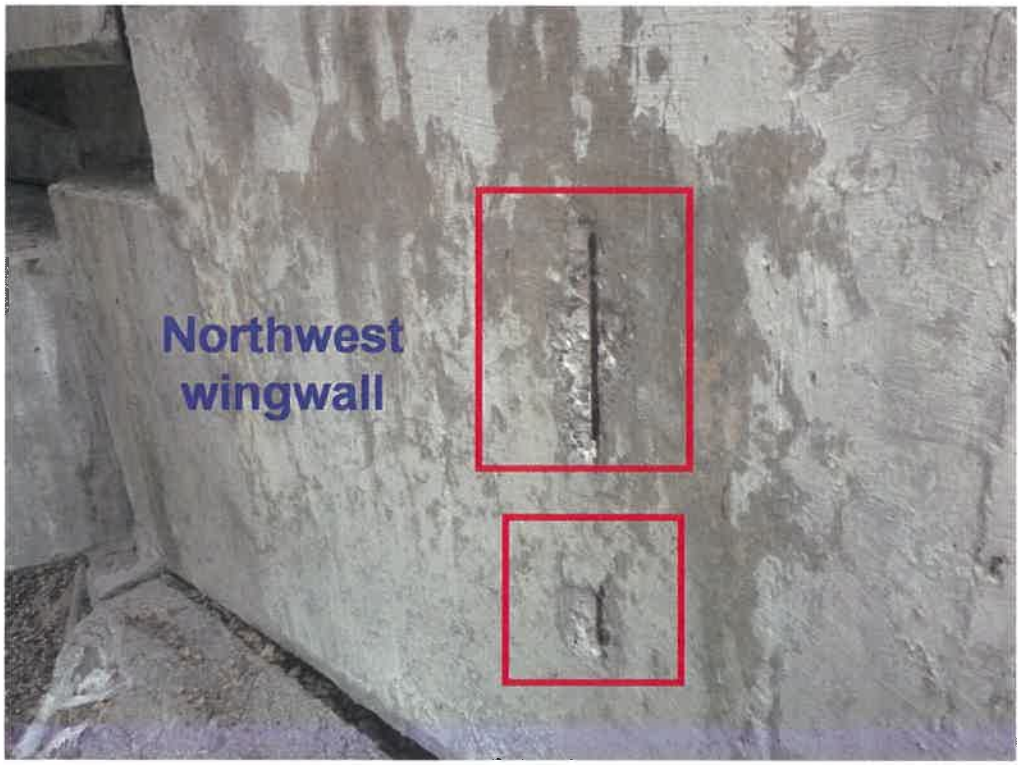


Photo No. 3

Nothwest has two spalls with exposed rebar.

# BREA CANYON CHANNEL

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107 - PHOTO-Super-Damage/Deteroration

Photo No. 4

Spalls with exposed rebars at the bottom face of the exterior girders.

107 - PHOTO-Super-Damage/Deteroration

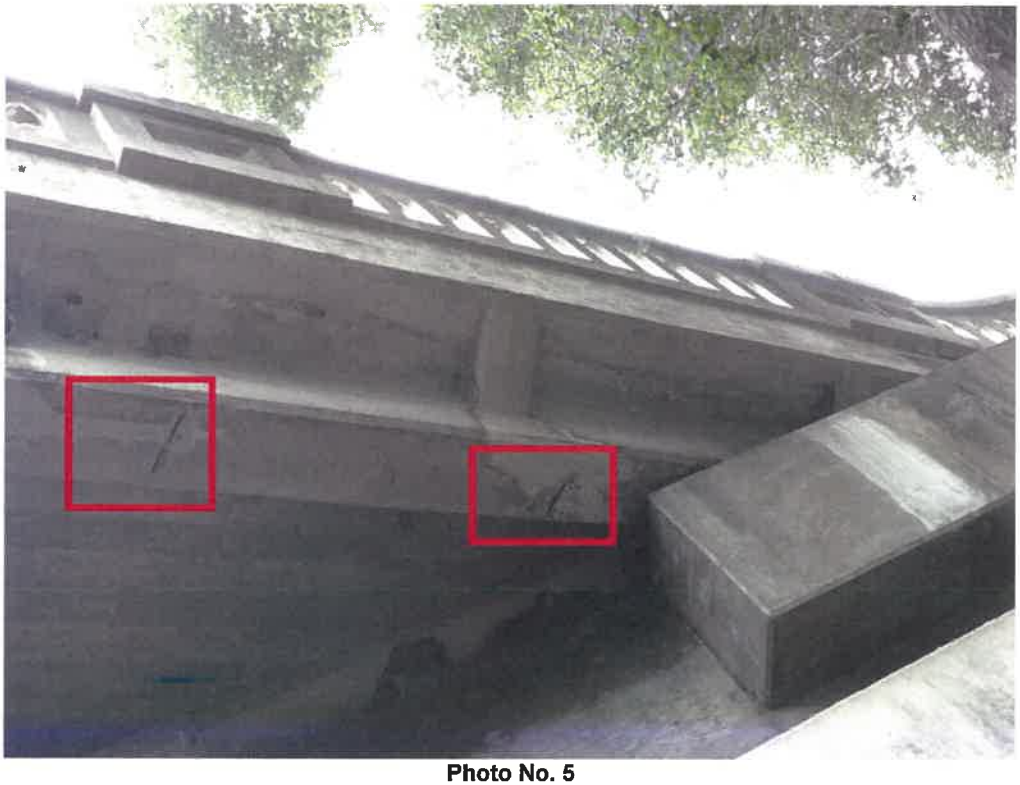

Photo No. 5

Spalls with exposed rebars at the bottom face of the exterior girders.

# BREA CANYON CHANNEL

0.8 MI N/O CENTRAL AVENUE 11/01/2017 [AAAK] 55C0123

135 - PHOTO-Routine-Underside View

Photo No. 6
Underside View looking South.

102 - PHOTO-Deck-Damage/Deterioration

Photo No. 7
North deck elevations has 10 spalls with exposed rebars mainly in spans 2 and 3.

# BREA CANYON CHANNEL

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102 - PHOTO-Deck-Damage/Deterioration

Photo No. 8

North deck elevations has 10 spalls with exposed rebars mainly in spans 2 and 3.