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: 55C0017

Bridge Name: Santa Ana River Channel **Year Built:** 1970

Facility Carried: Lincoln Avenue

The Santa Ana River Channel at Lincoln Avenue is a continuous six span cast-in-place reinforced concrete T-beam with pier wall and open end diaphragm abutments supported on steel piles.

Caltrans BIR recommendations:

• Seal the deck cracks with methacrylate. However, OCPW stated the deck was sealed when the bridge was widened.

Field Inspection Observations

- Concrete at joint is spalling and small portion of joint seal bulging (photo 1). No action required at this time.
- Some efflorescence visible on soffit (photo 2). Deck appeared to be treated. No immediate action required. But the bridge soffit should continue to be monitored to determine if water is seeping through the bridge deck.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No confirmed eligible maintenance activities

General Maintenance - Non-BPMP

• No recommendations.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 5: Joint Seal

Debonded Joint Seal

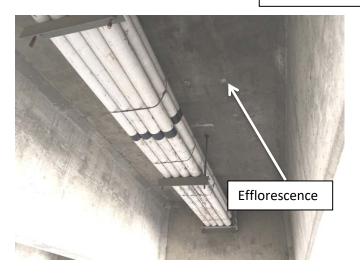


Photo 6: Bridge Soffit



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0017

Facility Carried: LINCOLN AVENUE

Location : 0.7 MI E/O ROUTE 57 FWY.

City

Inspection Date: 12/21/2013

Inspection Type

Bridge Inspection Report Routine

Routine FC Underwater Special Other

STRUCTURE NAME: SANTA ANA RIVER CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1970

Skew (degrees): No. of Joints:

: 8

Year Widened: N/A Length (m) : 130.1

No. of Hinges :

Structure Description: Continuous six span CIP/RC T-beam (8 each) with RC piers and RC open

end diaphragm abutments, all supported upon steel piles.

Span Configuration

:(W) 17.4 m, 4 @ 23.8 m, 17.4 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: RF=1.71 =>55.4 metric tons
Operating Rating: RF=2.84 =>92.0 metric tons

Calculation Method: LOAD FACTOR 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: (S) 0.1 m br, 9.6 m, 1.2 m cu med, 9.6 m, 0.1 m br (N)

Net Width:

Total Width: 20.4 m

19.1 m

No. of Lanes: 4

Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000 Rail Description: MBGR. with CLF on top.

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with rock slope protection, grouted through the

site.

INSPECTION COMMENTARY

HISTORY

The bridge currently is widening.

The previous condition was as follows

SCOPE AND ACCESS

There is 1 m of water in spans #2 down to 0.5 m in span #5.

MISCELLANEOUS

Photos of widening construction from both sides of this structure was taken and is included with this report.

DECK AND ROADWAY

There is a spall 150 mm \times 50 mm \times 15 mm with exposed steel bar in the deck at middle of the bridge on W/B lane #2.

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55C0017/AAAG/27771

INSPECTION COMMENTARY

There unsealed deck cracks 2 mm wide and 150 mm spacing and some of them developed small spall with steel bar exposed.

There are transverse crack in the soffit with whit efflorescence.

SUPERSTRUCTURE

There are shear cracks in the girder 0.5 mm wide near the supports.

SUBSTRUCTURE

No significant defects were found during this inspection.

SAFE LOAD CAPACITY

This rating summary is based on load ratings calculations performed by SMI Ratings Section on 11/20/1979. This summary does not include a check of that analysis.

| ELEMENT INSPECTION RATINGS | | 3.000 | | | | | | |
|--------------------------------------|-----|-------|-------|-----|----------|----------|---------|--------|
| Elem | | Total | | Ot | y in eac | h Condit | ion Sta | te |
| No. Element Description | Env | Qty | Units | | | | St. 4 | St. 5 |
| 12 Concrete Deck - Bare | 2` | 2490 | sq.m. | .0 | 2490 | 0 | 0 | . 0 |
| 110 Reinforced Conc Open Girder/Beam | 2 | 1040 | m. | 980 | 60 | 0 | 0 | |
| 210 Reinforced Conc Pier Wall | 2 | 105 | m. | 105 | 0 | 0 | 0 | 0 |
| 215 Reinforced Conc Abutment | 2 | 42 | m. | 42 | 0 | ó | 0 | 0 |
| 256 Slope Protection | 2 | 2 | ea. | 2 | 0 | 0 | Ō | 0 |
| 302 Compression Joint Seal | 2 | 21 | m. | 21 | 0 | 0 | 0 | 0 |
| 312 Enclosed/Concealed Bearing | 2 | 1 | ea. | 1 | 0 . | 0 | - 0 | 0 |
| 337 Metal Railing (W6X25 Posts) | 2 | 280 | m. | 280 | 0 | 0 | 0 | o |
| 358 Deck Cracking | 2 | 1 | ea. | 0 | . 0 | 0 | 1 | |
| 359 Soffit of Concrete Deck or Slab | 2 | 1 | ea. | 0 | 1 | 0 | . 0 | О |

2 YEARS

WORK RECOMMENDATIONS

RecDate: 05/30/2007

EstCost:

Seal the deck cracks with methacrylate.

Action : Deck-Methacrylate

StrTarget: DistTarget:

. Work By: LOCAL AGENCY Status : PROPOSED

EA:

Printed on: Monday

02/10/2014 01:19 PM

55C0017/AAAG/27771

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

PROFESSIONAL Ashraf Shenouda No. 64332 06/30/2015 CIVIL

STRUCTURE INVENTORY AND APPRAISAL REPORT

| (8) (5) (2) (3) (6) | ************************************** | (112) (104) | ************************************** |
|---------------------------------|--|-----------------|---|
| | LOCATION- 0.7 MI E/O ROUTE 57 FWY. MILEPOINT/KILOMETER POINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | MILEPOINT/KILOMETERPOINT 0 BASE HIGHWAY NETWORK- PART OF NET 1 | | PARALLEL STRUCTURE- NONE EXISTS N |
| | LRS INVENTORY ROUTE & SUBROUTE 000000L03100 | |) DIRECTION OF TRAFFIC- 2 WAY 2 |
| | LATITUDE 33 DEG 50 MIN 07.64 SEC | (103) | TEMPORARY STRUCTURE- |
| | LONGITUDE 117 DEG 51 MIN 47.36 SEC | (105) |) FED.LANDS HWY- NOT APPLICABLE 0 |
| | BORDER BRIDGE STATE CODE | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| | BORDER BRIDGE STRUCTURE NUMBER | (20) |) TOLL- ON FREE ROAD 3 |
| 20000 | | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ******* | (22) | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- TEE BEAM CODE 104 | 2.70 | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ************ CONDITION ************************************ |
| | TYPE- OTHER/NA CODE 000 | | DECK 3 |
| , | NUMBER OF SPANS IN MAIN UNIT | | SUPERSTRUCTURE 6 SUBSTRUCTURE 7 |
| (46) | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE 7 CHANNEL & CHANNEL PROTECTION 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CULVERTS N |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (02) | N |
| | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 TYPE OF DECK PROTECTION- NONE CODE 0 | (31) | DESIGN LOAD- MS-18 OR HS-20 5 |
| ٠, | ******* AGE AND SERVICE ******** | | OPERATING RATING METHOD- LOAD FACTOR 1 |
| (27) | | 100 mars 1000 m | OPERATING RATING- 92.0 |
| | YEAR BUILT 1970 YEAR RECONSTRUCTED 0000 | 100000000 | INVENTORY RATING METHOD- LOAD FACTOR 1 |
| | TYPE OF SERVICE: ON- HIGHWAY 1 | | INVENTORY RATING- 55.4 |
| (42) | UNDER- WATERWAY 5 | 4 | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 STRUCTURE OPEN, POSTED OR CLOSED- |
| (28) | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- DESCRIPTION- OPEN, NO RESTRICTION |
| (29) | AVERAGE DAILY TRAFFIC 28000 | | |
| (30) | YEAR OF ADT 2009 (109) TRUCK ADT 4 % | | ********** APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 5 KM | | STRUCTURAL EVALUATION 6 |
| | ************* GEOMETRIC DATA *********** | | DECK GEOMETRY 6 |
| (48) | LENGTH OF MAXIMUM SPAN 23.8 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) | STRUCTURE LENGTH 130.1 M | | WATER ADEQUACY 9 APPROACH ROADWAY ALIGNMENT 8 |
| 12.00300000 | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | | TRAFFIC SAFETY FEATURES 1000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 19.1 M | | SCOUR CRITICAL BRIDGES 8 |
| | DECK WIDTH OUT TO OUT 20.4 M | ,, | ******* PROPOSED IMPROVEMENTS ******* |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 21.6 M BRIDGE MEDIAN- NO MEDIAN 0 | (85) | |
| | BRIDGE MEDIAN- NO MEDIAN 0 SKEW 8 DEG (35) STRUCTURE FLARED NO | | TYPE OF WORK- CODE |
| | | | LENGTH OF STRUCTURE IMPROVEMENT M BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M INVENTORY ROUTE TOTAL HORIZ CLEAR 9.6 M | | |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST TOTAL PROJECT COST |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | |
| (55) | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE FUTURE ADT 78311 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | | YEAR OF FUTURE ADT 2029 |
| | ************************************** | (===7 | ************************************** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | INSPECTION DATE 12/13 (91) FREQUENCY 24 MO |
| | PIER PROTECTION- CODE NAVIGATION VERTICAL CLEARANCE 0.0 M | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | | | FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| ,, | 0.0 A | C) | OTHER SPECIAL INSP- NO MO C) |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0038

Bridge Name: Santiago Creek Year Built: 1963

Facility Carried: Santiago Canyon Road

The Santiago Creek Bridge at Santiago Canyon Road is a continuous four span cast-in-place reinforced

concrete T-beam on seat abutments supported on spread footings.

Caltrans BIR recommendations:

None

Field Inspection Observations

- Minor cracks are visible on the bridge deck. Some efflorescence visible on soffit. Note, Caltrans
 inspection report does not classify cracking as condition state 2, so deck does not qualify for
 treatment.
- Minor spalling on the northeast corner of deck. (photo 4)
- Pier footings are exposed and scour mitigation measures have been implements. Difficult to
 assess effectiveness of scour measures and condition should be monitored. Caltrans report does
 not note scour recommendations. Appraisal report code indicates foundations determined to be
 stable for calculated scour.
- Vertical crack at abutment above outlet.
- Minor spalling at joint causing joint seal to debond. Recommend monitoring joints.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

- Monitor joint seal spalling. Discuss condition with Caltrans inspector if condition worsens.
 Review BIRs for joint seal recommendations and deck treatment condition states. No immediate actions required since not a high priority.
- Efflorescence likely from water penetrating through deck. Not significant problem at this time.
- Monitor scour mitigation. Footing on spread footing so undermining could become an issue.

Proposed BPMP Construction Costs

• N/A

Construction Items not Funded by BPMP

• N/A

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Deck Cracks

Photo 3: Deck

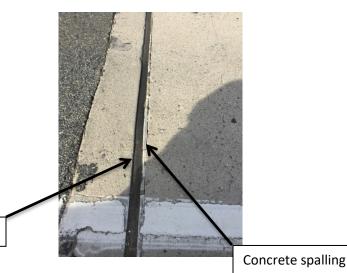


Photo 4: Joint Seal

Joint Seal



Photo 5:



Photo 6:

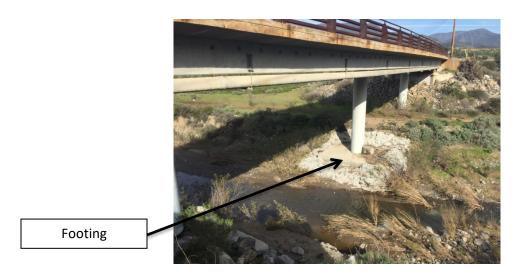


Photo 7:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0038

Facility Carried: SANTIAGO CNYN ROAD

Location : 0.2 MI W/O SILVERADO CYN

City

Inspection Date : 08/13/2015

Inspection Type

Bridge Inspection Report Routine FC Underwater Special Other

Х

STRUCTURE NAME: SANTIAGO CREEK

CONSTRUCTION INFORMATION

Year Built : 1963 Year Widened: N/A Length (m) : 69.5 Skew (degrees): No. of Joints : 2 No. of Hinges :

Structure Description: Continuous four span CIP/RC T-beam (5 each) with RC single column

bents and RC open end seat abutments, all supported upon spread

footings.

