DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0177
Facility Carried: SILVERADO CANYN RD
Location : 4.4 MI. E/O SANTIAGO ROA
City :
Inspection Date : 05/08/2019

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1947
Year Modified: N/A
Length (m) : 12.8
Skew (degrees): 45
No. of Joints : 0
No. of Hinges : 0

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

Span Configuration : (W) 40.00 feet (E).

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF= 0.73 Calculation Method: (LRFR) LD & RES FACT RATING
Operating Rating: RF= 0.95 Calculation Method: (LRFR) LD & RES FACT RATING
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 1.50 feet br, 27.00 feet, 1.50 feet br (N)
Total Width: 8.2 m Net Width: 7.2 m No. of Lanes: 2 Speed: 25 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 inches
Rail Code: 0000

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
A complete routine inspection was performed by walking on and around the bridge to inspect all visible elements of the bridge structure. Bridge deck was inspected by walking on shoulder. Soffit and all substructure were inspected by walking underneath the bridge with binoculars and rain boots due to 6.0 inches deep of water at the time of inspection.

There is no need for a special equipment to inspect this structure except rain boots if it is in raining season.

INSPECTION COMMENTARY

This structure is on the list of bridge replacement program from the Orange County Department of Public Works according to Regina Hu, Senior Civil Engineer.

DECK AND ROADWAY
There are longitudinal and transverse deck cracks (up to 0.06 inches wide, 12.0 inches in spacing) throughout the entire bridge deck. The work-recommendation of sealing the deck cracks has been made.

There are two spalls at (15.0 inches L X 10.0 inches W X 2.0 inches D) on eastbound direction approximately 3.0 feet from the east end; there is also an unsound concrete area (4.0 feet L X 3.0 feet W) (see the attached photos no. 1 and 2).

The bridge deck has numerous transverse soffit cracks at (0.04 inches wide, 2.0 to 3.0 feet long with effloresecence in bays #2 and #3 at east and west ends.

The bridge deck has a minor of seventy percent of abrasion on deck surface.

There is a wooden post broken at the westerly side of the northerly bridge rail; and there are two wooden posts missing at the southerly bridge railing.

SUPERSTRUCTURE
The steel girders have pitting rust on the surface.

Steel girder #1 (north girder) has a 3.0 inches dent at the bottom flange approximately 10.0 feet from the westerly abutment (see the attached photo no. 3).

The painting system is in poor condition. The work-recommendation of re-painting all the steel members has been made.

SUBSTRUCTURE
The abutment walls have few vertical cracks, up to 0.05 inches wide.

Both of abutment walls were probed to check for scour but there is no sign of scour at this time.

SAFE LOAD CAPACITY
A Load Rating Summary Sheet is achieved on 09/08/2016 for this structure. The current rating has been assigned in accordance with SM & I procedures for this structure. Based on the field conditions and load history, the structure is adequate to carry legal loads.

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	105	sq.m	39	50	16	0
	1080		Delamination/Spall/Patched Area	2	1		0	0	1	0
	1120		Effloresecence/Rust Staining	2	10		0	10	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
	1130		Cracking (RC and Other)	2	55		0	40	15	0
	1190		Abrasion (PS Conc./RC)	2	2		2	0	0	0

(12)
Deck has spalls, cracks and abrasion.

(12-1080)
There are two spalls at (15.0 inches L X 10.0 inches W X 2.0 inches D) on eastbound direction approximately 3.0 feet from the east end; there is also an unsound concrete area (4.0 feet L X 3.0 feet W) (see the attached photos no. 1 and 2).

(12-1120)
The bridge deck has numerous transverse soffit cracks at (0.04 inches wide, 2.0 to 3.0 feet long with efflorescence in bays #2 and #3 at east and west ends.

(12-1130)
There are longitudinal and transverse deck cracks (up to 0.06 inches wide, 12.0 inches in spacing) throughout the entire bridge deck.

(12-1190)
The bridge deck has a minor of seventy percent of abrasion on deck surface.

