**DEPARTMENT OF TRANSPORTATION**
Structure Maintenance & Investigations

**Bridge Number : 55C0008**
Facility Carried: TRABUCO CANYON RD.
Location : 1.4 mi n/o Snta Margarit
City :
Inspection Date : 05/06/2019

# Bridge Inspection Report

Inspection Type

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

RECEIVED
Aug 19 2020
BY: Co Phung, P.E.

**STRUCTURE NAME: TRABUCO CREEK**

## CONSTRUCTION INFORMATION

Year Built : 1980
Year Modified: N/A
Length (m) : 22.3

Skew (degrees): 33
No. of Joints : 0
No. of Hinges : 5

Structure Description: Simply supported 6-span PC/PS concrete deck slab units (7 each) with RC pier walls and RC open end seat abutments with monolithic wingwalls, all supported upon spread footings.

Span Configuration : (W) 6 @ 10.80 feet (E).

## 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) 0.30 feet br, 23.40 feet, 0.30 feet br (N)
Total Width: 7.3 m Net Width: 7.1 m No. of Lanes: 2 Speed: 35 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 6.0 inches
Rail Code: 0000

## DESCRIPTION UNDER STRUCTURE

Channel Description: Natural cobbled earth trapezoidal with an RC invert 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

HISTORY
During the raining season from february to march of 2019, the bridge was closed by the Orange County Department of Public Works due to the flood and the water shooting over the bridge deck according to Regina Hu (Senior Civil Engineer of Orange County Department Of Public Works). The inspection team consisted of Regina Hu, three of her staffs, the bridge crew supervisor from County of Orange and Caltrans ABME at the time.

According to Caltrans Element Inspection Manual Definition of the Culvert, this bridge is a slab bridge not a culvert because this bridge doesn't encompass the entire primeter of

**INSPECTION COMMENTARY**

the barrel.

According to Regina Hu, Senior Civil Engineer of Orange County. This bridge was designed to allow the water shooting over the top of the deck in case of flooding. This structure has been monitoring since the flood by the Orange County Department of Public Works. However, this bridge is on the list of bridge replacement programm from the county.

SCOPE AND ACCESS
A complete routine inspection was performed by walking on and around the structure to inspect all visible elements of the bridge structure. Bridge deck was inspected by walking on shoulder. Soffit and all substructure were inspected by looking through underneath of each unit of this structure with rain boots due to recent flood at this location.

There is no need for a special equipment to inspect this structure.

Spans #4 to #6 are with water inside at 2.0 to 3.0 inches deep and it runs through all of these spans at the time of inspection.

DECK AND ACCESS
The AC Overlay is measured in the field and it is about 6.0 inches thick with cracks at (0.07 inches wide) throughout the entire deck.

There are spalls in different size at (48.0 inches L X 10.0 inches W X 2.0 inches D) at the southerly edge of the slab with corroded rebars. There are numerous wall spalls in between spans #5 and #6 at (12.0 inches L X 8.0 inches W X 1.0 inch D); and also, scattering from spans #1 to #4 (see the attached photos no. 5 and 6).

There are numerous exposed rebars those have been sticking out on both sides at hinges and joints due to the replacement of the bridge rails. Original bridge rails were timbers but they were replaced by K-Rails on both sides of the bridge at the time of inspection (in the previous bridge inspection reports, the timber posts have loose nuts at the connection with the concrete slab (see the attached photo no. 8) and also vertical checks, up to 50% penetration).

There are sediments inside of all boxes due to the flood.

SUPERSTRUCTURE
There is no notable distress observed at the time of inspection.

SUBSTRUCTURE
The spread footing which invert slab is exposed and has an eroded concrete area with exposed and rusted rebars between span 5. The eroded area is about (17.0 feet L X 8.0 feet W) at the middle; and in span #6 the eroded area is about (2.0 feet LX 1.0 foot W) at the south end (see the attached photo no. 7).

The downstream grouted riprap is degraded at the southerly side; and there are holes at the bottom of riprap that has been exposeing about 1.0 foot at the following locations of these spans:

Span #4 has a hole about 13.0 feet L X 5.0 feet W (see the attached photo no. 4)
Span $5 has a hole about 10.0 feet L X 4.0 feet W; and span #6 has a hole about 7.0 feet L X 4.0 feet W.

SAFE LOAD CAPACITY
A Load Rating Summary Sheet is achieved on 01/06/1982 for this structure.

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 39 | | | Slab-PS Conc. | 2 | 170 | sq.m | 164 | 2 | 4 | 0 |
| | 1080 | | Delamination/Spall/Patched Area | 2 | 6 | | 0 | 2 | 4 | 0 |
| | 510 | | Deck Wearing Surface-Asphalt | 2 | 170 | sq.m | 120 | 10 | 40 | 0 |
| | | 3220 | Cracking-AC (WS) | 2 | 50 | | 0 | 10 | 40 | 0 |

(39)
With AC Overlay with cracks.

(39-1080)
There are few spalls in different size at (48.0 inches L X 10.0 inches W X 2.0 inches D) at the south edge of the slab with corroded rebars.spalls were mostly noticed at Spans 5 and 6; and scattered there are numerous wall spalls in between spans #5 and #6 at (12.0 inches L X 8.0 inches W X 1.0 inch D); and also, scattering from spans #1 to #4 (see the attached photos no. 5 and 6).

(39-510)
Cracks at 0.07 inches wide scattering throughout the deck.

(39-510-3220)
There are longitudinal crack at the middle of the bridge almost full bridge length and up to 1.0 inch wide; and transverse cracks above the supports 20.0 feet long, up to 1.0 inche wide (see the attached photos no. 2 and 3).

