

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: 55C0059

Bridge Name: William Canyon Creek

Year Built: 1970

Facility Carried: Santiago Canyon Road

The William Canyon Creek Bridge at Santiago Canyon Rd is a single span cast-in-place reinforced concrete ridged frame deck slab supported upon spread footings. The bridge spans over a natural earth trapezoidal creek with a cobble bottom. The bridge was widened in 1983.

Caltrans BIR recommendations:

- Fill sinkhole at southeast corner.
- Address southeast slope degradation.

Field Inspection Observations

- Little to no efflorescence in bridge soffit (photo 2).
- Deep rutting in deck (photo 3).
- Erosion of embankment by the wing walls (photo 4).

Maintenance Needs Assessment

BPMP Assessment

- Deep rutting in deck may be eligible for deck treatment, such as polyester concrete, since classified as condition state 2.
- Address erosion with fill material and divert water to suitable collection system.

General Maintenance – Non-BPMP

- None.

Proposed BPMP Construction Costs

- Polyester Concrete Overlay Estimated Total Construction Cost ≈ \$40,000 (with engineering, traffic control, mobilization and contingency)
- Address erosion ≈ \$6,000

Construction Items Not Funded by BPMP

- N/A

APPENDIX A

Photos and BIR



Photo 1: Williams Canyon Creek Bridge



Photo 2: Bridge Soffit



Photo 3: Bridge Deck

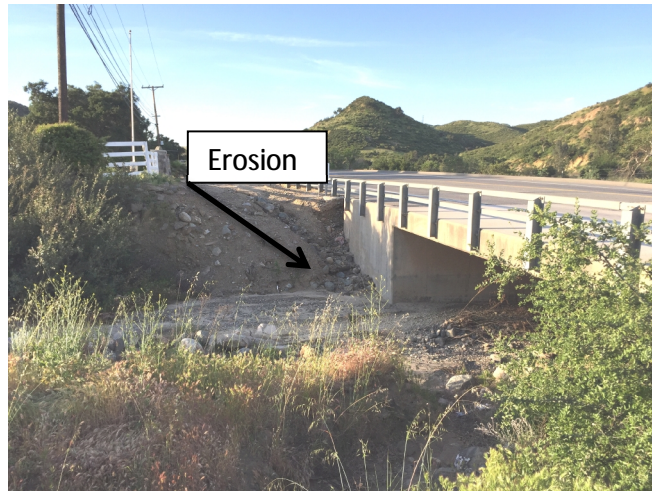


Photo 4: Abutment walls



DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0059
Facility Carried: SANTIAGO CANYON RD
Location : 0.8 MI N/O MODJESKA RD
City :
Inspection Date : 08/13/2015

Bridge Inspection Report

Inspection Type
Routine FC Underwater Special Other

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STRUCTURE NAME: WILLIAMS CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1970 Skew (degrees): 0
Year Widened: 1983 No. of Joints : 0
Length (m) : 10.7 No. of Hinges : 0

Structure Description: Single span CIP/RC rigid frame deck slab supported upon spread footings.

Span Configuration : (S) 1 @ 10.1 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20
Inventory Rating: 32.6 metric tons Calculation Method: LOAD FACTOR
Operating Rating: 53.5 metric tons Calculation Method: LOAD FACTOR
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.2 m br, 15.92 m, 0.2 m br (E)
Total Width: 16.2 m Net Width: 15.9 m No. of Lanes: 2 Speed: 55 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 Inches
Rail Code: 0000

Rail Type	Location	Length (ft)	Rail Modifications
Type 15	Right/Left	138	

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom and with rock slopes 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.

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

CONDITION OF STRUCTURE

The channel was dry at time of inspection; all elements were visually inspection.

SAFE LOAD CAPACITY

The load rating for this structure is being reviewed by SM&I Ratings Branch. An updated Load Rating Summary Sheet will be archived when this review is complete. The current

INSPECTION COMMENTARY

rating is based on BDS computer output dated 10/10/1979.

