STATE OF CALIFORNIA - CALIFORNIA STATE TRANSPORTATION AGENCY

DEPARTMENT OF TRANSPORTATION
DIVISION OF MAINTENANCE
STRUCTURE MAINTENANCE & INVESTIGATIONS
100 South Main Street, 3rd Floor
LOS ANGELES, CA 90012
PHONE (213) 897-2004
FAX (213) 897-2033

Making Conservation a California Way of Life.

ICB
cc: Regina
c: Wanda 2 pgs

March 23, 2020

RECEIVED
MAR 31 2020
OC PUBLIC WORKS
DIRECTOR'S OFFICE

Mr. Shane Silsby
Director of Public Works
County of Orange
P O Box 4048
Santa Ana, CA 92702-4048

Dear Mr. Silsby:

In accordance with Title 23 of the Code of Federal Regulations (Federal Highway Act) and the National Bridge Inspection Standards (NBIS), Caltrans Structure Maintenance and Investigations performed an inspection of 4 bridges under your jurisdiction. The type of inspection is indicated on the bridge report transmittal sheet. The bridges have been rated to indicate their deficiencies, structural adequacy, safe load carrying capacity and overall general condition.

Enclosed are copies of the Bridge Inspection Reports for the structures noted on the attached transmittal sheet. These reports contain descriptions of physical changes to the structures since the last inspection, recommendations for work to be done, and additional information not recorded in the previous Bridge Reports.

Your attention is directed to the requirements of Title 23, Part 650 of the Code of Federal Regulations, where newly completed structures or any modification of existing structures shall be entered in the inventory within 90 days. Please notify this office of any newly constructed bridge or culvert within your jurisdiction, more than 20 feet measured along the center of the roadway and carrying public vehicular traffic or over a public roadway, in order that it may be entered in the inventory of bridge structures in compliance with Federal requirements.

Should you have any questions regarding the enclosed Bridge Inspection Reports, please contact Bing Wu @ (213) 897-0874.

Sincerely,

CHING CHAO
Office Chief
Structure Maintenance & Investigations -
(Investigations-South)

Enclosures

STATE OF CALIFORNIA - CALIFORNIA STATE TRANSPORTATION AGENCY

GAVIN NEWSOM, Governor

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Bridge Report Transmittal Sheet

Batch 57987

County of Orange

Bridge #	Bridge Name	Location	Inspection Date	Inspection Type	Outstanding Work	Outstanding Cost
55C0205	SANTA ANA DELHI CHANNEL	0.1 MI S/O BRISTOL STREET	02/06/2020	Routine	Y	$
55C0572	SANTA ANA DELHI CHANNEL	0.4 MI SW/O BRISTOL ST.	02/06/2020	Routine	Y	$
55C0573	REDHILL CHANNEL	0.1 MI. NW/O BROWNING AVE	02/06/2020	Routine	N	$
55C0574	REDHILL CHANNEL	0.1 MI. NW/O BROWNING AVE	02/06/2020	Routine	Y	$

4 Bridge(s) in this Transmittal

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WEB SITES:

The National Bridge Inspection Standards (NBIS) Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, Element Level Inspection, Structure Maintenance and Investigations Manuals, Local Assistance Program Guidelines and other related information are posted on Division of Maintenance, Structure Maintenance and Investigations; Division of Local Assistance, Local Highway Bridge Program (HBP) and FHWA websites.
The websites can be accessed at:

1. "Caltrans Structure Maintenance and Investigations" http://www.dot.ca.gov/hq/structur/strmaint/
2. "Caltrans Division of Local Assistance"
http/www.dot.ca.gov/hq/LocalPrograms/hbrr99/hbrr99a.htm
3. "FHWA" http/www.fhwa.dot.gov/BRIDGE/mtguide.pdf

Inspection Type Definitions

Routine Inspection:

Routine Inspections consist of both the initial Inventory Inspection (the first inspection of the bridge that places it in the bridge inventory or when there has been a change in the configuration of the structure) and subsequent regularly scheduled inspections. The initial inspection provides all the Structural Inventory & Appraisal (SI&A) data required by federal and state regulations, determines the baseline structural conditions, lists any existing problems, and establishes the load capacity of the structure. Subsequent inspections consist of observations, measurements needed to determine the physical and functional condition of the bridge, to identify any changes from the previously recorded conditions, and verification of its load capacity. These inspections are generally conducted from the deck, ground and/or water level, and from permanent work platforms and walkways, if present. Inspection of underwater portions of the substructure is limited to observations during low-flow periods and/or probing for signs of undermining. Special equipment should be utilized in circumstances where its use provides the only practical access to areas of the structure.