: (W) 14.9 m, 2 @ 19.2 m, 14.9 m (E) c/c Span Configuration

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: 40.8 metric tons Calculation Method: LOAD FACTOR Operating Rating: 68.9 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: (S) 0.5 m br, 8.4 m, 0.5 m br (N)

Total Width: 9.3 m Net Width: 8.5 m No. of Lanes:

Min. Vertical Clearance: Unimpaired

Speed: Overlay Thickness: 0.0 Inches

55 mph

Rail Code: 0111

| Rail Type Locat | ion Length (ft) Ra | ail Modifications |
|-----------------|--------------------|-------------------|
| Type 8 Right/ | Left 492 | |

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

The channel was dry at the time of the inspection, and all substructure elements were visually inspected.

SAFE LOAD CAPACITY

The load rating for this structure is being reviewed by SMI Ratings Branch. An updated

Printed on: Wednesday 09/23/2015 08:16 AM

55C0038/AAAJ/32864

INSPECTION COMMENTARY

Load Rating Summary will be archived when this review is complete.

| | T11777 T11 | CDECETON DAMINGS AND NOTES | | • | | **** | V VIII II II II | | |
|----------------|--------------------|---|----------|--------------|---------|---------|--|-------------------|-----|
| | | SPECTION RATINGS AND NOTES | | | | | | | |
| No. | | t Defect Element Description t | Env | Total Qty | Units | | | ondition St. 3 | |
| 16 | | Top Flange-RC | 2 | 646 | sq.m | 636 | 10 | 0 | 0 |
| | 1120 | Efflorescence/Rust Staining | 2 | 10 | | 0 | 10 | 0 | 0 |
| | 521 | Concrete Coat.(Meth/Paint/Seal) | 2 | 584 | sq.m | 584 | 0 | 0 | 0 |
| (16) There | e were | no significant defects noted. | | | | | The second secon | | |
| soffi | e are f it in a | ew short 2 ft long transverse cracks 0.5 m | nm wide | with l | ight wh | ite eff | floresce | ence at | the |
| (16-5 | | no significant defects noted. | | | | | | | |
| 110 | 1. | Girder/Beam-RC | 2 | 348 | m | 347 | 1 | 0 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 1 | | 0 | 1 | 0 | 0 |
| | 1080) : is a : | spall 6" x 3" x 1" in the north exterior g | jirder i | n sapn | #3 | | | | |
| 215 | | Abutment-RC | 2 | 28 | m | 28 | 0 | 0 | 0 |
| (215) There | | no significant defects noted. | | | | | | | |
| 234 | | Pier Cap-RC | 2 | 27 | m | 27 | 0 | 0 | 0 |
| (234) There | were r | o significant defects noted. | | | | | 25 10000-0 | | |
| 254 | | Column Shell-Full Ht | 2 | 3 | ea. | 3 | 0 | 0 | 0 |
| | 515 | Steel Coating-Paint | 2 | 105 | sq.m | 105 | 0 | 0 | 0 |
| | n the l | top are exposed 2' x 10' at bent #2 and : imits | #3. Acc | ording | to the | hydrau | lic rep | ort it i | s |
| There | were n | o significant defects noted. | | | | | | | |
| 256 | | Slope Protection | 2 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) There | were n | o significant defects noted. | | | | | | 9 | |
| 301 | | Joint-Pourable Seal | 2 | 20 | m | 20 | 0 | 0 | 0 |
| (301) There | were n | o significant defects noted. | | | | | | | |
| 311 | | Bearing-Moveable | 2 | 10 | each | 10 | 0 | 0 | 0 |
| | 515 | Steel Coating-Paint | 2 | 10 | sq.m | 10 | 0 | 0 | 0 |
| (311) There | were n | o significant defects noted. | | | | | | | |
| (311-5 | 515) | | | | , | | | | |

| ELEME | NT INSPECTION RATINGS AND NOTES | | | | | | | |
|----------------|---|-----|--------------|-------|-----|--------|-------------------|---|
| Elem No. | Defect Defect Element Description /Prot | Env | Total Qty | Units | | | ondition St. 3 | |
| There | were no significant defects noted. | | | | | ****** | | |
| 330 | Railing-Metal | 2 | 139 | m | 139 | 0 | 0 | 0 |
| (330) There | were no significant defects noted. | | | | 11 | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

(Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************** IDENTIFICATION ********** | | *********** |
|---|--|--------------------|---|
| | | | SUFFICIENCY RATING = 74.0 |
| 100.00 | STATE NAME- CALIFORNIA 069 STRUCTURE NUMBER 55C0038 | | STATUS |
| | 9664 (1/C) CS VICE (4/C) | | HEALTH INDEX 99.7 |
| |) INVENTORY ROUTE(ON/UNDER) - ON 140000000) HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = 100.0 |
| | | | ******* CLASSIFICATION ******* CODE |
| | | (112) | MDIG TOTAL |
| 12000 | | | HICHMAN CYCTEM POYER ON NIC |
| 9.00 | The state of the s | | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| | LOCATION- 0.2 MI W/O SILVERADO CYN MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- PART OF NET 1 | | PARALLEL STRUCTURE- NONE EXISTS N |
| | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| 100000000000000000000000000000000000000 | LATITUDE 33 DEG 44 MIN 51.58 SEC | | TEMPORARY STRUCTURE- |
| 27 25 27 | LONGITUDE 117 DEG 40 MIN 33.96 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| 20 00 | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| A CONTRACTOR | BORDER BRIDGE STRUCTURE NUMBER | (20) | TOLL- ON FREE ROAD 3 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | (22) | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE CONT TYPE- TEE BEAM CODE 204 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 4 | | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CHANNEL & CHANNEL PROTECTION 4 |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| A) | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| - | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- MS-18 OR HS-20 5 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | | OPERATING RATING METHOD- LOAD FACTOR 1 |
| | ********* AGE AND SERVICE ********* | | OPERATING RATING- 68.9 |
| (27) | YEAR BUILT 1963 | (65) | INVENTORY RATING METHOD- LOAD FACTOR 1 |
| (106) | YEAR RECONSTRUCTED 0000 | (66) | INVENTORY RATING- 40.8 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| () | UNDER- WATERWAY 5 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | | DESCRIPTION- OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 7000 YEAR OF ADT 2012 (109) TRUCK ADT 5 % | | ******* APPRAISAL ******** CODE |
| 2000 000000 | | | STRUCTURAL EVALUATION 0 |
| (19) | BITADB, BETOOK BEKOTI | | DECK GEOMETRY |
| | ********** GEOMETRIC DATA ********** | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | LENGTH OF MAXIMUM SPAN 19.2 M | | WATER ADEQUACY 9 |
| | STRUCTURE LENGTH 69.5 M | | APPROACH ROADWAY ALIGNMENT 6 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | | TRAFFIC SAFETY FEATURES 0111 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 8.5 M | (113) | SCOUR CRITICAL BRIDGES 5 |
| | DECK WIDTH OUT TO OUT 9.3 M | | ******* PROPOSED IMPROVEMENTS ******* |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 12.2 M BRIDGE MEDIAN- NO MEDIAN 0 | (25) | |
| | BRIDGE MEDIAN- NO MEDIAN 0 SKEW 0 DEG (35) STRUCTURE FLARED NO | | TYPE OF WORK- CODE |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 8.5 M | | BRIDGE IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 9619 YEAR OF FUTURE ADT 2035 |
| | *********** NAVIGATION DATA ********* | (112) | *** ********************************** |
| (30) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | 100000000 | ************************************** |
| | PIER PROTECTION- CODE | 11.000.000.000.000 | INSPECTION DATE 08/15 (91) FREQUENCY 24 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| | | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0049

Bridge Name: Santiago Creek Year Built: 1967

Facility Carried: Santiago Canyon Road

The Santiago Creek Bridge at Santiago Canyon Rd is a continuous three span cast-in-place reinforced concrete T-beam with reinforced concrete single column bents and reinforced concrete open end seat abutments all supported on spread footings. OCPW noted the existing deck has been treated.

Caltrans BIR recommendations:

• Replace joint seal at abutment 4.

Field Inspection Observations

- Efflorescence is visible on the bridge soffit (photo 3). No immediate action is required but the bridge soffit should continue to be monitored to determine if water is continuing to seep through the bridge deck.
- Confirmed joint seal is in need of replacement. Portions of the joint seal are missing (photo 5).
- No approach slab. It appears there is some AC settlement behind the abutments (photo 2). No immediate action is required but the approach should continue to be monitored.

Maintenance Needs Assessment

BPMP Assessment

 Repair Abutment 4 joint seal. This is a pourable seal so less extensive work than other joint seal systems.

<u>General Maintenance - Non-BPMP</u>

None

Proposed BPMP Construction Costs

• Estimated Total Construction Cost ≈ \$20,000 (with engineering, traffic control, mobilization and contingency)

Construction Items Not Funded by BPMP

N/A

Appendix A

Photos and BIR



Photo 1:



Photo 2:

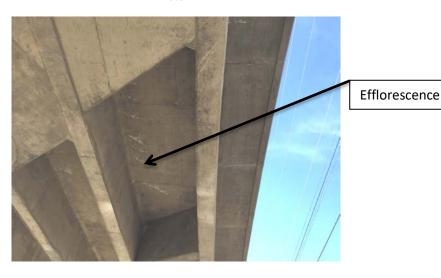
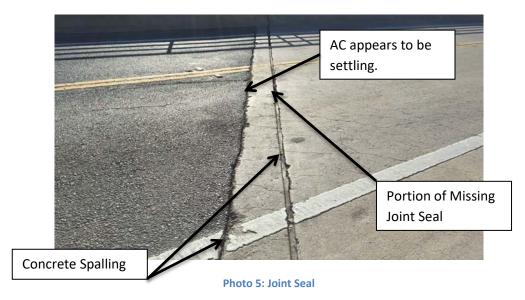


Photo 3: Bridge Soffit



Photo 4:





DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Inspection Report

Bridge Number : 55C0049

Facility Carried: SANTIAGO CANYON RD
Location : 0.3 MI S/O MODJESKA RD

City

Inspection Date : 08/13/2015

Inspection Type

Routine FC Underwater Special Other

Х

STRUCTURE NAME: SANTIAGO CREEK

CONSTRUCTION INFORMATION

 Year Built : 1967
 Skew (degrees): 18

 Year Widened: N/A
 No. of Joints : 1

 Length (m) : 60
 No. of Hinges : 0

Structure Description: Continuous three span CIP/RC T-beam (5 each) with RC single column

bents and RC open end seat abutments, all supported upon spread

footings.

Span Configuration : (S) 18.0 m, 24.8 m, 18.0 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: 40.8 metric tons Calculation Method: LOAD FACTOR Operating Rating: 68.0 metric tons Calculation Method: LOAD FACTOR

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.5 m br, 9.0 m, 0.5 m br (E)

Total Width: 10.1 m Net Width: 9.0 m No. of Lanes: 2 Speed: 55 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 Inches

Rail Code: 1111

| | | |) Rail | Modifications |
|---------|------------|-----|--------|---------------|
| Type 25 | Right/Left | 480 | Hand | rail |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoida 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

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 rating is based on BDS computer output dated 6/14/1979.