ELEMENT INSPECTION RATINGS AND NOTES									
Elem No.	Defect /Prot	Defect Element Description	Env	Total Qty	Units	Qty in each Condition State			
						St. 1	St. 2	St. 3	St. 4
38		Slab-RC	2	160	sq.m	80	80	0	0
	1190	Abrasion (PS Conc./RC)	2	80		0	80	0	0
(38-1190)									
There are wearing surface of the deck around the tires line									
215		Abutment-RC	2	48	m	47	0	1	0
	6000	Scour	2	1		0	0	1	0
(215)									
There were no significant defects noted.									
(215-6000)									
There is gully erosion at the southeast wing wall caused by runoff water. The water caused sinkhole 5' x 4' x 3' at the end of the wing wall in the roadway.									
330		Railing-Metal	2	20	m	20	0	0	0
(330)									
There were no significant defects noted.									

WORK RECOMMENDATIONS

RecDate: 08/13/2015	EstCost:	Provide suitable material for the
Action : Appr. Roadway-Repair	StrTarget: 2 YEARS	sinkhole 5' x 4' x 3' at the southeast
Work By: LOCAL AGENCY	DistTarget:	corner of the roadway.
Status : PROPOSED	EA:	
RecDate: 05/13/2011	EstCost:	Provide suitable material at the
Action : Drainage Issue	StrTarget: 2 YEARS	southeast slope next to the winwall to
Work By: LOCAL AGENCY	DistTarget:	prevent future degradation from runoff
Status : PROPOSED	EA:	water.

CHANNEL X-SECTION

Side : Upstream			X-Section Date: 08/13/2015
Measured From : Soffit of slab (E)			
Location	Horiz (m)	Vert (m)	Comments
Abut 1	0.00	2.30	face of abut wall
	4.30	2.20	
Abut 2	0.00	1.89	face of abut wall

Team Leader : Mikhael T. Zaarour
Report Author : Mikhael T. Zaarour
Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour 9/23/15
Mikhael T. Zaarour (Registered Civil Engineer) (Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

***** IDENTIFICATION *****

(1) STATE NAME- CALIFORNIA 069
 (8) STRUCTURE NUMBER 55C0059
 (5) INVENTORY ROUTE (ON/UNDER) - ON 140000000
 (2) HIGHWAY AGENCY DISTRICT 12
 (3) COUNTY CODE 059 (4) PLACE CODE 00000
 (6) FEATURE INTERSECTED- WILLIAMS CANYON CREEK
 (7) FACILITY CARRIED- SANTIAGO CANYON RD
 (9) LOCATION- 0.8 MI N/O MODJESKA RD
 (11) MILEPOINT/KILOMETERPOINT 0
 (12) BASE HIGHWAY NETWORK- PART OF NET 1
 (13) LRS INVENTORY ROUTE & SUBROUTE 000000000000
 (16) LATITUDE 33 DEG 43 MIN 43.55 SEC
 (17) LONGITUDE 117 DEG 39 MIN 01.01 SEC
 (98) BORDER BRIDGE STATE CODE % SHARE %
 (99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- CONCRETE
 TYPE- SLAB CODE 101
 (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- CIP CONCRETE CODE 1
 (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 1970
 (106) YEAR RECONSTRUCTED 1983
 (42) TYPE OF SERVICE: ON- HIGHWAY 1
 UNDER- WATERWAY 5
 (28) LANES:ON STRUCTURE 02 UNDER STRUCTURE 00
 (29) AVERAGE DAILY TRAFFIC 8000
 (30) YEAR OF ADT 2012 (109) TRUCK ADT 3 %
 (19) BYPASS, DETOUR LENGTH 22 KM

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

(48) LENGTH OF MAXIMUM SPAN 10.1 M
 (49) STRUCTURE LENGTH 10.7 M
 (50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 15.9 M
 (52) DECK WIDTH OUT TO OUT 16.2 M
 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 15.9 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 15.9 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 *****

SUFFICIENCY RATING = 88.7
 STATUS
 HEALTH INDEX 88.3
 PAINT CONDITION INDEX = N/A

***** CLASSIFICATION *****

CODE
 (112) NBIS BRIDGE LENGTH- YES Y
 (104) HIGHWAY SYSTEM- ROUTE ON NHS 1
 (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 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- LOAD FACTOR 1
 (64) OPERATING RATING- 53.5
 (65) INVENTORY RATING METHOD- LOAD FACTOR 1
 (66) INVENTORY RATING- 32.6
 (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 9
 (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
 (71) WATER ADEQUACY 8
 (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 12365
 (115) YEAR OF FUTURE ADT 2035

***** INSPECTIONS *****

(90) INSPECTION DATE 08/15 (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)