STATE OF CALIFORNIA - CALIFORNIA STATE TRANSPORTATION AGENCY

EDMUND G. BROWN JR., Governor

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.

July 4, 2018

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 5 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

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Bridge Report Transmittal Sheet

Batch 45045

County of Orange

Bridge #	Bridge Name	Location	Inspection Date	Inspection Type	Outstanding Work	Outstanding Cost
55C0175	LADD CANYON	2.2 MI. E/O SANTIAGO ROAD	12/15/2017	Routine	Y	$
55C0176	SILVERADO CANYON CREEK	0.1 MI. S/O SLVRDO CYN RD	12/15/2017	Routine	Y	$
55C0180	SILVERADO CANYON CREEK	2.7 MI E/O SANTIAGO ROAD	12/15/2017	Routine	N	$
55C0188	SILVERADO CANYON CREEK	200' S/O SILVERADO CYN RD	12/15/2017	Routine	N	$
55C0189	SILVERADO CANYON CREEK	50' N/O SILVERADO CYN RD	12/15/2017	Routine	Y	$

5 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 : 55C0175
Facility Carried: SILVERADO CANYN RD
Location : 2.2 MI. E/O SANTIAGO ROA
City :
Inspection Date : 12/15/2017

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: LADD CANYON

CONSTRUCTION INFORMATION

Year Built : 1947
Year Modified: N/A
Length (m) : 15.7

Skew (degrees): 60
No. of Joints : 0
No. of Hinges : 0

Structure Description: Simply supported single span steel girders (4 each) with RC closed end backfilled seat abutments, all supported upon spread footings.

Span Configuration : (W) 49.00 ft (E)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15
Inventory Rating: RF= 0.69 Calculation Method: (LRFR) LD & RES FACT RATING
Operating Rating: RF= 0.89 Calculation Method: (LRFR) LD & RES FACT RATING
Permit Rating : GGGGG
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 1.50 ft br, 24.00 ft, 1.50 ft br (N)

Total Width: 8.2 m Net Width: 7.4 m No. of Lanes: 2 Speed: 25 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 inches

Rail Code: 0000

Rail Type	Location	Length (ft)	Rail Modifications
Miscellaneous	Right/Left	110	

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom.

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

This inspection was performed by walking on the bridge shoulders and deck, and under the span. A full visual inspection is performed for the visible substructure elements. The channel was dry at the time of the inspection. Inspection access is from northwest and southwest quadrants.

INSPECTION COMMENTARY

The bridge deck was inspected on 12/15/2017 and the underside elements were inspected on 2/8/2018.

DECK AND ROADWAY

East side of the asphalt roadway is 1 inch higher above the bridge deck.

SAFE LOAD CAPACITY

The load rating for this structure is calculated on 08/03/2017 by SMI Ratings Branch using BrR 6.8.0 AASHTO analysis, and the load rating summary sheet is archived on 09/08/2016.

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
12			Deck-RC	2	128	sq.m	92	34	2	0
	1080		Delamination/Spall/Patched Area	2	6		0	5	1	0
	1120		Effloresecence/Rust Staining	2	10		0	9	1	0
	1190		Abrasion (PS Conc./RC)	2	20		0	20	0	0
	521		Concrete Coat.(Meth/Paint/Seal)	2	110	sq.m	110	0	0	0

(12-1080)
The deck has a few sound patched spall +/- 2 feet X 1.5 feet on the deck.

The deck has an unsound patched area 2 feet X 2 feet at eastbound lane at 10 feet from the west end and 2 feet south of the bridge centerline (2 feet south of double yellow lines).

(12-1120)
There are soffit transverse cracks +/- 4 feet long at the following locations:
* five cracks with white efflorescence in bay #1.
* seven cracks with white efflorescence and a crack with brown efflorescence in bay #2.
* four cracks with white efflorescence in bay #3.

(12-1190)
There is few areas of abrasion in different locations.

(12-521)
There were no significant defects noted.
The bridge deck cracks were treated with methacrylate and all spalls were patched.

107			Girder/Beam-Steel	2	62	m	62	0	0	0
	515		Steel Coating-Paint	2	138	sq.m	138	0	0	0

(107)
There were no significant defects noted.

(107-515)
There were no significant defects noted.

215			Abutment-RC	2	34	m	34	0	0	0

(215)
There were no significant defects noted.

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
220			Pile Cap/Footing-RC	2	6	m	0	6	0	0
	6000		Scour	2	6		0	6	0	0

(220)
6

(220-6000)
There is an exposed footing 6-8 inches high at the southerly 20 feet of the west abutment.

