STATE OF CALIFORNIA - CALIFORNIA STATE TRANSPORTATION AGENCY
EDMUND G. BROWN JR., Governor

DEPARTMENT OF TRANSPORTATION
DIVISION OF MAINTENANCE
STRUCTURE MAINTENANCE & INVESTIGATIONS
1801 30th Street
SACRAMENTO, CA 95816
PHONE (916) 227-8631
FAX (916) 227-8357

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 2 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 Chaz Kussoy @ (510) 286-6480.

Sincerely,

Kevin Flora for Vassil Simeonov

VASSIL K. SIMEONOV
Office Chief
Structure Maintenance & Investigations - (Specialty Investigations)

Enclosures

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Bridge Report Transmittal Sheet

Batch 44281

County of Orange

Bridge #	Bridge Name	Location	Inspection Date	Inspection Type	Outstanding Work	Outstanding Cost
55C0172	SANTIAGO CREEK	0.1 MI N/O MODJESKA GR RD	05/10/2018	Fracture Critical	Y	$
55C0174	SILVERADO CANYON CREEK	1.6 MI E/O SANTIAGO ROAD	05/10/2018	Fracture Critical	Y	$

2 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 : 55C0172
Facility Carried: MODJESKA CANYON RD
Location : 0.1 MI N/O MODJESKA GR R
City :
Inspection Date : 05/10/2018

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
☐	☒	☐	☐	☐

STRUCTURE NAME: SANTIAGO CREEK

CONSTRUCTION INFORMATION

Year Built : 1935
Year Modified: N/A
Length (m) : 19.5
Skew (degrees): 68
No. of Joints : 1
No. of Hinges : 0

Structure Description: CIP/RC deck on riveted steel floor beams (5) on simply supported riveted steel through girders (2) on RC pedestals on RC closed end backfilled cantilever abutments with monolithic wingwalls at the northwest and southeast corners on spread footings.

Span Configuration : (S) 60.00 ft (N)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15
Inventory Rating: RF=0.47 =>15.2 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT
Operating Rating: RF=0.79 =>25.6 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT
Permit Rating : XXXXX
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) Steel plate girder, 2.20 ft cu, 20.00 ft, 2.20 ft cu, steel plate girder (E)

Total Width: 7.3 m Net Width: 6.1 m No. of Lanes: 2 Speed: 25 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 inches

Rail Code: 0000 Rail Description: Steel plate girder

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal.

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

A fracture critical member inspection was performed on 05/10/2018 by Peyman Kaviani from the Office of Specialty Investigations.

The structure was accessed with a ladder from the ground below. Lane closures and traffic control were not needed.

INSPECTION COMMENTARY

The investigation was conducted in accordance with the Fracture Critical Member Inspection Plan, dated 05/21/2008.

FRACTURE CRITICAL MEMBER INSPECTION

A hands-on visual inspection was performed on the tension stress areas of the left and right girders. No fractures or cracks were found.

During the 05/21/2008 fracture critical member inspection, up to 19 mm (3/4 in) of pack rust was found between the bottom flange plates of the left and right girders at the following locations:

- Girder 1 to Floor Beam 3 connection
- Girder 1 to Floor Beam 5 connection
- Girder 2 to Floor Beam 2 connection
- Girder 2 to Floor Beam 4 connection

No increase in corrosion has occurred at these locations. These areas will continue to be monitored for any significant increase in corrosion during the next scheduled fracture critical member inspection.

STEEL INVESTIGATIONS

This structure qualifies for an in-depth Steel investigation because it possesses the following fracture critical or fatigue prone details:

Girder (Built-Up): FC Members

Fracture Critical: Yes Inspection Freq.: 24 Next Inspection: 05/10/2020

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	142	sq.m	40	100	2	0
	1080		Delamination/Spall/Patched Area	2	2		2	0	0	0
	1130		Cracking (RC and Other)	2	2		0	0	2	0
	1190		Abrasion (PS Conc./RC)	2	100		0	100	0	0

(12-1080)
The soffit has few spalls with exposed and rusted rebars, the total defected area estimated to be 15 feet long X 1 foot wide X 1.5 inches deep between the south Abutment and floor beam 1. (see the attached photo no. 5)

(12-1130)
There are two longitudinal cracks at the soffit 0.03 inches wide.

(12-1190)
There is an abrasion and wearing of 80 % of the deck, the aggregate were exposed but remains secure in the concrete.

107			Girder/Beam-Steel	2	40	m	28	8	4	0
	1000		Corrosion	2	12		0	8	4	0
	515		Steel Coating-Paint	2	182	sq.m	0	91	91	0
		3410	Chalking (Steel PC)	2	182		0	91	91	0

(107)