Printed on: Wednesday 09/23/2015 08:16 AM

55C0049/AAAI/32864

| Elem Defect No. /Prot | Defect Element Description | Env | Total Qty | Units | | | ondition St. 3 | Stat |
|--------------------------------------|--|----------|--------------|----------|---------------|--------------------|-------------------|-------|
| 16 | Top Flange-RC | 2 | 600 | sq.m | 580 | 20 | 0 | 0 |
| 1120 | Efflorescence/Rust Staining | 2 | 20 | | 0 | 20 | 0 | 0 |
| 1130 | Cracking (RC and Other) | 2 | 580 | | 580 | 0 | 0 | 0 |
| 521 | Concrete Coat.(Meth/Paint/Seal) | 2 | 600 | sq.m | 600 | 0 | 0 | 0 |
| | rt transverse crack in the soffit 0.5 mm mg with white efflorescence. | m wide b | y 2 ft | long a | and long | gitudina | al hairl | ine |
| | ve been seald with methacrylate | | | | | | | |
| (16-521) There were no | significant defects noted. | C 0 | | | | | | |
| 110 | Girder/Beam-RC | 2 | 300 | m | 300 | 0 | 0 | 0 |
| (110) There were no | significant defects noted. | | | | | | | |
| 205 | Column-RC | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (205) There were no | significant defects noted. | | | | | | | |
| 215 | Abutment-RC | 2 | 34 | m | 34 | 0 | 0 | 0 |
| (215) There were no | significant defects noted. | | | | | | | |
| 234 | Pier Cap-RC | 2 | 18 | m | 18 | 0 | 0 | 0 |
| (234) There were no | significant defects noted. | | | | | | | |
| 301 | Joint-Pourable Seal | 2 | 12 | m | 0 | 0 | 12 | 0 |
| 2310 | Leakage (Joints) | 2 | 6 | | 0 | 0 | 6 | 0 |
| 2330 | Seal Damage (Joints) | 2 | 6 | | 0 | 0 | 6 | 0 |
| (301-2310) There are wate | er stain at the abutment wall #4 (north) | | | | 7000 H 1000 L | | | |
| (301-2330) There are miss | sing dry and section of the seal | | | | | | | - |
| 312 | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| 312) The bearing elvere not expos | ement is included to indicate the prese ed for visual inspection. No indication | nce of h | pearing d | gs on th | his str | ucture. oted in | The bea | aring |
| apperactare e | | | | | | | | |

WORK RECOMMENDATIONS

WORK RECOMMENDATIONS

RecDate: 05/13/2011

EstCost:

Replace the joint seal at Abutment 4

Action : Joints-Replace

StrTarget: 2 YEARS DistTarget:

(north) which is dry and 3 m is missing.

Work By: LOCAL AGENCY Status : PROPOSED

EA:

| Side : Upstream | | | X-Section Date: 08/13/2015 |
|----------------------|------------------|---------|----------------------------|
| Measured From :Soffi | t of east girder | | A-Section Date: 00/13/2013 |
| Location | Horiz(m) | Vert(m) | Comments |
| Abut 1 | 0.00 | 2.16 | face of abut wall |
| | 2.10 | 2.56 | top of slope |
| Bent 2 | -3.40 | 7.78 | toe of slope |
| | 0.00 | 7.76 | CL of bent 2 |
| | 5.55 | 7.15 | |
| | 13.05 | 6.30 | |
| | 17.70 | 6.73 | |
| | 20.50 | 6.95 | thalweg |
| Bent 3 | 0.00 | 6.35 | CL of bent 3 |
| | 1.84 | 5.90 | toe of slope |
| | 7.30 | 3.40 | break point |
| | 12.95 | 1.43 | top of slope |
| Abut 4 | 0.00 | 1.20 | face of abut wall |

Team Leader :

Mikhael T. Zaarour

Report Author :

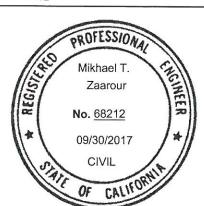
Mikhael T. Zaarour

Inspected By :

MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

CC:



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************ |
|---|--|-----------------------|---|
| /1 | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 80.0 |
| | STRUCTURE NUMBER 55C0049 | | STATUS |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 99.5 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE |
| 10.000 | FEATURE INTERSECTED- SANTIAGO CREEK | (112) | NBIS BRIDGE LENGTH- YES Y |
| 100000 | FACILITY CARRIED- SANTIAGO CANYON RD | (104) | HIGHWAY SYSTEM- ROUTE ON NHS 1 |
| | LOCATION- 0.3 MI S/O MODJESKA RD | | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| | MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- PART OF NET 1 | | PARALLEL STRUCTURE- NONE EXISTS N |
| | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 42 MIN 44.92 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 38 MIN 42.4 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (20) | TOLL- ON FREE ROAD 3 |
| | AND WATERIAL AND WATERIAL | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| (42) | ****** STRUCTURE TYPE AND MATERIAL ******* | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE CONT TYPE- TEE BEAM CODE 204 | | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | 10.00 | DECK 7 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 3 | | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CHANNEL & CHANNEL PROTECTION 8 CULVERTS N |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | COLVERTS |
| | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- MS-18 OR HS-20 5 |
| () | TYPE OF DECK PROTECTION- NONE CODE 0 | (63) | OPERATING RATING METHOD- LOAD FACTOR 1 |
| | ********* AGE AND SERVICE ********* | (64) | OPERATING RATING- 68.0 |
| | YEAR BUILT 1967 | (65) | INVENTORY RATING METHOD- LOAD FACTOR 1 |
| | YEAR RECONSTRUCTED 0000 | (66) | INVENTORY RATING- 40.8 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 UNDER- WATERWAY 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES: ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | AVERAGE DAILY TRAFFIC 8000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| | YEAR OF ADT 2012 (109) TRUCK ADT 3 % | | ******* APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 2 KM | | STOLICTION I PUNITION |
| 1/ | ************************************** | | DECK GEOMETRY 2 |
| (40) | LENGTH OF MAXIMUM SPAN 23.8 M | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 60.0 M | (71) | WATER ADEQUACY 9 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | (72) | APPROACH ROADWAY ALIGNMENT 8 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 9.0 M | (36) | TRAFFIC SAFETY FEATURES 1111 |
| 0.000,000,000,000,000 | DECK WIDTH OUT TO OUT 10.1 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| 0.0000000000000000000000000000000000000 | APPROACH ROADWAY WIDTH (W/SHOULDERS) 12.5 M | | ****** PROPOSED IMPROVEMENTS ******* |
| (33) | BRIDGE MEDIAN- NO MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 18 DEG (35) STRUCTURE FLARED NO | Annual Control of the | LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | | BRIDGE IMPROVEMENT COST |
| (47) | INVENTORY ROUTE TOTAL HORIZ CLEAR 9.0 M | | ROADWAY IMPROVEMENT COST |
| (53) | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | TOTAL PROJECT COST |
| Standard Co. | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| 2000000 | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | FUTURE ADT 12365 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | | YEAR OF FUTURE ADT 2035 |
| | *********** NAVIGATION DATA ********* | | ************************************** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | |
| (111) | PIER PROTECTION- CODE | 1000000000000 | CDIMICAL HEAMIND THORSES |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) |
| | | | |

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



Rutting

Photo 3: Bridge Deck



Photo 4: Abutment walls



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Inspection Report

Bridge Number : 55C0059

Facility Carried: SANTIAGO CANYON RD
Location: 0.8 MI N/O MODJESKA RD

City

Inspection Date : 08/13/2015

Inspection Type

Routine FC Underwater Special Other

Х

STRUCTURE NAME: WILLIAMS CANYON CREEK

CONSTRUCTION INFORMATION

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

Printed on: Wednesday 09/23/2015 08:16 AM

55C0059/AAAG/32864

INSPECTION COMMENTARY

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

| ELEMEN | NT INSPECTIO | ON RATINGS AND NOTES | | | | | | | |
|--------|---------------|--|------|--------------|--------|--------|----------|-------------------|-------|
| | Defect Defect | t Element Description | Env | Total Qty | Units | | | ondition St. 3 | |
| 38 | | Slab-RC | 2 | 160 | sq.m | 80 | 80 | 0 | 0 |
| | 1190 | Abrasion (PS Conc./RC) | 2 | 80 | | 0 | 80 | 0 | 0 |
| (38-11 | .90) | | | | | | | | |
| 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 sign | ificant defects noted. | | | | | | | |
| (215-6 | (000) | | | | | | | . 1007 | |
| | | sion at the southeast wing wall cause e end of the wing wall in the roadway | | runoff | water. | The wa | ater cai | used sir | khole |
| 330 | | Railing-Metal | 2 | 20 | m | 20 | 0 | 0 | 0 |
| (330) | | | | | | | | | |
| There | were no sign: | ificant defects noted. | | | | | | 7W S X-1 | |

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 prevent future degradation from runoff

Status: PROPOSED EA: water.

| CHANNEL X-SECTION | | | |
|--|----------|---------|-------------------|
| Side : Upstream X-Section Da 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

 ${\tt Inspected \ By : } \qquad {\tt MT.Zaarour/KD.Henderson}$

MiKNS 9/23/15

Mikhael T. Zaarour (Registered Civil Engineer) (Date



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | ************************************** | | | |
|---|---|--|--|------------------------------------|--|
| (1) | STATE NAME- CALIFORNIA 069 | STATUS | CY RATING = 88.7 | | |
| (8) | STRUCTURE NUMBER 55C0059 | HEALTH INI | DEV. | | |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | 00.3 | | |
| (2) | HIGHWAY AGENCY DISTRICT 12 | | DITION INDEX = N/A | | |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | | *** CLASSIFICATION ********* | CODE | |
| (6) | FEATURE INTERSECTED- WILLIAMS CANYON CREEK | (112) NBIS BRIDGE | | Y | |
| (7) | FACILITY CARRIED- SANTIAGO CANYON RD | | STEM- ROUTE ON NHS | 1 | |
| (9) | LOCATION- 0.8 MI N/O MODJESKA RD | | CLASS- OTHER PRIN ART URBAN | 14 | |
| (11) | MILEPOINT/KILOMETERPOINT 0 | | GHWAY- NOT STRAHNET | 0 | |
| 100000000000000000000000000000000000000 | BASE HIGHWAY NETWORK- PART OF NET 1 | | RUCTURE- NONE EXISTS | N | |
| (13) | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | OF TRAFFIC- 2 WAY | 2 | |
| (16) | LATITUDE 33 DEG 43 MIN 43.55 SEC | (103) TEMPORARY S | | | |
| (17) | LONGITUDE 117 DEG 39 MIN 01.01 SEC | | HWY- NOT APPLICABLE | 0 | |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | NATIONAL NETWORK - NOT ON NET | 0 | |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON F | | 3 | |
| 9 | ****** STRUCTURE TYPE AND MATERIAL ****** | | COUNTY HIGHWAY AGENCY | 02 | |
| | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE | (22) OWNER- COUR | NTY HIGHWAY AGENCY | 02 | |
| (13) | TYPE- SLAB CODE 101 | (37) HISTORICAL | SIGNIFICANCE- NOT ELIGIBLE | 5 | |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ******* | **** CONDITION ********* | CODE | |
| | TYPE- OTHER/NA CODE 000 | (58) DECK | | 7 | |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | (59) SUPERSTRUCT | URE | 7 | |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) SUBSTRUCTUR | Œ | 7 | |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) CHANNEL & C | CHANNEL PROTECTION | 8 | |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) CULVERTS | | N | |
| | TYPE OF WEARING SURFACE- NONE CODE 0 | ****** T | OAD DAMING AND DOCTING | | |
| | TYPE OF MEMBRANE- NONE CODE 0 | | OAD RATING AND POSTING ******* | | |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | | - MS-18 OR HS-20 | 5 | |
| | ******* AGE AND SERVICE ********* | | ATING METHOD- LOAD FACTOR | 1 | |
| (27) | YEAR BUILT 1970 | (64) OPERATING R | | 53.5 | |
| 201000000000000000000000000000000000000 | YEAR RECONSTRUCTED 1983 | | ATING METHOD- LOAD FACTOR | 1 | |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | (66) INVENTORY R | | 32.6 | |
| | UNDER- WATERWAY 5 | | ING- EQUAL TO OR ABOVE LEGAL LOA PEN, POSTED OR CLOSED- | 12(12)(*14(12)) 1 -4 (1 | |
| (28) | LANES: ON STRUCTURE 02 UNDER STRUCTURE 00 | | - OPEN, NO RESTRICTION | A | |
| 1000000000 | AVERAGE DAILY TRAFFIC 8000 | | | | |
| (30) | YEAR OF ADT 2012 (109) TRUCK ADT 3 % | ****** | **** APPRAISAL ********** | CODE | |
| (19) | BYPASS, DETOUR LENGTH 22 KM | (67) STRUCTURAL | EVALUATION | 7 | |
| | ********* GEOMETRIC DATA ********** | (68) DECK GEOMET | | 9 | |
| (48) | LENGTH OF MAXIMUM SPAN 10.1 M | (69) UNDERCLEARA | NCES, VERTICAL & HORIZONTAL | N | |
| (49) | STRUCTURE LENGTH 10.7 M | (71) WATER ADEQUA | | 8 | |
| (50) | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | (72) APPROACH RO | | 8 | |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 15.9 M | (36) TRAFFIC SAF | androne concentration and transfer | 0000 | |
| (52) | DECK WIDTH OUT TO OUT 16.2 M | (113) SCOUR CRITIC | JAL BRIDGES | 8 | |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 15.9 M | ******* | PROPOSED IMPROVEMENTS ******* | | |
| (33) | BRIDGE MEDIAN- NO MEDIAN 0 | (75) TYPE OF WORE | K- CODE | | |
| (34) | SKEW 0 DEG (35) STRUCTURE FLARED NO | (76) LENGTH OF ST | TRUCTURE IMPROVEMENT | М | |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) BRIDGE IMPRO | OVEMENT COST | | |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 15.9 M | (95) ROADWAY IMPR | ROVEMENT COST | | |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) TOTAL PROJEC | | | |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) YEAR OF IMPR | ROVEMENT COST ESTIMATE | | |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M MIN LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT | | 2365 | |
| 5000 Pacific Co. 100 | Control (1997-1997) - The Control (1997-1997) | (115) YEAR OF FUTU | TDT and | 035 | |
| | ************* NAVIGATION DATA ********** | ****** | *** INSPECTIONS ********* | ESPECIAL SERVICES | |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | 7 mm / / \ | MC | |
| | PIER PROTECTION- CODE | (92) CRITICAL FEA | MIDE INCREGNAL | MO | |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | A) FRACTURE CRI | | HIL | |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | B) UNDERWATER I | | | |
| (40) I | VAVIGATION HORIZONTAL CLEARANCE 0.0 M | C) OTHER SPECIA | 1.0 2/ | | |
| | | | 1000 Magazia 1505 1505 1506 | | |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0065

