

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

RECEIVED

AUG 17 2018

**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 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,

A handwritten signature in blue ink, appearing to read "Ching Chao".

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 | | Outstanding | |
|-----------------|------------------------|---------------------------|-------------------|-------------|--------------------|-------------|
| | | | Date | Type | Work | 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 : 55C0176
Facility Carried: KITTERMAN DRIVE
Location : 0.1 MI. S/O SLVRDO CYN R
City :
Inspection Date : 12/15/2017

Bridge Inspection Report

Inspection Type
Routine ☒ FC ☐ Underwater ☐ Special ☐ Other ☐

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1970 Skew (degrees): 0
Year Modified: 1983 No. of Joints : 0
Length (m) : 9.1 No. of Hinges : 0

Structure Description: Simply supported single span treated timber stringers (8 each) with a timber deck, all supported by masonry rock abutments.

Span Configuration : (S) 29.00 ft (N)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF=1.10 =>35.6 metric tons Calculation Method: ALLOWABLE STRESS
Operating Rating: RF=1.59 =>51.5 metric tons Calculation Method: ALLOWABLE STRESS
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.50 ft br, 12.50 ft, 0.50 ft br (E)
Total Width: 4.3 m Net Width: 3.8 m No. of Lanes: 1 Speed: 25 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 2.0 inches
Rail Code: 0000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| Timber | Right/Left | 70 | |
| Rail | | | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom, grouted rock slopes through 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

This inspection was performed by walking on the culvert shoulders and deck, and under the span. A full visual inspection is performed for the visible substructure elements.

INSPECTION COMMENTARY

The channel was dry at the time of the inspection.

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

SUBSTRUCTURE

The grouted channel bed has undermining up to 2.5 feet deep, 5 feet deep with full channel (20 feet long) width at the downstream side at 10 feet from the west end of the bridge. (see the attached photos no. 2 & 3)

The channel bed is degraded in front of the grouted channel bed, 20 feet wide X 3 feet deep. (see the attached photo no. 4)

SAFE LOAD CAPACITY

The load rating for this structure is being reviewed by SMI Rating Branch. An updated Load Rating Summary will be archived when this review is complete.

| <u>ELEMENT INSPECTION RATINGS AND COMMENTARY</u> | | | | | | | | | |
|---|---------------------|------------------------------|------------|------------------|--------------|------------------------------------|--------------|--------------|--------------|
| Elem No. | Defect /Prot | Element Description | Env | Total Qty | Units | Qty in each Condition State | | | |
| | | | | | | St. 1 | St. 2 | St. 3 | St. 4 |
| 31 | | Deck-Timber | 2 | 40 | sq.m | 40 | 0 | 0 | 0 |
| | 510 | Deck Wearing Surface-Asphalt | 2 | 35 | sq.m | 31 | 4 | 0 | 0 |
| | 3220 | Cracking-AC (WS) | 2 | 4 | | 0 | 4 | 0 | 0 |
| (31) | | | | | | | | | |
| There were no significant defects noted. | | | | | | | | | |
| (31-510-3220) | | | | | | | | | |
| AC exhibits few transverse cracks 5-10 feet long and up to 0.5 inches wide. | | | | | | | | | |
| 111 | | Girder/Beam-Timber | 2 | 70 | m | 57 | 13 | 0 | 0 |
| | 1150 | Check/Shake (Timber) | 2 | 11 | | 0 | 11 | 0 | 0 |
| | 1160 | Crack (Timber) | 2 | 2 | | 0 | 2 | 0 | 0 |
| (111-1150) | | | | | | | | | |
| There is a longitudinal horizontal check up to 3 mm wide, and 30% penetration in the westerly face of the west exterior girder. | | | | | | | | | |
| Timber beam #4 has two cracks at the bottom face at mid span, 9 ft long each. | | | | | | | | | |
| Timber beam #6 has two cracks at the bottom face at mid span, 12 ft long each. | | | | | | | | | |
| (111-1160) | | | | | | | | | |
| There are two cracks 8" long at the middle of the easterly timber beam. | | | | | | | | | |
| 215 | | Abutment-RC | 2 | 9 | m | 5 | 3 | 1 | 0 |
| | 1130 | Cracking (RC and Other) | 2 | 2 | | 0 | 2 | 0 | 0 |
| | 1190 | Abrasion (PS Conc./RC) | 2 | 2 | | 0 | 1 | 1 | 0 |
| (215-1130) | | | | | | | | | |
| There is a wide horizontal crack, 6 feet long at the north abutment westerly end up to 1 inch wide. | | | | | | | | | |