333			Railing-Other	2	32	m	26	6	0	0
	1010		Cracking	2	6		0	6	0	0

(333-1010)
At the north rail, timber post #3 (counting from west) is split.

At the southerly rail, timber posts #3 and #4 have vertical checks at the exterior face.

WORK RECOMMENDATIONS

RecDate: 12/15/2017
Action : Deck-Patch spalls
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

Patch the deck that has an unsound patched area 2 feet X 2 feet at eastbound lane at 10 feet from the west end and 2 feet south of the bridge centerline (2 feet south of double yellow lines).

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

6/27/18

Ashraf Shenouda (Registered Civil Engineer) (Date)

STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **55C0175**
(5) INVENTORY ROUTE(ON/UNDER)- ON 140000000
(2) HIGHWAY AGENCY DISTRICT 12
(3) COUNTY CODE 059 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- LADD CANYON
(7) FACILITY CARRIED- SILVERADO CANYN RD
(9) LOCATION- 2.2 MI. E/O SANTIAGO ROAD
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- NOT ON NET 0
(13) LRS INVENTORY ROUTE & SUBROUTE
(16) LATITUDE 33 DEG 44 MIN 53.2 SEC
(17) LONGITUDE 117 DEG 38 MIN 25.68 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- STEEL
TYPE- STRINGER/MULTI-BEAM OR GDR CODE 302
(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 1947
(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 2000
(30) YEAR OF ADT 2009 (109) TRUCK ADT 1 %
(19) BYPASS, DETOUR LENGTH 199 KM

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

(48) LENGTH OF MAXIMUM SPAN 15.2 M
(49) STRUCTURE LENGTH 15.7 M
(50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 7.4 M
(52) DECK WIDTH OUT TO OUT 8.2 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 6.7 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 60 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 7.4 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 = 47.7
STATUS
HEALTH INDEX 95.0
PAINT CONDITION INDEX = 100.0

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

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- LOCAL RURAL 09
(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 5
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION 7
(62) CULVERTS N

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

(31) DESIGN LOAD- M-13.5 OR H-15 2
(63) OPERATING RATING METHOD- (LRFR) LD & RES FA 8
(64) OPERATING RATING- RF= 0.89
(65) INVENTORY RATING METHOD- (LRFR) LD & RES FA 8
(66) INVENTORY RATING- RF= 0.69
(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 5
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 8
(72) APPROACH ROADWAY ALIGNMENT 6
(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 4204
(115) YEAR OF FUTURE ADT 2035

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

(90) INSPECTION DATE 12/17 (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)

NO INSPECTION PHOTOS
OF BRIDGE
55C0175

SILVERADO CANYON CREEK

0.1 MI. S/O SLVRDO CYN RD | 12/15/2017 [AAAK] | 55C0176

113 - PHOTO-Sub-Damage/Deterioration

Photo No. 1

Some aggregates were missing from the north abutment westerly end.