Bridge Name: Limestone Canyon **Year Built:** 1931

Facility Carried: Santiago Canyon Road

The Limestone Canyon culvert at Santiago Canyon Road is a reinforced concrete double box culvert. The culvert appears to have been maintained. The walls appear to have been painted. Erosion measures appear to be in good shape.

Caltrans BIR recommendations:

• Repair the northeast wingwall that is separated from structure.

Field Inspection Observations

- Cracks and efflorescence visible on soffit (photo 3).
- There appears to be excessive AC overly. Recommend no addition AC lifts on structure.
- Culvert walls appear to be painted (photo 4).
- Confirmed wingwall has separated from structure (photo 6).

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

- Monitor gap between wingwall and structure. If increases, initiate repair.
- Efflorescence likely from water penetrating through deck. May become more significant over time. To repair will require deck AC removal, deck treatment, and grinding approach AC to conform to lower deck elevation.
- No additional AC should be applied to the deck.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

Reconnect Wingwall ≈\$30,000 (includes engineering, mobilization and contingency)

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:

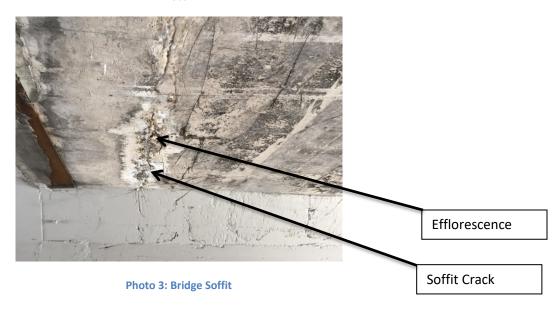




Photo 4:



Photo 5:



Photo 6:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Inspection Report

Bridge Number : 55C0065

Facility Carried: SANTIAGO CNYN ROAD

Location : 4.4 mi se/o JAMBOREE RD.

City

Inspection Date: 08/13/2015

Inspection Type

Routine FC Underwater Special Other

X

STRUCTURE NAME: LIMESTONE CANYON

CONSTRUCTION INFORMATION

Year Built : 1931 Year Widened: 1955 Length (m) : 7.9 Skew (degrees): 0
No. of Joints: 0
No. of Hinges: 0

Structure Description: Double 3.7 m x 3.0 m x 12.8 m RC box culvert (grade top) beneath 0.3

m of earth fill.

Span Configuration : (W) 2 @ 3.7 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=0.50 =>16.2 metric tons

Calculation Method: FIELD EVAL/ENG JUDGMENT Calculation Method: FIELD EVAL/ENG JUDGMENT

Operating Rating: RF=0.84 =>27.2 metric tons

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u>

Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.2 m br, 12.4 m, 0.2 m br (N)

Total Width: 12.8 m Net Width: Min. Vertical Clearance: Unimpaired

No. of Lanes: 2

Speed: 55 mph

Overlay Thickness: 5.0 Inches

Rail Code: 0000

| Rail Type | Location | Length (| ft) Rail | Modifications | |
|-----------|------------|----------|----------|---------------|--|
| MBBR | Right/Left | 60 | | | |

12.5 m

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

CONDITION OF STRUCTURE

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

There is 0.25" wide diagonal crack at southwest wingwall and at the end there is 8" x 8" x 3" spall with exposed rebar.

The northeast wingwall is separated from structure, horizontal movement of 6" at the top and 2" at the bottom, it caused erosion behind the culvert wall and depression in the

Printed on: Wednesday 09/23/2015 08:16 AM

55C0065/AAAH/32864

INSPECTION COMMENTARY

roadway corner.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures.

| Elem | NT INSPECTION RAT Defect Defect El /Prot | | Env | Total Qty | Units | | each Co | | |
|-----------------|--|----------------------------|------------|--------------|-------|----|---------|---|---|
| 241 | Culver | t-RC | 2 | 26 | m | 24 | 2 | 0 | 0 |
| | 1130 Cracki | ng (RC and Other) | 2 | 2 | | 0 | 2 | 0 | 0 |
| (241-1 There | | cks in interior wall of bo | th barrels | | | | | | |
| 330 | Railir | g-Metal | 2 | 16 | m | 16 | 0 | 0 | 0 |
| (330) There | were no significant | defects noted. | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 08/13/2015 Action : Sub-Misc. Work By: LOCAL AGENCY Status : PROPOSED

EstCost:

DistTarget: EA:

Repair the northeast wingwall that is StrTarget: 2 YEARS separated from structure, horizontal movement of 6" at the top and 2" at the bottom, it caused erosion behind the

culvert wall and depression in the

roadway corner.

Team Leader :

Mikhael T. Zaarour

Report Author :

Mikhael T. Zaarour

Inspected By :

MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

Mikhael T. Zaarour No. 68212 09/30/2017 CIVIL

Printed on: Wednesday 09/23/2015 08:16 AM

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************** IDENTIFICATION ********** | | *********** |
|--|--|--------------------|---|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 60.7 |
| 1,500 | STRUCTURE NUMBER 55C0065 | | STATUS |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 98.2 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| ,-, | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******* CODE |
| | FEATURE INTERSECTED- LIMESTONE CANYON | (112) | NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- SANTIAGO CNYN ROAD | | HIGHWAY SYSTEM- ROUTE ON NHS 1 |
| 6.00 | LOCATION- 4.4 mi se/o JAMBOREE RD. | | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| | MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| 0.7655334255 | BASE HIGHWAY NETWORK- PART OF NET 1 | | PARALLEL STRUCTURE- NONE EXISTS N |
| | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| 200000000000000000000000000000000000000 | LATITUDE 33 DEG 45 MIN 36.09 SEC | | TEMPORARY STRUCTURE- |
| 1070 0000 -50 | LONGITUDE 117 DEG 42 MIN 12.47 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| V. 12 | BORDER BRIDGE STATE CODE | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| | DONDER DRIDGE CHILL COSE | | TOLL- ON FREE ROAD 3 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE | | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| | TYPE- CULVERT CODE 119 | | |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | , , | DECK |
| (45) | NUMBER OF SPANS IN MAIN UNIT 2 | 910000 | SUPERSTRUCTURE |
| (46) | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE |
| (107) | DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | | CHANNEL & CHANNEL PROTECTION 8 |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS 7 |
| A) | TYPE OF WEARING SURFACE- NOT APPLICABLE CODE $_{ m N}$ | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NOT APPLICABLE CODE N | (31) | DESIGN LOAD- UNKNOWN 0 |
| C) | TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N | (63) | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | ******** AGE AND SERVICE ********* | | OPERATING RATING- 27.2 |
| (27) | YEAR BUILT . 1931 | (65) | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| (106) | YEAR RECONSTRUCTED 1955 | | INVENTORY RATING- 16.2 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (00) | UNDER- WATERWAY 5 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 AVERAGE DAILY TRAFFIC 8000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| | YEAR OF ADT 2012 (109) TRUCK ADT 3 % | | ******* APPRAISAL ********* CODE |
| | O. T. T. | (67) | STRUCTURAL EVALUATION |
| (19) | BITAGB, BETGGE EDITOR | | DECK CEOMETRY |
| 0.270.000.000 | ************* GEOMETRIC DATA *********** | 11.50 | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| 0.000.000.00 | LENGTH OF MAXIMUM SPAN 3.7 M | | WATER ADEQUACY 8 |
| | STRUCTURE LENGTH 7.9 M | 11000000 | APPROACH ROADWAY ALIGNMENT 8 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | Date of the second | TRAFFIC SAFETY FEATURES 0000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 12.5 M | | SCOUR CRITICAL BRIDGES 8 |
| 100000000000000000000000000000000000000 | DECK WIDTH OUT TO OUT 12.8 M | | ******* PROPOSED IMPROVEMENTS ******* |
| 50,000,000 | APPROACH ROADWAY WIDTH (W/SHOULDERS) 12.5 M BRIDGE MEDIAN NO MEDIAN 0 | /n= \ | Classifier on the |
| | | | TYPE OF WORK- CODE |
| (34) | | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | | | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 12.5 M MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| 550 min 100 mi | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 12426 |
| 13 13 | ************* NAVIGATION DATA ********** | (115) | YEAR OF FUTURE ADT 2035 |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | ************************************** |
| | PIER PROTECTION- CODE N | | INSPECTION DATE 08/15 (91) FREQUENCY 24 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| , / | | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0097

Bridge Name: Santa Ana River Channel Year Built: 1983

Facility Carried: Talbert/MacArthur

The Santa Ana River Channel at Talbert MacArthur is a continuous 4 span cast-in-place reinforced concrete box girder with pier wall and open end diaphragm abutments supported on concrete piles.

Caltrans BIR recommendations:

None

Field Inspection Observations

- Very minor spall on concrete railing, exposing rebar, and spalled sidewalk concrete (photos 1 & 5).
- Bridge deck appears to be treated (photo 2).