Fracture Critical, Special Feature & Underwater Inspections:

Fracture Critical, Special Feature, and Underwater Inspections are up close, hands-on inspections of one or more members above or below the water level to identify any deficiencies not readily detectable using Routine Inspection procedures. These inspections generally require special equipment such as under-bridge inspection equipment, manlifts, boats, traffic control, and railroad flagging. Personnel with special skills such as divers or structural steel inspectors trained in non-destructive testing techniques may be required.

Other Inspections:

Other Inspections are conducted on damaged structures, structures that have developed specific problems, or structures suspected of developing problems. The scope of these investigations should be sufficient to determine the need for emergency load restrictions or closure of the structure, monitor a changing condition, and to assess the level of effort necessary to effect a repair.

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0573
Facility Carried: RIVERFORD ROAD
Location : 0.1 MI. NW/O BROWNING AV
City :
Inspection Date : 02/06/2020
Inspection Type

Bridge Inspection Report

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: REDHILL CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1980
Year Modified: 1989
Length (m) : 6.7
Skew (degrees): 0
No. of Joints : 0
No. of Hinges : 0

Structure Description: Double 12 ft W and 8.5 ft W x 8 ft H x 47 ft L RC box culvert beneath 2 ft of earth fill and AC surfacing.

Span Configuration : (W) 8.50 ft, 12.00 ft (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT
Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.70 ft br, 4.00 ft sw, 36.00 ft, 4.00 ft sw, 0.70 ft br (N)
Total Width: 14.8 m Net Width: 11.0 m No. of Lanes: 2 Speed: 25 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 3.0 inches
Rail Code: 0000

DESCRIPTION UNDER STRUCTURE

Channel Description: RC rectangular.

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

A routine inspection was performed by Y. Chen and P. Piratheepan. The conditions of AC pavement surface and rails on the top of the bridge were inspected by walking along the sidewalks. The conditions of culvert cells were inspected at walking through both cells. At the time of inspection, there was up to 1-inch deep water on the bottom of both culvert cells. A 12 ft aluminum extension ladder was used to reach the channel bottom.

DECK AND ROADWAY

There are transverse cracks on AC pavement at the areas above abutments up to 0.2 inch

INSPECTION COMMENTARY

wide (Photo Number 2).

SAFE LOAD CAPACITY

A revised assigned load rating has been performed on this structure by SMI Ratings Branch based on Section 5.10 of the SM&I Inspection Procedure Manual and a Load Rating Summary Sheet (LRSS) dated on 09/21/2018 is in file. 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.

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
241			**Culvert-RC**	2	28	m	28	0	0	0
(241)										
There were no significant defects noted. All wall vertical and diagonal cracks are sealed with epoxy paste by local agency (Photo Number 5).										
334			**Railing-Masonry**	2	13	m	13	0	0	0
(334)										
There were no significant defects noted.										

WORK RECOMMENDATIONS - NONE

Team Leader : Young Chen

Report Author : Young Chen

Inspected By : Y.Chen/P.Piratheepan

Young Chen (Registered Civil Engineer) 3/16/2020 (Date)

STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **55C0573**
(5) INVENTORY ROUTE(ON/UNDER)- ON 140000000
(2) HIGHWAY AGENCY DISTRICT 12
(3) COUNTY CODE 059 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- REDHILL CHANNEL
(7) FACILITY CARRIED- RIVERFORD ROAD
(9) LOCATION- 0.1 MI. NW/O BROWNING AVE
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- NOT ON NET 0
(13) LRS INVENTORY ROUTE & SUBROUTE
(16) LATITUDE 33 DEG 44 MIN 17.15 SEC
(17) LONGITUDE 117 DEG 48 MIN 08.32 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- CONCRETE
TYPE- CULVERT CODE 119
(44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
TYPE- OTHER/NA CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 2
(46) NUMBER OF APPROACH SPANS 0
(107) DECK STRUCTURE TYPE- NOT APPLICABLE CODE N
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE- NOT APPLICABLE CODE N
B) TYPE OF MEMBRANE- NOT APPLICABLE CODE N
C) TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N

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

(27) YEAR BUILT 1980
(106) YEAR RECONSTRUCTED 1989
(42) TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5
UNDER- WATERWAY 5
(28) LANES:ON STRUCTURE 02 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 1040
(30) YEAR OF ADT 2010 (109) TRUCK ADT 1 %
(19) BYPASS, DETOUR LENGTH 2 KM

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

(48) LENGTH OF MAXIMUM SPAN 3.7 M
(49) STRUCTURE LENGTH 6.7 M
(50) CURB OR SIDEWALK: LEFT 1.2 M RIGHT 1.2 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 11.0 M
(52) DECK WIDTH OUT TO OUT 14.8 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 11.0 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 0 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 11.0 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 = 96.9