ELEMENT INSPECTION RATINGS AND COMMENTARY

| Elem No. | Defect /Prot | Defect | Element Description | Env Qty | Total Qty | Units | Qty in each Condition State | | | |
|---|--------------|--------|---------------------|---------|-----------|-------|-----------------------------|-------|-------|-------|
| | | | | | | | St. 1 | St. 2 | St. 3 | St. 4 |
| (215-1190) | | | | | | | | | | |
| Some aggregates were missing from the north abutment westerly end. (see the attached photo no. 1) | | | | | | | | | | |
| 256 | | | Slope Protection | 2 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) | | | | | | | | | | |
| There were no significant defects noted. | | | | | | | | | | |
| 332 | | | Railing-Timber | 2 | 18 | m | 18 | 0 | 0 | 0 |
| (332) | | | | | | | | | | |
| There were no significant defects noted. | | | | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 12/15/2017
 Action : Sub-Misc.
 Work By: LOCAL AGENCY
 Status : PROPOSED

EstCost:
 StrTarget: 1 YEAR
 DistTarget:
 EA:

Protect the grouted channel bed that has undermining up to 2.5 feet deep, 5 feet deep with full channel (20 feet long) width at the downstream side at 10 feet from the west end of the bridge.

Team Leader : Ashraf Shenouda
 Report Author : Ashraf Shenouda
 Inspected By : A.Shenouda/KD.Henderson


 Ashraf Shenouda (Registered Civil Engineer) (Date) 6/27/18



STRUCTURE INVENTORY AND APPRAISAL REPORT

***** IDENTIFICATION *****

(1) STATE NAME- CALIFORNIA 069
 (8) STRUCTURE NUMBER 55C0176
 (5) INVENTORY ROUTE (ON/UNDER)- ON 140000000
 (2) HIGHWAY AGENCY DISTRICT 12
 (3) COUNTY CODE 059 (4) PLACE CODE 00000
 (6) FEATURE INTERSECTED- SILVERADO CANYON CREEK
 (7) FACILITY CARRIED- KITTERMAN DRIVE
 (9) LOCATION- 0.1 MI. S/O SLVRDO CYN RD
 (11) MILEPOINT/KILOMETERPOINT 0
 (12) BASE HIGHWAY NETWORK- NOT ON NET 0
 (13) LRS INVENTORY ROUTE & SUBROUTE
 (16) LATITUDE 33 DEG 44 MIN 48.01 SEC
 (17) LONGITUDE 117 DEG 38 MIN 15.53 SEC
 (98) BORDER BRIDGE STATE CODE % SHARE %
 (99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- WOOD OR TIMBER
 TYPE- STRINGER/MULTI-BEAM OR GDR CODE 702
 (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- TIMBER CODE 8
 (108) WEARING SURFACE / PROTECTIVE SYSTEM:
 A) TYPE OF WEARING SURFACE- BITUMINOUS CODE 6
 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 01 UNDER STRUCTURE 00
 (29) AVERAGE DAILY TRAFFIC 200
 (30) YEAR OF ADT 2009 (109) TRUCK ADT 1 %
 (19) BYPASS, DETOUR LENGTH 2 KM

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

(48) LENGTH OF MAXIMUM SPAN 9.1 M
 (49) STRUCTURE LENGTH 9.1 M
 (50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 3.8 M
 (52) DECK WIDTH OUT TO OUT 4.3 M
 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 3.8 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 3.8 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 = 67.0

STATUS

HEALTH INDEX 94.7

PAINT CONDITION INDEX = N/A

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

(112) NBIS BRIDGE LENGTH- YES Y
 (104) HIGHWAY SYSTEM- NOT ON NHS 0
 (26) FUNCTIONAL CLASS- MAJOR COLLECTOR RURAL 07
 (100) DEFENSE HIGHWAY- NOT STRAHNET 0
 (101) PARALLEL STRUCTURE- NONE EXISTS N
 (102) DIRECTION OF TRAFFIC- 1 LANE, 2 WAY 3
 (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 5
 (61) CHANNEL & CHANNEL PROTECTION 8
 (62) CULVERTS N

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

(31) DESIGN LOAD- UNKNOWN 0
 (63) OPERATING RATING METHOD- ALLOWABLE STRESS 2
 (64) OPERATING RATING- 51.5
 (65) INVENTORY RATING METHOD- ALLOWABLE STRESS 2
 (66) INVENTORY RATING- 35.6
 (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 5
 (68) DECK GEOMETRY 2
 (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- SUP/SUB REHAB CODE 35
 (76) LENGTH OF STRUCTURE IMPROVEMENT 9.1 M
 (94) BRIDGE IMPROVEMENT COST \$38,000
 (95) ROADWAY IMPROVEMENT COST \$7,600
 (96) TOTAL PROJECT COST \$63,840
 (97) YEAR OF IMPROVEMENT COST ESTIMATE 2017
 (114) FUTURE ADT 210
 (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)

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.