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
			FCMI (05/10/2018): See the report narrative for the list of members that were inspected. A fracture critical member inspection was performed (on 05/19/2016) on the tension stress areas of the left and right girders. No fractures or cracks were found.							
			(107-1000) FCMI (05/10/2018): See the report narrative for description of the defects (1.2 m in CS3). Fracture critical inspection was performed on 5/19/2016 and there is up to 19 mm (3/4 in) of pack rust found between the bottom flange plates of the left and right girders at the following locations: Girder 1 to Floor Beam 3 connection, Girder 1 to Floor Beam 5 connection, Girder 2 to Floor Beam 2 connection, and Girder 2 to Floor Beam 4 connection. No increase in corrosion has occurred at these locations since 2008. Pitted rust is noticed at the bottom flange of the main exterior girdesr 1 and 2. Top flange of the westerly girder at the north end is rudted 2 feet long X 10 inches wide. (see the attached photo no. 2)							
			(107-515-3410) The paints are chalking and lost pigments at the edges.							
152		**Floor Beam-Steel**		2	56	m	51	5	0	0
	1000	**Corrosion**		2	5		0	5	0	0
	515	**Steel Coating-Paint**		2	94	sq.m	0	47	47	0
		3410 Chalking (Steel PC)		2	94		0	47	47	0
			(152) There were no significant defects noted.							
			(152-1000) The bottom flange and web of the floor beams are rusted in many locations.							
			(152-515-3410) The paints are chalking and lost pigments at the edges.							
215		**Abutment-RC**		2	42	m	41	1	0	0
	1130	**Cracking (RC and Other)**		2	1		0	1	0	0
			(215) Monolithic wingwalls are included in the total quantity.							
			(215-1130) The south Abutment has a vertical crack 0.05 inches wide. The north Abutment has a diagonal crack at the west face of the westerly pedestal. (see the attached photo no. 3)							
256		**Slope Protection**		2	1	ea.	1	0	0	0
			(256) There were no significant defects noted. The slope is at the north Abutment.							
301		**Joint-Pourable Seal**		2	8	m	3	5	0	0
	2330	**Seal Damage (Joints)**		2	1		0	1	0	0
	2350	**Debris Impaction (Joints)**		2	4		0	4	0	0

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
(301)										
(301-2330)			The joint seal is detriorated at the south Abutment.							
(301-2350)			The pourable joint is partially filled with debris at the south Abutment.							
311			**Bearing-Moveable**	2	2	each	0	2	0	0
	1000		**Corrosion**	2	2		0	2	0	0
(311)			There were no significant defects noted.							
(311-1000)			The steel plate of the bearing is rusted at the north bearings. (see the attached photo no. 4)							
313			**Bearing-Fixed**	2	2	each	2	0	0	0
(313)			There were no significant defects noted.							

Team Leader : Peyman Kaviani

Report Author : Peyman Kaviani

Inspected By : P.Kaviani

Peyman Kaviani 06/27/2018

Peyman Kaviani (Registered Civil Engineer) (Date)

SANTIAGO CREEK

0.1 MI N/O MODJESKA GR RD | 05/10/2018 [AAAR] | 55C0172

133 - PHOTO-Unclassified

Photo No. 1
Roadway view of the structure

133 - PHOTO-Unclassified

Photo No. 2
Elevation view of the structure

SANTIAGO CREEK

0.1 MI N/O MODJESKA GR RD 05/10/2018 [AAAR] 55C0172

133 - PHOTO-Unclassified

Photo No. 3

Underside view of the structure

108 - PHOTO-Super-Details

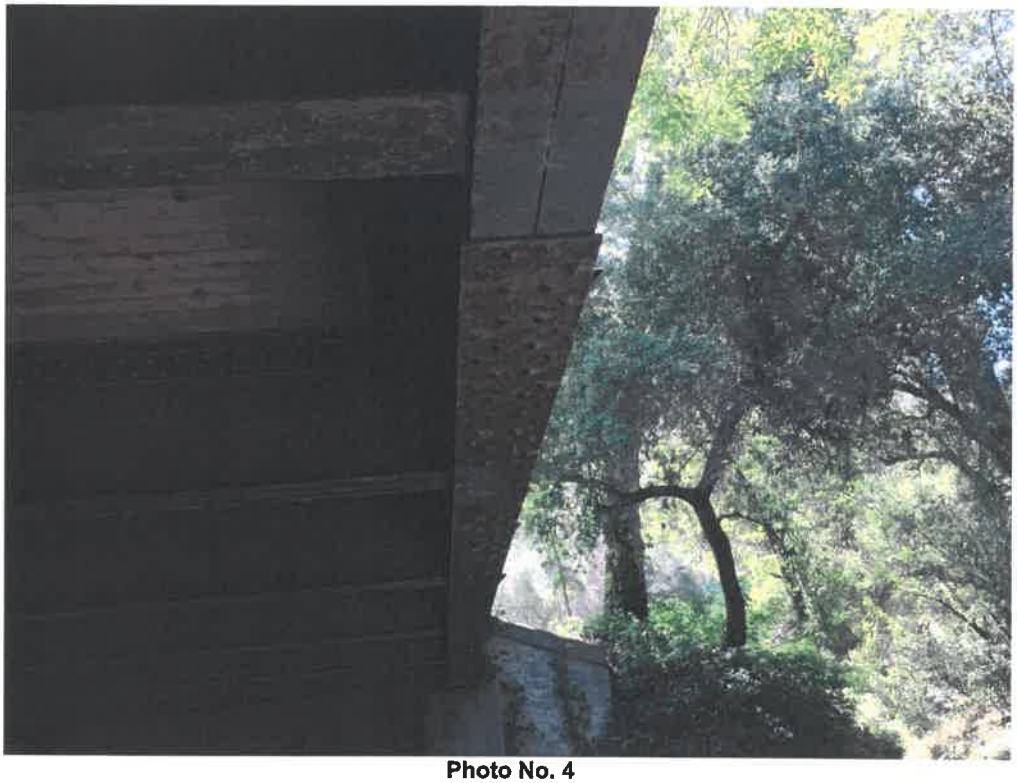

Photo No. 4

Typical view of a girder with a cover plate