115 - PHOTO-Sub-Unusual Conditions

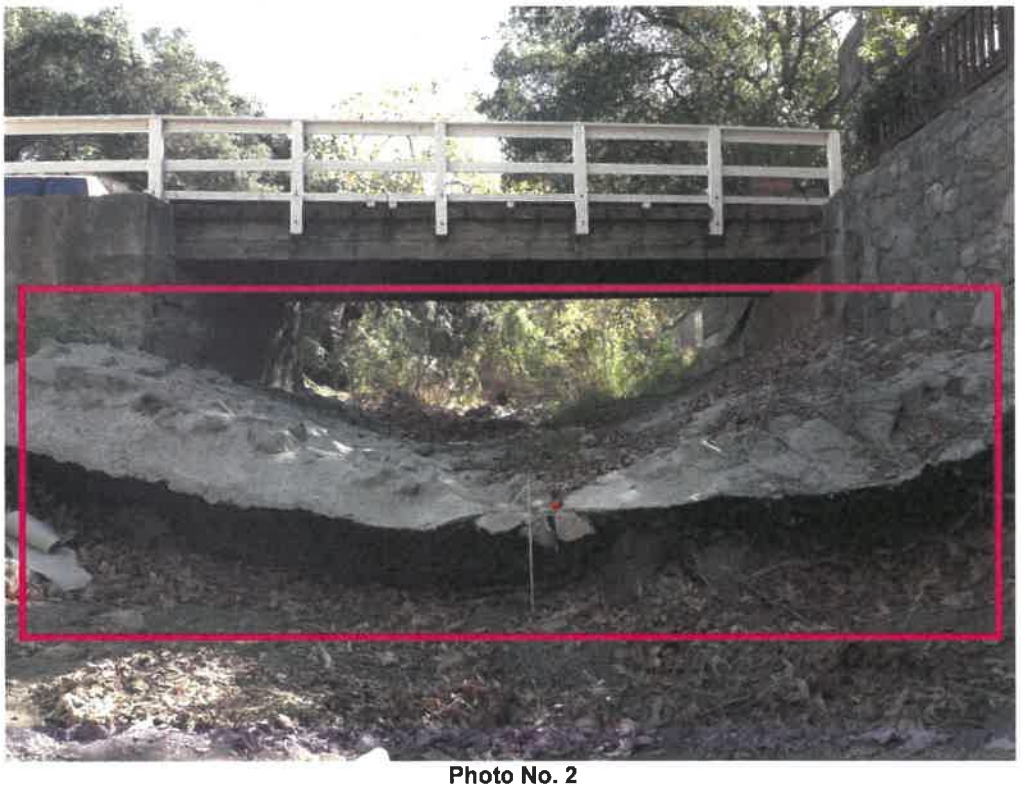

Photo No. 2

Undermining 2.5'X 5' X 20 ' at 10 ft from the west end of the bridge.

SILVERADO CANYON CREEK

0.1 MI. S/O SLVRDO CYN RD | 12/15/2017 [AAAK] | 55C0176

115 - PHOTO-Sub-Unusual Conditions

Photo No. 3

Undermining 2.5'X 5' X 20 ' at 10 ft from the west end of the bridge.

115 - PHOTO-Sub-Unusual Conditions

Photo No. 4

The channel bed is degraded in front of the grouted channel bed 20' dia. X 3 ' Deep.

SILVERADO CANYON CREEK

2.7 MI E/O SANTIAGO ROAD | 12/15/2017 [AAAK] | 55C0180

102 - PHOTO-Deck-Damage/Deterioration

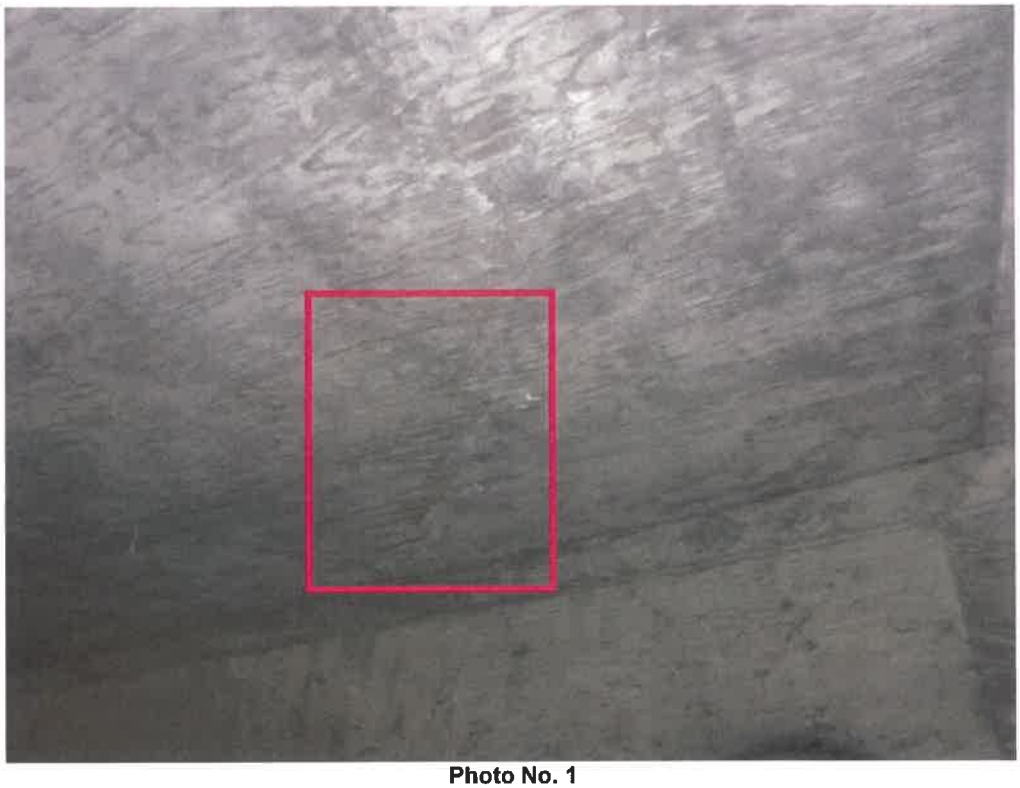

Photo No. 1

Diagonal and longitudinal cracks with white and brown efflorescence.