PAINT CONDITION INDEX = N/A

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

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- LOCAL URBAN 19
(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 N
(59) SUPERSTRUCTURE N
(60) SUBSTRUCTURE N
(61) CHANNEL & CHANNEL PROTECTION 9
(62) CULVERTS 7

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

(31) DESIGN LOAD- UNKNOWN 0
(63) OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0
(64) OPERATING RATING- 54.1
(65) INVENTORY RATING METHOD- FIELD EVAL/ENG JUD 0
(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 6
(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 2096
(115) YEAR OF FUTURE ADT 2037

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

(90) INSPECTION DATE 02/20 (91) FREQUENCY 48 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)

REDHILL CHANNEL

0.1 MI. NW/O BROWNING AVE

02/06/2020 [AAAI]

55C0573

100 - PHOTO> Routine-Roadway View

Photo No. 1

ROADWAY VIEW LOOKING SOUTHEAST

133 - PHOTO> Unclassified

Photo No. 2

A TRANSVERSE ROADWAY AC PAVEMENT CRACK ABOVE THE CULVERT

REDHILL CHANNEL

0.1 MI. NW/O BROWNING AVE

02/06/2020 [AAAI]

55C0573

101 - PHOTO> Routine-Elevation View

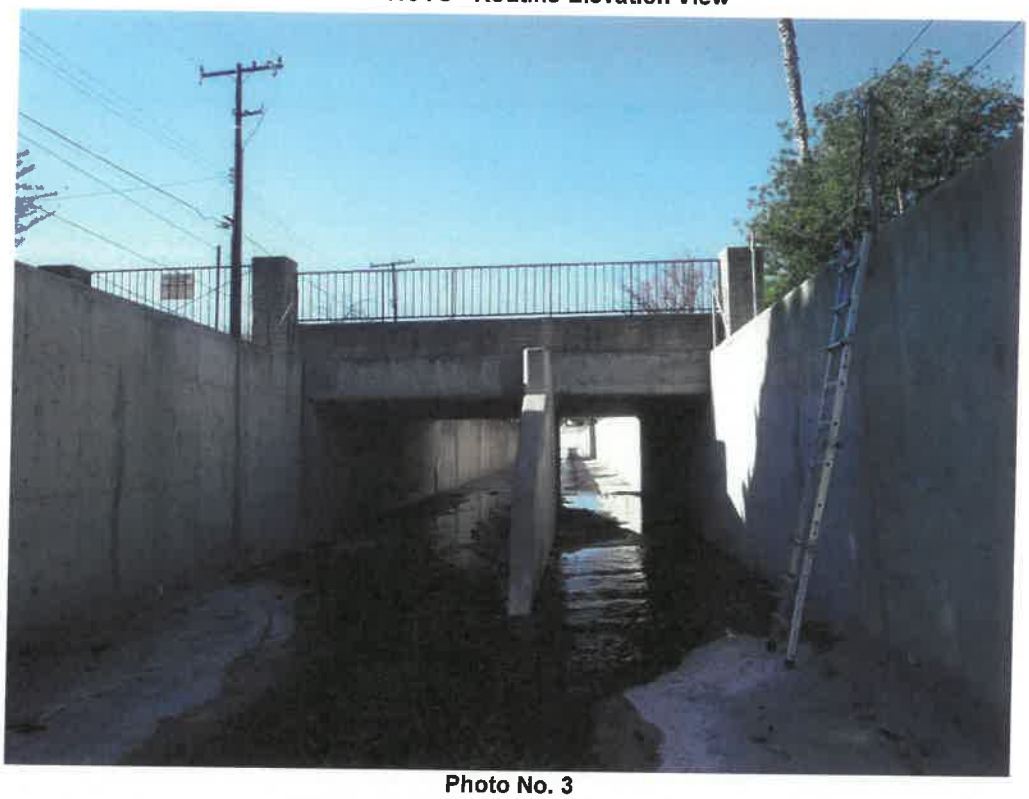

Photo No. 3

SIDE VIEW LOOKING SOUTHWEST

135 - PHOTO> Routine-Underside View

Photo No. 4

UNDER VIEW IN THE WEST CELL, LOOKING SOUTHWEST

REDHILL CHANNEL

0.1 MI. NW/O BROWNING AVE

02/06/2020 [AAAI]

55C0573

118 - PHOTO> Sub-Repairs

Photo No. 5

TYPICAL SEALED WALL CRACKS ALONG CELLS

101 - PHOTO> Routine-Elevation View

Photo No. 6

SIDE VIEW LOOKING NORTHEAST

REDHILL CHANNEL

0.1 MI. NW/O BROWNING AVE

02/06/2020 [AAAI]

55C0573

135 - PHOTO> Routine-Underside View

Photo No. 7

UNDER VIEW IN THE EAST CELL, LOOKING SOUTHWEST