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

Monitor existing spalls. Currently very minor, no action needed at this time.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1:

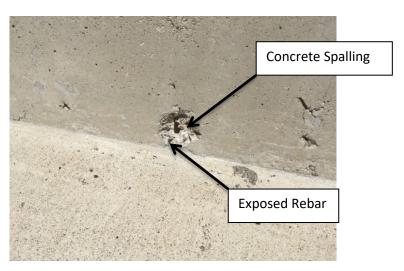


Photo 2: Barrier

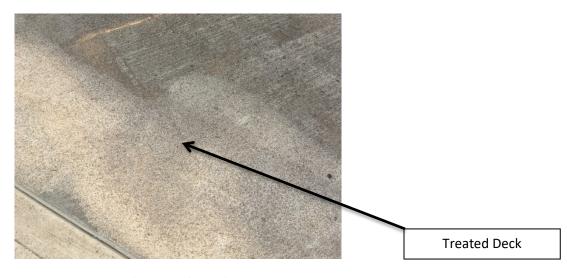


Photo 3: Bridge Deck

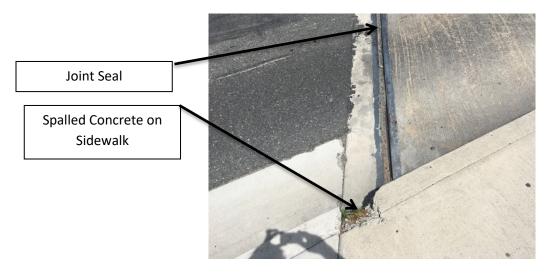


Photo 4: Bridge Deck

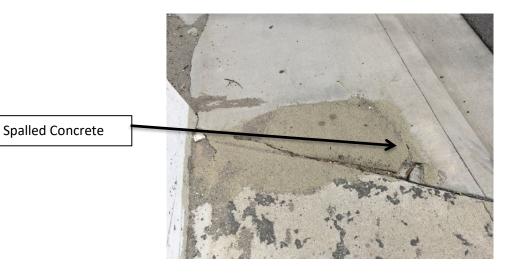


Photo 5: Sidewalk



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0097

Facility Carried: TALBERT/MACARTHUR

Location : 0.6 MI W/O HARBOR BLVD.

City

Inspection Date: 10/24/2014

Inspection Type

Routine FC Underwater Special Other

Bridge Inspection Report

STRUCTURE NAME: SANTA ANA RIVER CHANNEL (TALBERT/MACARTHUR)

CONSTRUCTION INFORMATION

Year Built : 1983 Skew (degrees): 30 Year Widened: N/A No. of Joints : 2 Length (m) : 110 No. of Hinges : 0

Structure Description: Continuous 4 span CIP/RC box girder (8 cells) with RC pier walls and

RC open end seat abutments, all supported upon concrete piles.

Span Configuration : (W) 24.4 m, 2 @ 29.9 m, 24.4 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: ASSIGNED (LFD)
Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: ASSIGNED (LFD)

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.3 m br, 1.5 m sw, 20.8m, 1.5 m sw, 0.3 m br (N)

Total Width: 24.4 m Net Width: 20.7 m No. of Lanes: 4 Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

Rail Type Location Length (ft) Rail Modifications
Type 26 Right/Left 722

DESCRIPTION UNDER STRUCTURE

Channel Description: RC 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

The river was dry at inspection time. All elements were visually inspected.

REVISIONS

The bridge name was revised to include the road carried name.

Old name: SANTA ANA RIVER CHANNEL.

New name: SANTA ANA RIVER CHANNEL (TALBERT/MACARTHUR).

Printed on: Thursday 11/13/2014 12:27 PM

55C0097/AAAH/30344

INSPECTION COMMENTARY

SAFE LOAD CAPACITY

A load Rating Summary sheet was in BIRIS. This load rating was assigned in accordance with current SM&I procedures.

| ELEME | NT INSPE | ECTION RATINGS AND COMMENTARY | | | | | | | |
|------------------|---|---|---------|--------------|-------|------|----|--------------------|-----|
| | Defect I | | Env | Total Qty | Units | | | Condition St. 3 | |
| 16 | | Top Flange-RC | 2 | 2682 | sq.m | 2682 | 0 | 0 | 0 |
| | 1130 | Cracking (RC and Other) | 2 | 2280 | | 2280 | 0 | 0 | 0 |
| | 521 | Concrete Coat.(Meth/Paint/Seal) | 2 | 2280 | sq.m | 2280 | 0 | 0 | 0 |
| (16-11 The cr | | re sealed by methacrylate in 2014 | | | | | | | |
| (16-52 | 1.5 | | | | | | | | |
| 105 | were no | significant defects noted. Box Girder-RC | 2 | 110 | m | 110 | 0 | 0 | 0 |
| (105) | | | | | | | | | |
| | were no | significant defects noted. | | | | | | | |
| 210 | | Pier Wall-RC | 2 | 84 | m | 84 | 0 | 0 | 0 |
| (210) There | were no | significant defects noted. | | | | | | | |
| 215 | *************************************** | Abutment-RC | 2 | 56 | m | 56 | 0 | 0 | 0 |
| (215) | | 1.5 | | | | | | | |
| _ | were no | significant defects noted. | | | | | | | |
| 256 | | Slope Protection | 2 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) There | were no | significant defects noted. | | | | | | | |
| 302 | | Joint-Compression Seal | 2 | 48 | m | 32 | 16 | 0 | 0 |
| | 2350 | Debris Impaction (Joints) | 2 | 16 | | 0 | 16 | 0 | 0 |
| (302-2 The jo | | gaps were partially filled with dirt a | nd debr | is. | | | | | |
| 312 | | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (312) There | were no | significant defects noted. | | | | | | | |
| 331 | | Railing-RC | 2 | 220 | m | 189 | 30 | 1 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 31 | | 0 | 30 | 1 | 0 |
| | is a tri | angular spall 12" x 8" x 4" with rebar many small spalls 2" x 2" x 0.5" in th | | | | | | | er. |

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer) (Date)

(Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************************************** |
|---|---|---|--|
| (1) | STATE NAME- CALIFORNIA 069 | | |
| (8) | STRUCTURE NUMBER 55C0097 | | STATUS |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 99.8 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******** CLASSIFICATION ******** CODE |
| 100 | FEATURE INTERSECTED- SANTA ANA RIVER CHANNEL | (112) | NBIS BRIDGE LENGTH- YES Y |
| | | | HIGHWAY SYSTEM- ROUTE ON NHS 1 |
| | FACILITY CARRIED- TALBERT/MACARTHUR | | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| | LOCATION- 0.6 MI W/O HARBOR BLVD. | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | MILEPOINT/KILOMETERPOINT 0 | | DELETION TO THE PROPERTY OF TH |
| | BASE HIGHWAY NETWORK- PART OF NET 1 | | |
| (13) | LRS INVENTORY ROUTE & SUBROUTE 000000000000 | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 42 MIN 07 SEC | | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 55 MIN 48 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ******* | (22) | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE CONT | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| | TYPE- BOX BEAM OR GIRDER - MULTI CODE 205 | | ******* CODE |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | |
| | TYPE- OTHER/NA CODE 000 | W. C. | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 4 | the second of | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) | CHANNEL & CHANNEL PROTECTION 9 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | | |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- MS-18 OR HS-20 5 |
| | ******* AGE AND SERVICE ******** | | OPERATING RATING METHOD- ASSIGNED (LFD) A |
| () | | | OPERATING RATING- 54.1 |
| 10000000 | YEAR BUILT 1983 | | INVENTORY RATING METHOD- ASSIGNED (LFD) A |
| 00.00000000 | YEAR RECONSTRUCTED 0000 | (66) | INVENTORY RATING- 32.4 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 UNDER- WATERWAY 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | AVERAGE DAILY TRAFFIC 26000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| 250000000000000000000000000000000000000 | YEAR OF ADT 2012 (109) TRUCK ADT 1 % | | ******* APPRAISAL ******** CODE |
| 8 | | | OMDITOMED I DIVILIANTON |
| (19) | Dirico, Dirock Ibacom | | |
| | *********** GEOMETRIC DATA ********** | | |
| (48) | LENGTH OF MAXIMUM SPAN 29.9 M | | |
| (49) | STRUCTURE LENGTH 110.0 M | | WATER ADEQUACY 9 APPROACH ROADWAY ALIGNMENT 8 |
| (50) | CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M | | |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 20.7 M | | TRAFFIC SAFETY FEATURES 1000 |
| (52) | DECK WIDTH OUT TO OUT 24.4 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 20.7 M | | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| | SKEW 30 DEG (35) STRUCTURE FLARED NO | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | 200 1100 | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 20.7 M | ANDROGEN | |
| 3 | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | 1,100,000 | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR REF- NOT H/RR 0.0 M | 1-11 | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 53226 |
| | | (115) | YEAR OF FUTURE ADT 2031 |
| | *********** NAVIGATION DATA ********* | | ************* INSPECTIONS ********** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | INSPECTION DATE 10/14 (91) FREQUENCY 48 MO |
| (111) | PIER PROTECTION- CODE | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (39) | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) |
| (116) | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) |
| | | C/ | 10 FO C/ |

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: 55C0103

Bridge Name: Santa Ana River Year Built: 1979

Facility Carried: Mailton-Victoria

The Santa Ana River Channel Bridge at Hamilton Victoria is a continuous 7 span cast-in-place reinforced concrete box girder bridge with pier wall and open end diaphragm abutments supported on concrete piles.

Caltrans BIR recommendations:

• None

Field Inspection Observations

• None

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

None

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A BIR



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0103

Facility Carried: HAMILTON-VICTORIA

Location : 0.15 MI E/O BROOKHURST S

City

Inspection Date : 12/09/2014

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other X

STRUCTURE NAME: SANTA ANA RIVER (HAMILTON AVE)

CONSTRUCTION INFORMATION

 Year Built : 1979
 Skew (degrees): 16

 Year Widened: 1992
 No. of Joints : 3

 Length (m) : 194
 No. of Hinges : 1

Structure Description: Continuous 7 span CIP/RC box girder (9 cells) with RC piers and RC open end diaphragm abutments, all supported upon concrete piles.

Span Configuration : (W) 24.4 m, 3 @ 28.8 m, 24.8 m, 28.6 m, 28.2 m (E)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18+MOD OR HS-20+MOD

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (N) 0.3 m br, 1.5 m sw, 23.8 m, 1.5 m sw, 0.3 m br (S)

Total Width: 27.4 m Net Width: 23.8 m No. of Lanes: 4 Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| Type 11 | Right | 448 | |
| Type 26 | Right/Left | 828 | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Santa Ana River: Sandy bottom with grouted rock slopes through the site.

Greenville-Banning: Sandy bottom with RC vertical walls.

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

The was 3 ft of deep water in the river under span #2 to span #5, these spans were inspected from the side. All other element were visually inspected.

Printed on: Monday 12/15/2014 07:47 AM 55C0103/AAAJ/30795

INSPECTION COMMENTARY

REVISIONS

The bridge name was revised to include the road carried name.

Old name: SANTA ANA RIVER.

New name: SANTA ANA RIVER (HAMILTON AVE).

SAFE LOAD CAPACITY

A load Rating Summary sheet was in BIRIS. This load rating was assigned in accordance with current SM&I procedures.

| ET.EME | NT THEFE | CTION RATINGS AND COMMENTARY | | | # 100 TO 100 | | | | |
|--------|------------|---|---------|---------|-----------------------------|---------|--------|----------------|------------------|
| | Defect I | | | | | | | | 1210 121 |
| No. | /Prot | Defect Element Description | Env | Qty | Units | | each C | ondition St. 3 | n State St. 4 |
| 16 | | Top Flange-RC | 2 | 5335 | sq.m | 5335 | 0 | 0 | 0 |
| 1 | 521 | Concrete Coat. (Meth/Paint/Seal) | | | 11.500 - 11.0 p. 0.0 | | 0 | 0 | 0 |
| | 521 | Concrete Coat. (Meth/Paint/Seal) | 2 | 2450 | sq.m | 2450 | U | U | 0 |
| (16) | were no | significant defects noted. | | | | | | | |
| (16-5) | | significant defects noted. | | | | | | | |
| 100 | <i>*</i> | significant defects noted. | | | | | | | |
| 105 | | Box Girder-RC | 2 | 390 | m | 390 | 0 | 0 | 0 |
| (105) | | | | | | | | | |
| There | were no | significant defects noted. | | | | | | | |
| 210 | | Pier Wall-RC | 2 | 180 | m | 180 | 0 | 0 | 0 |
| (210) | | | | | | | | | |
| There | were no | significant defects noted. | | | | | | | |
| 215 | | Abutment-RC | 2 | 60 | m | 60 | 0 | 0 | 0 |
| (215) | | | | | | | | | |
| There | were no | significant defects noted. | | | | | | | |
| 227 | | Pile-RC | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (227) | | | | | | | | | |
| | | nt is included to indicate the presence sual inspection. No indication of pile | - | | | | | - | |
| 302 | | Joint-Compression Seal | 2 | 87 | m | 27 | 60 | 0 | 0 |
| | 2320 | Seal Adhesion (Joints) | 2 | 60 | | 0 | 60 | 0 | 0 |
| (302-2 | 2320) | | | | | | | | |
| The jo | oint seals | s are lost adhesion and dirt were fille | d in be | tween t | the rub | ber and | the co | oncrete. | |
| 331 | | Railing-RC | 2 | 252 | m | 252 | 0 | 0 | 0 |
| (331) | | | | | | | | | |
| There | were no s | significant defects noted. | | | | | | | |
| 333 | | Railing-Other | 2 | 136 | m | 136 | 0 | 0 | 0 |
| (333) | | | | | | | | | |
| There | were no s | significant defects noted. | | | | | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

(Data)

PROFESSIONAL

Mikhael T.