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 210 | | | Pier Wall-RC | 2 | 45 | m | 45 | 0 | 0 | 0 |

(210)
There were no significant defects noted.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 215 | | | Abutment-RC | 2 | 34 | m | 34 | 0 | 0 | 0 |

(215)
Monolithic wingwalls are included in the total quantity.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 | | | Pile Cap/Footing-RC | 2 | 8 | m | 2 | 3 | 3 | 0 |
| | 1090 | | Exposed Rebar (PS Conc./RC) | 2 | 6 | | 0 | 3 | 3 | 0 |

(220)
There were no significant defects noted.

(220-1090)
The spread footing which invert slab is exposed and has an eroded concrete area with exposed and rusted rebars between span 5. The eroded area is about (17.0 feet L X 8.0 feet W) at the middle; and in span #6 the eroded area is about (2.0 feet LX 1.0 foot W) at the south end (see the attached photo no. 7).

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 312 | | | Bearing-Enclosed | 2 | 7 | each | 7 | 0 | 0 | 0 |

(312)
There were no significant defects noted.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 333 | | | Railing-Other | 2 | 45 | m | 45 | 0 | 0 | 0 |

(333)
Original bridge rails were replaced by K-Rails on both sides at the time of inspection.

## WORK RECOMMENDATIONS

## WORK RECOMMENDATIONS

| | | | |
|---|---|---|---|
| RecDate: 05/06/2019<br>Action : Super-Misc.<br>Work By: LOCAL AGENCY<br>Status : PROPOSED | EstCost:<br>StrTarget: 1 YEAR<br>DistTarget:<br>EA: | | The local agency continues to monitor this bridge closely for public safety before it is replaced. The Orange County Local Agency needs to repair all spalls for entire structure and stablize the upstream and downstream accordingly. The previous work-recommendations are same as up to current date. |
| RecDate: 09/07/2017<br>Action : Deck-Repair Potholes<br>Work By: LOCAL AGENCY<br>Status : PROPOSED | EstCost:<br>StrTarget: 2 YEARS<br>DistTarget:<br>EA: | | Seal all AC overlay cracks, that are up to 1.0 inch wide on the bridge deck. |
| RecDate: 09/07/2017<br>Action : Scour-Place Counterm<br>Work By: LOCAL AGENCY<br>Status : PROPOSED | EstCost:<br>StrTarget: 2 YEARS<br>DistTarget:<br>EA: | | Fill the riprap holes with proper material to prevent more damage to the riprap at the downstream side. |
| RecDate: 05/21/2009<br>Action : Sub-Patch spalls<br>Work By: LOCAL AGENCY<br>Status : PROPOSED | EstCost:<br>StrTarget: 2 YEARS<br>DistTarget:<br>EA: | | Repair the eroded concrete at the spread footing at spans #5 and #6 with exposed rebars of an area at (17.0 feet L X 8.0 feet W) in the middle of the spans. |
| RecDate: 05/01/2007<br>Action : Deck-Patch spalls<br>Work By: LOCAL AGENCY<br>Status : PROPOSED | EstCost:<br>StrTarget: 2 YEARS<br>DistTarget:<br>EA: | | Repair the two spalls (48.0 inches L X 10.0 inches H X 3.0 inches D) with exposed rebars at the southerly edge of the deck in spans #5 and #6. |

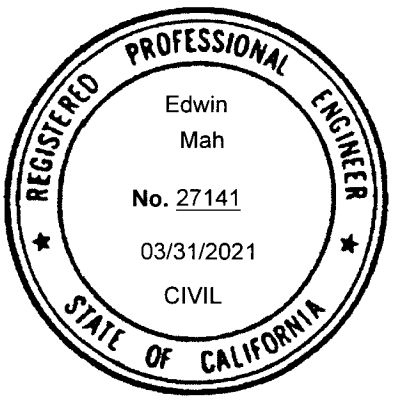
Team Leader : Edwin Mah

Report Author : Nelson N. Vo

Inspected By : NN.Vo/E.Mah

8/22/2019

Edwin Mah (Registered Civil Engineer) (Date)

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# STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **55C0008**
(5) INVENTORY ROUTE(ON/UNDER)- ON 140000000
(2) HIGHWAY AGENCY DISTRICT 12
(3) COUNTY CODE 059 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- TRABUCO CREEK
(7) FACILITY CARRIED- TRABUCO CANYON RD.
(9) LOCATION- 1.4 mi n/o Snta Margarita
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- NOT ON NET 0
(13) LRS INVENTORY ROUTE & SUBROUTE
(16) LATITUDE 33 DEG 39 MIN 33.72 SEC
(17) LONGITUDE 117 DEG 35 MIN 11.76 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- PRESTRESS CONC
TYPE- SLAB CODE 501
(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- PRECAST CONC. PA CODE 2
(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 1980
(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 3000
(30) YEAR OF ADT 2019 (109) TRUCK ADT 1 %
(19) BYPASS, DETOUR LENGTH 10 KM

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

(48) LENGTH OF MAXIMUM SPAN 3.4 M
(49) STRUCTURE LENGTH 22.3 M
(50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 7.1 M
(52) DECK WIDTH OUT TO OUT 7.3 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 7.3 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 33 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 7.1 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 = 72.1

PAINT CONDITION INDEX = N/A

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

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- COLLECTOR URBAN 17
(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- 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 7
(68) DECK GEOMETRY 2
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 4
(72) APPROACH ROADWAY ALIGNMENT 4
(36) TRAFFIC SAFETY FEATURES 0000
(113) SCOUR CRITICAL BRIDGES 7

**********  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 8437
(115) YEAR OF FUTURE ADT 2037

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

(90) INSPECTION DATE 05/19 (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)