

Orange County Bridge Review Summary

Dokken Engineering performed field reviews of selected Orange County bridges in February and April of 2017 to identifying maintenance activities eligible for Caltrans' Bridge Preventive Maintenance Program funding. Additional maintenance activities not eligible for funding were also identified, and maintenance recommendations in the most recent Caltrans Bridge Inspection Report (BIR) were confirmed.

Bridge Number: 55C0511M

Bridge Name: Santiago Creek

Year Built: 1982

Facility Carried: Villa Park Road

The Santiago Creek culvert is a single span multiple corrugated steel pipe culvert beneath 40 feet of earth fill. There was not access to the culvert and it was not visible from the road.

Caltrans BIR recommendations:

- None

Field Inspection Observations

- No work recommendation can be made for this culvert. There was no access and the culvert was not visible from the road.

Maintenance Needs Assessment

BPMP Assessment

- N/A – No eligible maintenance activities

General Maintenance – Non-BPMP

- No recommendations.

Proposed BPMP Construction Costs

- N/A

Construction Items Not Funded by BPMP

- N/A

APPENDIX A

Photos and BIR



Photo 1: Santiago Creek Bridge



Photo 2: Santiago Creek Bridge

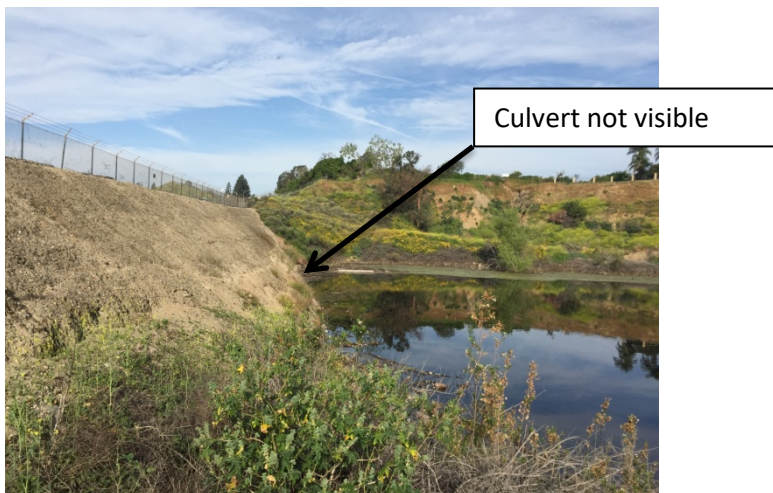


Photo 3:



DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0511M
Facility Carried: VILLA PARK ROAD
Location : 1.74 MI. E/O ROUTE 55 FW
City :
Inspection Date : 08/07/2014
Inspection Type
Routine FC Underwater Special Other
☒

Bridge Inspection Report

STRUCTURE NAME: SANTIAGO CREEK

CONSTRUCTION INFORMATION

Year Built : 1982
Year Widened: N/A
Length (m) : 6.7

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

Structure Description: Single 6.4 m diameter x 100.5 m L corrugated steel multiplate pipe culvert (non-grade top) beneath 12.2 m of earth fill.

Span Configuration : (W) 1 @ 6.4 m (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) 25.0 m (N)

Total Width: .0 m Net Width: .0 m

No. of Lanes: 4

Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 0000 Rail Description: Chain link fence.

DESCRIPTION UNDER STRUCTURE

Channel Description: Earth basin reservoir downstream and natural gravel upstream.

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.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The basin was dry at the north side of the culvert and subside at the south side. All elements were visually inspected.

SAFE LOAD CAPACITY

A load Rating Summary sheet was in BIRIS. This load rating was assigned in accordance with current SM&I procedures.

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Defect Element Description	Env	Total Qty	Units	Qty in each State	St. 1	St. 2	St. 3	St. 4
240		Culvert-Steel	2	101	m	99	0	0	0	2
	516	Steel Coating-Galvanized	2	2000	sq.m	0	800	400	800	
	1010	Cracking	2	2		0	0	0	0	2
	3440	Effectiveness (Steel PC)	2	2000		0	800	400	800	

(240-1010)

There was 2 cuts 8" and 3" in the steel plates at the south end to the east side.

(240-516-3440)

The culvert invert was rusted. the galvanized coat was gone at the pipe bottom and 2/3 of the pipe show some type of rust especially at the connection between plates.

WORK RECOMMENDATIONS - NONE

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 Report Author : Mikhael T. Zaarour
 Inspected By : MT.Zaarour/M.Zolfaghari

Mikhael T. Zaarour
 Mikhael T. Zaarour (Registered Civil Engineer) (Date)

9/9/14



STRUCTURE INVENTORY AND APPRAISAL REPORT

***** IDENTIFICATION *****

(1) STATE NAME- CALIFORNIA 069
 (8) STRUCTURE NUMBER 55C0511M
 (5) INVENTORY ROUTE (ON/UNDER)- ON 140000000
 (2) HIGHWAY AGENCY DISTRICT 12
 (3) COUNTY CODE 059 (4) PLACE CODE 00000
 (6) FEATURE INTERSECTED- SANTIAGO CREEK
 (7) FACILITY CARRIED- VILLA PARK ROAD
 (9) LOCATION- 1.74 MI. E/O ROUTE 55 FWY
 (11) MILEPOINT/KILOMETERPOINT 0
 (12) BASE HIGHWAY NETWORK- PART OF NET 1
 (13) LRS INVENTORY ROUTE & SUBROUTE 000000000000
 (16) LATITUDE 33 DEG 48 MIN 37.24 SEC
 (17) LONGITUDE 117 DEG 48 MIN 19.16 SEC
 (98) BORDER BRIDGE STATE CODE % SHARE %
 (99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- STEEL
 TYPE- CULVERT CODE 319
 (44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
 TYPE- OTHER/NA CODE 000
 (45) NUMBER OF SPANS IN MAIN UNIT 1
 (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 1982
 (106) YEAR RECONSTRUCTED 0000
 (42) TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5
 UNDER- WATERWAY 5
 (28) LANES:ON STRUCTURE 04 UNDER STRUCTURE 00
 (29) AVERAGE DAILY TRAFFIC 26000
 (30) YEAR OF ADT 2003 (109) TRUCK ADT 1 %
 (19) BYPASS, DETOUR LENGTH 6 KM

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

(48) LENGTH OF MAXIMUM SPAN 6.4 M
 (49) STRUCTURE LENGTH 6.7 M
 (50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 0.0 M
 (52) DECK WIDTH OUT TO OUT 0.0 M
 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 25.0 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 25.0 M
 (53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M
 (54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.0 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 *****

SUFFICIENCY RATING = 73.1
 STATUS
 HEALTH INDEX 98.0
 PAINT CONDITION INDEX = N/A

***** CLASSIFICATION *****

	CODE
(112) NBIS BRIDGE LENGTH- YES	Y
(104) HIGHWAY SYSTEM- NOT ON NHS	0
(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	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 JUL	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	N
(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 *****

	CODE
(75) TYPE OF WORK-	
(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	53049
(115) YEAR OF FUTURE ADT	2029

***** INSPECTIONS *****

(90) INSPECTION DATE	08/14	(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)