Zaarour

No. 68212

09/30/2015

CIVIL

OF CALIFORNIA

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ********** |
|---|---|---|---|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 91.0 |
| | STRUCTURE NUMBER 55C0103 | | STATUS |
| , - , | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 100.0 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******** CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- SANTA ANA RIVER | (112) | NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- HAMILTON-VICTORIA | (104) | HIGHWAY SYSTEM- NOT ON NHS |
| | LOCATION- 0.15 MI E/O BROOKHURST ST | (26) | FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 |
| | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 39 MIN 02.35 SEC | (103) | TEMPORARY STRUCTURE- |
| | LONGITUDE 117 DEG 57 MIN 05.81 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - PART OF NET 1 |
| | BORDER BRIDGE STRUCTURE NUMBER | (20) | TOLL- ON FREE ROAD 3 |
| | | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ******* | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE CONT TYPE- TEE BEAM CODE 204 | | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | *********** CONDITION ********** CODE |
| 981 93 | TYPE- OTHER/NA CODE 000 | ,, | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 7 | *************************************** | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | 17.7 | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CHANNEL & CHANNEL PROTECTION 9 CULVERTS |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| A) | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- MS-18+MOD OR HS-20+MOD 6 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | (63) | OPERATING RATING METHOD- ASSIGNED (LFD) A |
| | ******* AGE AND SERVICE ********* | (64) | OPERATING RATING- 54.1 |
| (27) | YEAR BUILT 1979 | (65) | INVENTORY RATING METHOD- ASSIGNED (LFD) A |
| (106) | YEAR RECONSTRUCTED 1992 | (66) | INVENTORY RATING- 32.4 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | UNDER- WATERWAY 5 LANES:ON STRUCTURE 04 INDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 AVERAGE DAILY TRAFFIC 30000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| ********* | YEAR OF ADT 2010 (109) TRUCK ADT 2 % | | ****** APPRAISAL ******** CODE |
| | BYPASS, DETOUR LENGTH 5 KM | | OMPHOMIDAT PUATILATION |
| (19) | | 100000000000000000000000000000000000000 | DECK GEOMETRY 9 |
| | ******** GEOMETRIC DATA ********** | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | LENGTH OF MAXIMUM SPAN 28.8 M | | WATER ADEQUACY 9 |
| | STRUCTURE LENGTH 194.0 M | 00.00.00.000 | APPROACH ROADWAY ALIGNMENT 8 |
| | CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M | (36) | TRAFFIC SAFETY FEATURES 1000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 23.8 M DECK WIDTH OUT TO OUT 27.4 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| 1 (CONT.) | | | ****** PROPOSED IMPROVEMENTS ******* |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 24.0 M BRIDGE MEDIAN- NO MEDIAN 0 | /pc\ | |
| | SKEW 16 DEG (35) STRUCTURE FLARED NO | | TYPE OF WORK- CODE |
| | | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M INVENTORY ROUTE TOTAL HORIZ CLEAR 23.8 M | | BRIDGE IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| 100000000000000000000000000000000000000 | MIN LAT UNDERCLEAR LT 0.0 M | n and many a mention | FUTURE ADT 49459 |
| | *********** NAVIGATION DATA ******** | (115) | YEAR OF FUTURE ADT 2031 |
| | | | ************************************** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N PIER PROTECTION- CODE | | INSPECTION DATE 12/14 (91) FREQUENCY 48 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| | | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0119

Bridge Name: Brea Canyon Channel **Year Built:** 1971

Facility Carried: Tonner Canyon Road

The Brea Canyon Channel at Tonner Canyon Road is a triple reinforced concrete box culvert.

Caltrans BIR recommendations:

• Clearing and grubbing channel bed.

Field Inspection Observations

- Horizontal cracks on culvert walls. (photo 2)
- Confirmed that the channel bed is over grown with vegetation. (photo 3) Recommend clearing and grubbing channel bed to allow water to flow properly.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

Recommend monitoring cracks on culvert walls. Seal if further deterioration is observed.
 Existing cracks do not currently pose major maintenance issue.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

Clearing and Grubbing

APPENDIX A

Photos and BIR



Photo 1:



Culvert Wall Cracks

Photo 2: Culvert Wall



Overgrown Vegetation

Photo 3: Brea Canyon Channel



Photo 4:



Photo 5:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0119

Facility Carried: TONNER CANYON ROAD

Location : 400' S/O BREA CANYON BLV

City

Х

Inspection Date: 10/02/2015

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

STRUCTURE NAME: BREA CANYON CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1971 Skew (degrees): Year Widened: N/A No. of Joints : Length (m) : 11.9 No. of Hinges : 0

Structure Description: Triple 3.7 m W x 3.0 m H x 39.6 m L RC box culvert (non-grade top)

beneath 2.1 m of earth fill.

Span Configuration : (W) 3 @ 3.7 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=0.75 =>24.3 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT Operating Rating: RF=1.25 =>40.5 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT

Permit Rating : PPPPP

Posting Load Type 3S2: Legal : Type 3: Legal Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S)4.4 m ea, MBGR, 8.0 m ea, 14.6 m, 8.0 m ea, CL fence, 1.8 m ea (N)

Total Width: .0 m Net Width: .0 m No. of Lanes: Speed: 45 mph Overlay Thickness: 0.0 Inches

Min. Vertical Clearance: Unimpaired

Rail Code: NNNN

| Rail Type | Location | Length (ft |) Rail | Modifications . |
|------------|----------|------------|--------|-----------------|
| MBGR on | Right | 100 | | |
| Fill | | | _ | |
| Pedestrian | Left | 100 | CLF | |

DESCRIPTION UNDER STRUCTURE

Channel Description: RC rectangular upstream, natural earth trapezoidal downstream with heavy bushes and trees in the channel.

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. 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

The inspection was performed by walking on the deck and inside the culvert. All elements were visually inspected. Access the the culvert from southwest quadrant. There are bushes and trees down stream obstructed the water flow.

Printed on: Wednesday 02/24/2016 12:04 PM

55C0119/AAAH/33353

INSPECTION COMMENTARY

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures.

| Elem | Defect Defe | ON RATINGS AND NOTES ct Element Description | Env | Total | Units | Qty in | each Co | ondition | ı State |
|------|-------------|--|-----|-------|-------|--------|---------|----------|---------|
| No. | /Prot | | | Qty | | St. 1 | St. 2 | St. 3 | St. 4 |
| 241 | | Culvert-RC | 2 | 120 | m | 111 | 0 | 9 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 3 | | 0 | 0 | 3 | 0 |
| | 1090 | Exposed Rebar (PS Conc./RC) | 2 | 3 | | 0 | 0 | 3 | 0 |
| | 1130 | Cracking (RC and Other) | 2 | 3 | | 0 | 0 | 3 | 0 |

(241 - 1080)

There are spalls at the following locations:

Eight ft of south end of wall #1, size was 12" x 12" x 1".

North bottom nose of wall #2, size was 12" x 6" x x2".

South end of wall #3, size was 18" x 15" x 2".

(241-1090)

There were 6 exposed rebars in the invert of barrel #1 and 1 exposed 2' rebar at the bottom of wall #4.

(241 - 1130)

There is horizontal crack 2 mm wide 6 ft long at the south end of wall #1.

WORK RECOMMENDATIONS

RecDate: 06/05/2001

EstCost:

Remove the bushes and trees from the

Action : Remove Vegetation

StrTarget:

2 YEARS channel bed within 30 meters of the

Work By: LOCAL AGENCY

DistTarget:

bridge to allow the water to flow

Status : PROPOSED

properly.

It is growing back.

Mikhael T. Zaarour Team Leader :

Mikhael T. Zaarour Report Author :

MT.Zaarour / DH.Kim Inspected By :

Mikhael T. Zaarour (Registered Civil Engineer)

OR OFESSION Mikhael T. Zaarour No. 68212 09/30/2017 CIVIL

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************ |
|----------------|--|---|--|
| (1 | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 75.1 |
| (8 | STRUCTURE NUMBER 55C0119 | | STATUS |
| (5 | INVENTORY ROUTE(ON/UNDER) - ON 140000000 | | HEALTH INDEX 95.0 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- BREA CANYON CHANNEL | (112) | NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- TONNER CANYON ROAD | (104) | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 400' S/O BREA CANYON BLVD | (26) | FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 56 MIN 21.19 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 52 MIN 39.33 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | ****** STRUCTURE TYPE AND MATERIAL ******* | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- CULVERT CODE 119 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********* CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK |
| (45) | NUMBER OF SPANS IN MAIN UNIT 3 | (59) | SUPERSTRUCTURE N |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE |
| 50.00 (S00.00) | DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | (61) | CHANNEL & CHANNEL PROTECTION 9 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS 7 |
| | TYPE OF WEARING SURFACE- NOT APPLICABLE CODE N | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NOT APPLICABLE CODE N | (21) | |
| | TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N | | DESIGN LOAD- UNKNOWN 0 OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | ******* AGE AND SERVICE ********* | | OPERATING RATING- FIELD EVALYENG 30D 0 |
| (27) | YEAR BUILT 1971 | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| (106) | YEAR RECONSTRUCTED 0000 | | INVENTORY RATING- 24.3 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| | UNDER- WATERWAY 5 | | STRUCTURE OPEN, POSTED OR CLOSED- |
| | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | , | DESCRIPTION- OPEN, NO RESTRICTION |
| 9 | AVERAGE DAILY TRAFFIC 2000 | | The Design of the Control of the Con |
| | YEAR OF ADT 2009 (109) TRUCK ADT 3 % | | ******* APPRAISAL ******** CODE |
| (19) | BYPASS, DETOUR LENGTH 19 KM | | STRUCTURAL EVALUATION 6 |
| | ******** GEOMETRIC DATA ********** | | DECK GEOMETRY N |
| (48) | LENGTH OF MAXIMUM SPAN 3.7 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 11.9 M | | WATER ADEQUACY 9 APPROACH ROADWAY ALIGNMENT 7 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | | TRAFFIC SAFETY FEATURES NNNN |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 0.0 M | | SCOUR CRITICAL BRIDGES 8 |
| | DECK WIDTH OUT TO OUT 0.0 M | | |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 14.6 M | | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- CLOSED (NO BARRIER) 2 SKEW 0 DEG (35) STRUCTURE FLARED NO | | TYPE OF WORK- CODE |
| | | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | 0.0000000000000000000000000000000000000 | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 14.6 M MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 3544 |
| | ********* NAVIGATION DATA ********* | (115) | YEAR OF FUTURE ADT 2035 |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | ************* INSPECTIONS ********** |
| | PIER PROTECTION- CODE | | INSPECTION DATE 10/15 (91) FREQUENCY 24 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| | | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0121

Bridge Name: Brea Canyon Channel **Year Built:** 1920

Facility Carried: Brea Canyon BLVD

The Brea Canyon Channel at Brea Canyon Boulevard is a continuous 2-span cast-in-place reinforced concrete deck slab supported by strutted abutments, on unknown foundation type.

