

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: 55C0477

Bridge Name: Sand Canyon Wash

Year Built: 1973

Facility Carried: Mason Regional Parkway

The Sand Canyon Wash Bridge at Mason Regional PRX is cast-in-place reinforced concrete triple box culvert.

Caltrans BIR recommendations:

- Clean and grub channel.

Field Inspection Observations

- Minor Spalling on pier nose (photo 4). Recommend repairing spalled surface area.
- Exposed footing (photo 4).
- Diagonal and vertical cracks on culvert walls (photo 4).
- Overgrown vegetation. (photo 5)

Maintenance Needs Assessment

BPMP Assessment

- N/A – No eligible maintenance activities
- However, exposed footing should be monitored. If the bridge is on piles this will not pose a future issue.

General Maintenance – Non-BPMP

- Repair spall and cracks on pier nose.
- Remove vegetation.

Proposed BPMP Construction Costs

- Scour counter measure would be funded if become needed. No action needed at this time.

Construction Items Not Funded by BPMP

- Repair Pier nose cracks and Spalls ≈ \$15,000 (includes engineering, mobilization and contingency)
- Remove vegetation.

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:



Photo 4: Culvert Wall



Photo 5: Channel Vegetation



DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0477
Facility Carried: MASON REGIONAL PRK
Location : 50' s/o University Drive
City :
Inspection Date : 12/09/2014

Bridge Inspection Report

Inspection Type
Routine FC Underwater Special Other
☒

STRUCTURE NAME: SAND CANYON WASH

CONSTRUCTION INFORMATION

Year Built : 1973 Skew (degrees): 99
Year Widened: N/A No. of Joints : 0
Length (m) : 12.2 No. of Hinges : 0

Structure Description: Triple 3.7 m W x 2.7 m H x 15.2 m L RC box culvert (grade top)
beneath 0.6 m of earth fill.

Span Configuration : (S) 3 @ 3.7 m (N) 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 : P P P P P
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.5 m br, 1.2 m sw, 6.9 m, 1.8 m cu med, 3.5 m, 1.2 m sw, 0.5 m br (E)

Total Width: 14.6 m Net Width: 10.4 m No. of Lanes: 3 Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 0000 Rail Description: Timber Railing

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with rock slopes at 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 wash was dry at time of inspection. All elements were visually inspected.

CULVERT

The downstream live trees accumulated 300 mm dirt and water inside the barrels #1 and #3.

SAFE LOAD CAPACITY

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Element Description	Env	Total Qty	Units	Qty in each Condition State			
						St. 1	St. 2	St. 3	St. 4
241		Culvert-RC	2	45	m	35	10	0	0
	1130	Cracking (RC and Other)	2	10		0	10	0	0

(241-1130)

There are vertical cracks up to 1 mm wide in the culvert walls as follow 5 cracks in wall #1, 6 cracks in walls #2 & #3, and 3 cracks in wall #4.

332		Railing-Timber	2	32	m	32	0	0	0
-----	--	----------------	---	----	---	----	---	---	---

(332)

There were no significant defects noted.

WORK RECOMMENDATIONS

RecDate: 06/08/2011

EstCost:

Remove and clean the downstream channel

Action : Remove Vegetation

StrTarget: 2 YEARS

from live trees and accumulated dirt

Work By: LOCAL AGENCY

DistTarget:

Status : PROPOSED

EA:

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson



Mikhael T. Zaarour (Registered Civil Engineer) (Date) *12/15/14*

STRUCTURE INVENTORY AND APPRAISAL REPORT

***** IDENTIFICATION *****

(1) STATE NAME- CALIFORNIA 069
 (8) STRUCTURE NUMBER 55C0477
 (5) INVENTORY ROUTE(ON/UNDER)- ON 140000000
 (2) HIGHWAY AGENCY DISTRICT 12
 (3) COUNTY CODE 059 (4) PLACE CODE 00000
 (6) FEATURE INTERSECTED- SAND CANYON WASH
 (7) FACILITY CARRIED- MASON REGIONAL PRK
 (9) LOCATION- 50' s/o University Drive
 (11) MILEPOINT/KILOMETERPOINT 0
 (12) BASE HIGHWAY NETWORK- NOT ON NET 0
 (13) LRS INVENTORY ROUTE & SUBROUTE
 (16) LATITUDE 33 DEG 39 MIN 25.58 SEC
 (17) LONGITUDE 117 DEG 49 MIN 53.4 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 3
 (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 1973
 (106) YEAR RECONSTRUCTED 0000
 (42) TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5
 UNDER- WATERWAY 5
 (28) LANES:ON STRUCTURE 03 UNDER STRUCTURE 00
 (29) AVERAGE DAILY TRAFFIC 300
 (30) YEAR OF ADT 2010 (109) TRUCK ADT 1 %
 (19) BYPASS, DETOUR LENGTH 199 KM

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

(48) LENGTH OF MAXIMUM SPAN 3.7 M
 (49) STRUCTURE LENGTH 12.2 M
 (50) CURB OR SIDEWALK: LEFT 1.2 M RIGHT 1.2 M
 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 10.4 M
 (52) DECK WIDTH OUT TO OUT 14.6 M
 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 10.4 M
 (33) BRIDGE MEDIAN- CLOSED (NO BARRIER) 2
 (34) SKEW 99 DEG (35) STRUCTURE FLARED NO
 (10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
 (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 6.9 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 = 76.7
 STATUS FUNCTIONALLY OBSOLETE
 HEALTH INDEX 94.9
 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 8
 (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 2
 (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
 (71) WATER ADEQUACY 9
 (72) APPROACH ROADWAY ALIGNMENT 6
 (36) TRAFFIC SAFETY FEATURES 0000
 (113) SCOUR CRITICAL BRIDGES 8

***** PROPOSED IMPROVEMENTS *****

(75) TYPE OF WORK- MISC STRUCTURAL WORK CODE 38
 (76) LENGTH OF STRUCTURE IMPROVEMENT 12.2 M
 (94) BRIDGE IMPROVEMENT COST \$114,000
 (95) ROADWAY IMPROVEMENT COST \$22,800
 (96) TOTAL PROJECT COST \$191,520
 (97) YEAR OF IMPROVEMENT COST ESTIMATE 2010
 (114) FUTURE ADT 361
 (115) YEAR OF FUTURE ADT 2031

***** INSPECTIONS *****

(90) INSPECTION DATE 12/14 (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)