107			Girder/Beam-Steel	2	52	m	26	26	0	0
	1000		Corrosion	2	25		0	25	0	0
	1900		Distortion	2	1		0	1	0	0
	515		Steel Coating-Paint	2	116	sq.m	64	26	20	6
		3440	Effectiveness (Steel PC)	2	52		0	26	20	6

(107)
Superstructure members have corrosion, distorsion and a failing of paint system.

(107-1000)
The steel girders have pitting rust on the surface.

(107-1900)
Steel girder #1 (north girder) has a 3.0 inches dent at the bottom flange approximately 10.0 feet from the westerly abutment (see the attached photo no. 3).

(107-515)
The painting is in poor condition.

(107-515-3440)
The paint system is failed especially at the the bottom flange of all girders.

215			Abutment-RC	2	24	m	22	2	0	0
	1130		Cracking (RC and Other)	2	2		0	2	0	0

(215)
Minor cracks.

(215-1130)
The abutment walls have few vertical cracks, up to 0.05 inches wide.

312			Bearing-Enclosed	2	2	each	2	0	0	0

(312)
The enclosed bearing pads are not exposed for visual inspection.

332			Railing-Timber	2	13	m	12	1	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
	1020		Connection	2	1		0	1	0	0

(332)
There were no significant defects noted.

(332-1020)
There is a wooden post broken at the westerly side of the northerly bridge rail.

333			Railing-Other	2	13	m	9	0	2	2
	1020		Connection	2	4		0	0	2	2

(333)
There were no significant defects noted.

(333-1020)
There are two wooden posts missing at the southerly bridge railing.

WORK RECOMMENDATIONS

RecDate: 07/12/2011
Action : Deck-Methacrylate
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

Repair the deck spall (15.0 inches L X 10.0 inches W X 2.0 inches D) on eastbound direction at 3.0 feet from the east end; and around this spall, there is an unsound concrete area (4.0 feet L X 3.0 feet W).

Clean and seal the deck cracks with methacrylate.

RecDate: 07/12/2011
Action : Paint-Full Blast/Ful
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 4 YEARS
DistTarget:
EA:

Clean and paint the steel girders.

RecDate: 02/09/2005
Action : Railing-Repair
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

Replace the two wooden posts missing in the southerly bridge railing.

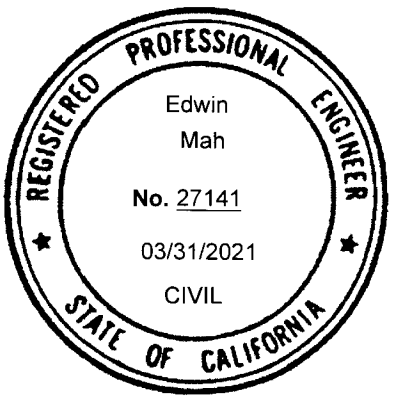
Team Leader : Edwin Mah

Report Author : Nelson N. Vo

Inspected By : NN.Vo/E.Mah

7/17/2019

Edwin Mah (Registered Civil Engineer) (Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **55C0177**
(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- SILVERADO CANYN RD
(9) LOCATION- 4.4 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 48.7 SEC
(17) LONGITUDE 117 DEG 36 MIN 42.76 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 2019 (109) TRUCK ADT 1 %
(19) BYPASS, DETOUR LENGTH 199 KM

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

(48) LENGTH OF MAXIMUM SPAN 12.5 M
(49) STRUCTURE LENGTH 12.8 M
(50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 7.2 M
(52) DECK WIDTH OUT TO OUT 8.2 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 6.4 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 45 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 7.2 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

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SUFFICIENCY RATING = 44.6

PAINT CONDITION INDEX = 75.9

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

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- COLLECTOR URBAN 17
(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 5
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION 8
(62) CULVERTS N

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

(31) DESIGN LOAD- UNKNOWN 0
(63) OPERATING RATING METHOD- (LRFR) LD & RES FA 8
(64) OPERATING RATING- RF= 0.95
(65) INVENTORY RATING METHOD- (LRFR) LD & RES FA 8
(66) INVENTORY RATING- RF= 0.73
(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 3
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 5
(72) APPROACH ROADWAY ALIGNMENT 8
(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 2037

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

(90) INSPECTION DATE 05/19 (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)