Caltrans BIR recommendations:

- Repair spall and delamination at north side of pier wall, west face of wall.
- Clearing and grubbing channel bed.

Field Inspection Observations

- There was limited access to the substructure.
- Exposed rebar on pier wall (photo 2).
- Confirmed vegetation overgrowth in channel. Recommend clearing and grubbing the channel.
- Portion of road is being undermined. Recommend removing portion of AC and filling and reconstructing the eroded slope. Investigate if roadside drainage pattern is causing erosion.
- Rutting at power pole. Recommend filling eroded slope. (photo 3)

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

 Repair spalled pier wall. This should be performed soon to prevent additional corrosion of reinforcement.

BPMP Assessment

• Recommend patching spalled concrete on pier wall.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

- Repair Spalls < \$10,000 (includes engineering, mobilization and contingency)
- Clearing and Grubbing
- Bank erosion repair

APPENDIX A

Photos and BIR



Photo 1: Edge of Pavement



Spalled Concrete and Exposed rebar

Photo 2: Bridge Pier

Erosion



Photo 3:



Photo 4: Pier Wall



Photo 5:



Photo 6:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0121

Facility Carried: BREA CANYON BLVD.

Location : 0.4 MI N/O CENTRAL AVENU

City

Inspection Date: 10/02/2015

Inspection Type

Routine FC Underwater Special Other

Х

Bridge Inspection Report

STRUCTURE NAME: BREA CANYON CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1920 Year Widened: 1929 Length (m) : 9.1 Skew (degrees): 32
No. of Joints: 0
No. of Hinges: 0

Structure Description: Continuous 2-span CIP/RC deck slab under 1.5 m of fill with an RC

11.3 m

pier and RC closed end backfilled strutted abutments. Foundation

type is unknown.

Span Configuration : (S) 2 @ 4.1 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=1.00 =>32.4 metric tons
Operating Rating: RF=1.67 =>54.1 metric tons

Calculation Method: LOAD FACTOR Calculation Method: LOAD FACTOR

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u>

Type 3S2:Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 3.4 m ea, 11 m, 0.9 m ea (E)

Total Width: 17.1 m Net Width:

No. of Lanes: 2

Speed: 55 mph

Min. Vertical Clearance: Unimpaired

Overlay Thickness: 6.0 Inches

Rail Code: 0000

| Rail Type | Location | Length | (ft) | Rail | Modifications |
|-----------|----------|--------|------|------|---------------|
| MBGR on | Right | 30 | | | |
| Fill | | | | | |
| None | Left | | | | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with heavy bushes and trees in the channel bed.

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

The inspection was performed by walking on and under the bridge. There was 2' of stagnant water in span #1 (south) and there was 2.5'of dirt accumulated in span #2 (north); all elements were Visually inspected. Access the under the bridge is from northeast quadrant.

Printed on: Wednesday 02/24/2016 12:04 PM

55C0121/AAAJ/33353

INSPECTION COMMENTARY

SAFE LOAD CAPACITY

The load rating for this structure is being reviewed by SM&I Rating Branch. An updated Load Rating Summary Sheet will be archived when this review is completed. The current load rating is based on BDS computer output dated 11/21/1979.

| ELEME | ENT INSPECTION RATINGS AND NOTES | | | | | | | |
|---------------|--|--------|--------------|---------|---------|---------|---------|-------|
| Elem No. | Defect Defect Element Description /Prot | Env | Total Qty | Units | | each Co | | |
| 38 | Slab-RC | 2 | 156 | sq.m | 156 | 0 | 0 | 0 |
| | 510 Deck Wearing Surface-Asphalt | 2 | 110 | sq.m | 110 | 0 | 0 | 0 |
| (38) There | were no significant defects noted. (under 4ft of | fill) | | | 1.2 | | | |
| (38-5 | • | | | | | | | |
| There | were no significant defects noted. (above 4 ft of | fill |) | | 9 | | | |
| 210 | Pier Wall-RC | 2 | 17 | m | 11 | 3 | 3 | 0 |
| | 1080 Delamination/Spall/Patched Area | 2 | 6 | | 0 | 3 | 3 | 0 |
| | 1080) is $10' \times 2' \times 2"$ spall in the west side at the nc e east side of the northend of the peirwall #2 | orth e | nd with | h expos | ed reba | ars and | delamin | ation |
| 215 | Abutment-RC | 2 | 34 | m | 34 | 0 | 0 | 0 |
| (215) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 313 | Bearing-Fixed | 2 | 21 | each | 21 | 0 | 0 | 0 |
| (313) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 330 | Railing-Metal | 2 | 10 | m | 10 | 0 | 0 | 0 |
| (330) | | | | | | | | |
| | were no significant defects noted. | | | | | | | |

WORK RECOMMENDATIONS

| RecDate: 05/18/2012 Action: Sub-Patch spalls Work By: LOCAL AGENCY Status: PROPOSED | EstCost: StrTarget: 2 YEARS DistTarget: EA: | Repair the spall and delamination at the north side of the pier wall west face of the wall 3 m x 0.6 m x 50 mm spall and at the east face of the wall the delamination area 3 m x 0.5 m. |
|--|---|--|
| RecDate: 06/05/2001 Action: Remove Vegetation Work By: LOCAL AGENCY Status: PROPOSED | EstCost: StrTarget: 2 YEARS DistTarget: EA: | Clean the channel to improve the water flow. Remove the bushes and the trees in the channel bed within 30 meters of the bridge. |

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour / DH.Kim

Mikhael T. Zaarour (Registered Civil Engineer) (Date)

Mikhael T.
Zaarour

No. 68212

09/30/2017

CIVIL

OF CALIFORNIA

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************** IDENTIFICATION ********** | | *********** |
|--|--|--|---|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 93.2 |
| | STRUCTURE NUMBER 55C0121 | | STATUS |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 98.4 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******* CODE |
| | FEATURE INTERSECTED- BREA CANYON CHANNEL | (112) | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- BREA CANYON BLVD. | (104) | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 0.4 MI N/O CENTRAL AVENUE | (26) | FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | V | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 56 MIN 16.26 SEC | | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 53 MIN 29.83 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | N. C. | |
| | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE | | OWNER- COUNTY HIGHWAY AGENCY 02 HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (43) | TYPE- SLAB CODE 101 | (37) | HISTORICAL SIGNIFICANCE NOT EDIGIBLE S |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********* CODE |
| , , | TYPE- OTHER/NA CODE 000 | (58) | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 2 | (59) | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 7 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) | CHANNEL & CHANNEL PROTECTION 8 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| Marie Control | TYPE OF WEARING SURFACE- GRAVEL CODE 8 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- UNKNOWN 0 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | | OPERATING RATING METHOD- LOAD FACTOR 1 |
| | ******* AGE AND SERVICE ********* | | OPERATING RATING- 54.1 |
| (27) | YEAR BUILT 1920 | (65) | INVENTORY RATING METHOD- LOAD FACTOR 1 |
| (106) | YEAR RECONSTRUCTED 1929 | (66) | INVENTORY RATING- 32.4 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (00) | UNDER- WATERWAY 5 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | | DESCRIPTION- OPEN, NO RESTRICTION |
| 8 | AVERAGE DAILY TRAFFIC 19000 YEAR OF ADT 2009 (109) TRUCK ADT 2 % | | ****** APPRAISAL ******** CODE |
| | CONTRACTOR AND | | |
| (19) | BITAGO, BETOOK BENGIN | | DECK GEOMETRY 4 |
| | ************ GEOMETRIC DATA *********** | (2000) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | LENGTH OF MAXIMUM SPAN 4.3 M | No. C. COLUMN | WATER ADEQUACY 9 |
| | STRUCTURE LENGTH 9.1 M | | APPROACH ROADWAY ALIGNMENT 8 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M BRIDGE ROADWAY WIDTH CURB TO CURB 11.3 M | (36) | TRAFFIC SAFETY FEATURES 0000 |
| | | (113) | SCOUR CRITICAL BRIDGES U |
| ## TO THE PARTY OF | | | ****** PROPOSED IMPROVEMENTS ******* |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 11.0 M BRIDGE MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| | SKEW 32 DEG (35) STRUCTURE FLARED NO | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | J. Control of the Con | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 8.5 M | 40 -4 | ROADWAY IMPROVEMENT COST |
| 7. O. C. | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | TOTAL PROJECT COST |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | 20.000000000000000000000000000000000000 | YEAR OF IMPROVEMENT COST ESTIMATE |
| (55) | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | FUTURE ADT 41217 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | | YEAR OF FUTURE ADT 2035 |
| | ********** NAVIGATION DATA ********* | ,/ | ************************************** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (00) | STEEL |
| | PIER PROTECTION- CODE | 718-1-10-0-1 | INSPECTION DATE 10/15 (91) FREQUENCY 24 MO CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) |
| (116) | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) |
| | | | |

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: 55C0122

Bridge Name: Brea Canyon Channel **Year Built:** 1930

Facility Carried: Brea Canyon BLVD

The Brea Canyon Channel at Brea Canyon Boulevard is a continuous 2-span cast-in-place reinforced concrete deck slab supported by strutted abutments supported by pile foundations.

Caltrans BIR recommendations:

- Repair Spalls
- Repair damaged rail.
- Remove overgrown vegetation.

Field Inspection Observations

- Confirmed that the concrete railing has been damaged (photo 1).
- Soffit efflorescence visible. This is indicative of water seepage through deck cracks (photo 2).
- Excessive AC on deck, which will reduce load capacity and long-term bridge health. Recommend no additional AC overlay, and County may consider removing some of the AC.
- Exposed rebar on girder soffit (photo 2).
- Vegetation overgrowth in channel and on Pier 2.
- Bird nests visible on bridge overhang (photo 3 and 4). Work may need to take place outside the bird-nesting season.

Maintenance Need Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

- Recommend patching spalls in concrete baluster railings.
- Efflorescence likely from water penetrating through deck. Recommend sealing deck. Not significant problem at this time. To repair will require deck AC removal, deck treatment, and grinding approach AC to conform to lower deck elevation.
- Recommend patching spalled concrete for exposed rebar on girder soffit.
- Recommend clearing and grubbing overgrown vegetation in channel and Pier 2.

Proposed BPMP Construction Costs

• N/A

Construction Items Not Funded by BPMP

- Bridge barrier repair likely not eligible for BPMP funding since the repair work will not bring railing up to current standards. Cost to repair delaminated barrier and soffit concrete and patch ≈\$35,000 (includes engineering, traffic control, mobilization and contingency)
- Clearing and Grubbing
- Deck sealing not critical at this time.

APPENDIX A

Photos and BIR



Photo 1:



Damaged Railing

Photo 2: Barrier



Photo 3: Bridge Soffit

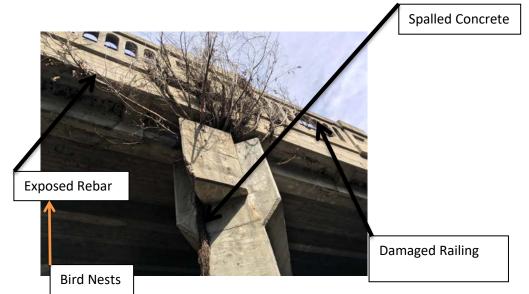


Photo 4:

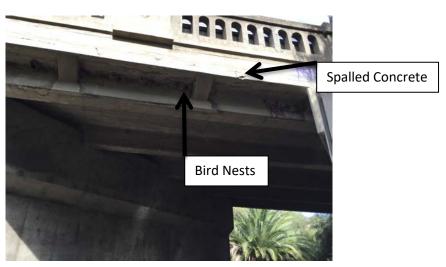


Photo 5:



Photo 6:



Photo 7:



Photo 8:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0122

Facility Carried: BREA CANYON BLVD.

Location : 0.6 MI N/O CENTRAL AVENU

City

Inspection Date : 10/02/2015

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other Х

STRUCTURE NAME: BREA CANYON CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1930 Year Widened: N/A Length (m) : 18.9

Skew (degrees): 45 No. of Joints : 0 No. of Hinges : 0

Structure Description: Simply supported 2-span CIP/RC T-beam (5 each) with an RC pier wall

and with RC open end diaphragm abutments, all supported upon

concrete piles.

Span Configuration : (W) 2 @ 9.1 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15

Inventory Rating: RF= 0.64 Operating Rating: RF= 0.83

Calculation Method: (LRFR) LD & RES FACT RATING 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) 0.3 m br, 0.2 m cu, 9.2 m, 0.2 m cu, 0.3 m br (N)

Total Width: 10.1 m Net Width:

9.1 m No. of Lanes: 2

Speed:

55 mph

Min. Vertical Clearance: Unimpaired Overlay Thickness: 3.0 Inches

Rail Code: 0000

| Rail Type | Location | Length (f | t) Rail | Modifications | |
|-----------|------------|-----------|---------|---------------|--|
| Concrete | Right/Left | 190 | | | |
| Baluster | | | | | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal, RC rectangular 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. 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

The inspection was performed by walking on and under the bridge. There was about 1' of water in both spans; all elements were visually inspected. There is no shoulder and access to under the bridge was from northwest quadrant.

INSPECTION COMMENTARY

SUBSTRUCTURE

There was a tree growing at the top of the southside pier wall. And there was three vertical cracks in the wall.

SAFE LOAD CAPACITYA

Load Rating Summary Sheet dated 8/28/2015 is on file for this structure. While this report does not include a check of that analysis, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis. The current rating is based on LRFR calculation.

| There were no significant defects noted. 210 Pier Wall-RC 2 14 m 14 0 0 0 0 (210) There were no significant defects noted. 215 Abutment-RC 2 36 m 36 0 0 0 (215) There were no significant defects noted. 227 Pile-RC 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 ea. 2 0 0 0 | | Defect Defect /Prot | et Element Description | Env | Total Qty | Units | | | ondition St. 3 | |
|---|---|-------------------------------|-------------------------------------|----------|-------------------|-------|--------|---------|------------------------|--------|
| 3220 Cracking-AC (WS) 2 50 | 16 | | Top Flange-RC | 2 | 190 | sq.m | 190 | 0 | 0 | 0 |
| There were no significant defects noted. (16-510-3220) There are 5 transverse cracks 0.5" wide and across the roadway. 110 | | 510 | Deck Wearing Surface-Asphalt | 2 | 174 | sq.m | 124 | 0 | 50 | 0 |
| There were no significant defects noted. (16-510-3220) There are 5 transverse cracks 0.5" wide and across the roadway. 110 | | 3220 | Cracking-AC (WS) | 2 | 50 | | 0 | 0 | 50 | 0 |
| There are 5 transverse cracks 0.5" wide and across the roadway. 110 | | were no sign | ificant defects noted. | | | | | | | |
| 110 Girder/Beam-RC 2 95 m 95 0 0 0 (110) There were no significant defects noted. 210 Pier Wall-RC 2 14 m 14 0 0 0 0 (210) There were no significant defects noted. 215 Abutment-RC 2 36 m 36 0 0 0 (215) There were no significant defects noted. 227 Pile-RC 2 1 ea. 1 0 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 ea. 2 0 0 0 (256) (256) (256) (256) (256) (256) (257) (258) | | 30.5kg - 150.5m 215.5kg 1.5kg | | | | | | | | |
| There were no significant defects noted. 210 Pier Wall-RC 2 14 m 14 0 0 0 (210) There were no significant defects noted. 215 Abutment-RC 2 36 m 36 0 0 0 (215) There were no significant defects noted. 227 Pile-RC 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 ea. 2 0 0 0 (226) There were no significant defects noted. 331 Railing-RC 2 29 m 9 15 4 1 | There | are 5 transv | erse cracks 0.5" wide and across t | he roadw | ay. | | | | | |
| There were no significant defects noted. 210 Pier Wall-RC 2 14 m 14 0 0 0 (210) There were no significant defects noted. 215 Abutment-RC 2 36 m 36 0 0 0 (215) There were no significant defects noted. 227 Pile-RC 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 ea. 2 0 0 0 (226) There were no significant defects noted. 331 Railing-RC 2 29 m 9 15 4 1 | 110 | | Girder/Beam-RC | 2 | 95 | m | 95 | 0 | 0 | 0 |
| 2 14 m 14 0 0 0 (210) There were no significant defects noted. 2 36 m 36 0 0 0 (215) There were no significant defects noted. 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. Railing-RC 2 29 m 9 15 4 1 | (110) | | | | | | | | | |
| There were no significant defects noted. 215 Abutment-RC 2 36 m 36 0 0 0 (215) There were no significant defects noted. 227 Pile-RC 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. 331 Railing-RC 2 29 m 9 15 4 1 | There | were no sign | ificant defects noted. | | | | | | | |
| There were no significant defects noted. 215 Abutment-RC 2 36 m 36 0 0 0 (215) There were no significant defects noted. 227 Pile-RC 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. 331 Railing-RC 2 29 m 9 15 4 1 | 210 | | Pier Wall-RC | 2 | 14 | m . | 14 | 0 | 0 | . 0 |
| (215) There were no significant defects noted. 227 Pile-RC 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. 331 Railing-RC 2 29 m 9 15 4 1 | (210) There | were no sign | ificant defects noted. | | | | | | a in all a local and a | |
| There were no significant defects noted. 27 Pile-RC 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. 331 Railing-RC 2 29 m 9 15 4 1 | 215 | | Abutment-RC | 2 | 36 | m | 36 | 0 | 0 | 0 |
| Pile-RC 2 1 ea. 1 0 0 0 (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element Slope Protection 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. Railing-RC 2 29 m 9 15 4 1 | (215) | | | | | | | | | |
| (227) The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. 331 Railing-RC 2 29 m 9 15 4 1 | There | were no sign | ificant defects noted. | | | | | | | |
| The pile element is included to indicate the presence of piles on this structure. The piles were no exposed for visual inspection. No indication of pile distress was noted in any substructure element 256 Slope Protection 2 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. 331 Railing-RC 2 29 m 9 15 4 1 | 227 | | Pile-RC | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| 256 Slope Protection 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. Railing-RC 2 29 m 9 15 4 1 | | | | | | | | | | - |
| 2 2 ea. 2 0 0 0 (256) There were no significant defects noted. Railing-RC 2 29 m 9 15 4 1 | (227) | | s included to indicate the presence | e of pil | | | | | | |
| (256) There were no significant defects noted. Railing-RC 2 29 m 9 15 4 1 | The pi | | | | SERVICE TO STREET | noted | in anv | substru | icture e | lement |
| There were no significant defects noted. Railing-RC 2 29 m 9 15 4 1 | The pi | | inspection. No indication of pile | e distre | ss was | noceu | wiij | | | |
| 331 Railing-RC 2 29 m 9 15 4 1 | The pi | | | | | | -W- | 0 | 0 | 0 |
| 2 23 3 13 1 | expose | | | | | | -W- | 0 | 0 | 0 |
| 1080 Delamination/Spall/Patched Area 2 20 0 15 4 1 | The pi expose 256 (256) | d for visual | Slope Protection | | | | -W- | 0 | 0 | 0 |
| | The pi expose 256 (256) There | d for visual | Slope Protection | 2 | 2 | ea. | 2 | | | |

WORK RECOMMENDATIONS

WORK RECOMMENDATIONS

RecDate: 05/06/2010

Action : Railing-Repair

Work By: LOCAL AGENCY Status : PROPOSED

EstCost:

StrTarget: 2 YEARS

Repair the spalls (100 mm \times 75 mm \times 20 mm) in both side of concrete baluster

railings.

DistTarget:

2 YEARS

EA:

RecDate: 05/30/2007

Action : Railing-Repair Work By: LOCAL AGENCY

Status : PROPOSED

EstCost:

StrTarget:

DistTarget:

EA:

Repair the damaged rail.

The west end post of north is damaged; there was 1" wide vertical cracks from

top to the bottom of footing. It may

cause by vehicular hit.

There are about 56 cracks or spalls in

the concrete baluster railings.

Team Leader :

Mikhael T. Zaarour

Report Author :

Mikhael T. Zaarour

Inspected By :

MT.Zaarour / DH.Kim

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | ************ |
|---|--|---|
| (1) | STATE NAME- CALIFORNIA 069 | SUFFICIENCY RATING = 61.1 |
| (8) | STRUCTURE NUMBER 55C0122 | STATUS |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | HEALTH INDEX 99.0 |
| (2) | HIGHWAY AGENCY DISTRICT 12 | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | ******* CLASSIFICATION ******* CODE |
| (6) | FEATURE INTERSECTED- BREA CANYON CHANNEL | (112) NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- BREA CANYON BLVD. | (104) HIGHWAY SYSTEM- NOT ON NHS |
| (9) | LOCATION- 0.6 MI N/O CENTRAL AVENUE | (26) FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 56 MIN 23.13 SEC | (103) TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 53 MIN 26.05 SEC | (105) FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD 3 |
| | | (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ******* STRUCTURE TYPE AND MATERIAL ****** | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE | , , , Indicate and the second se |
| (44) | TYPE- TEE BEAM CODE 104 STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ******* CODITION ********* CODE |
| (44) | | |
| (45) | Table 1 and 1 and 2 and | |
| | The Control of the Co | |
| | NUMBER OF APPROACH SPANS 0 | |
| | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) CHANNEL & CHANNEL PROTECTION 8 (62) CULVERTS |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (ob) contacts |
| | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | ******* LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 TYPE OF DECK PROTECTION- NONE CODE 0 | (31) DESIGN LOAD- M-13.5 OR H-15 2 |
| C/ | 0022 0 | (63) OPERATING RATING METHOD- (LRFR) LD & RES FA 8 |
| | ******* AGE AND SERVICE ********** | (64) OPERATING RATING- RF= 0.83 |
| | YEAR BUILT 1930 | (65) INVENTORY RATING METHOD- (LRFR) LD & RES FA 8 |
| | YEAR RECONSTRUCTED 0000 | (66) INVENTORY RATING- RF= 0.64 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 UNDER- WATERWAY 5 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | UNDER- WATERWAY 5 LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) STRUCTURE OPEN, POSTED OR CLOSED- A |
| | AVERAGE DAILY TRAFFIC 19000 | DESCRIPTION- OPEN, NO RESTRICTION |
| | YEAR OF ADT 2009 (109) TRUCK ADT 2 % | ******* APPRAISAL ********* CODE |
| | BYPASS, DETOUR LENGTH 2 KM | (67) CODUCOUDAL DUALIZADION |
| | ************************************** | (68) DECK GEOMETRY |
| | | (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| 100000000000000000000000000000000000000 | LENGTH OF MAXIMUM SPAN 9.1 M STRUCTURE LENGTH 18.9 M | (71) WATER ADEQUACY 9 |
| | STRUCTURE LENGTH 18.9 M CURB OR SIDEWALK: LEFT 0.2 M RIGHT 0.2 M | (72) APPROACH ROADWAY ALIGNMENT 8 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 9.1 M | (36) TRAFFIC SAFETY FEATURES 0000 |
| | DECK WIDTH OUT TO OUT 10.1 M | (113) SCOUR CRITICAL BRIDGES 8 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 9.1 M | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | |
| | SKEW 45 DEG (35) STRUCTURE FLARED NO | (75) TYPE OF WORK- MISC STRUCTURAL WORK CODE 38 |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (76) LENGTH OF STRUCTURE IMPROVEMENT 18.9 M |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 99.9 M | (94) BRIDGE IMPROVEMENT COST \$184,000 |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (95) ROADWAY IMPROVEMENT COST \$36,800 |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (96) TOTAL PROJECT COST \$309,120 |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (97) YEAR OF IMPROVEMENT COST ESTIMATE 2010 |
| | MIN LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT 41217 |
| * | ************* NAVIGATION DATA ********* | (115) YEAR OF FUTURE ADT 2035 |
| | NAVIGATION DATA NAVIGATION CONTROL- NOT APPLICABLE CODE N | ********** INSPECTIONS ********* |
| | PIER PROTECTION- CODE | (90) INSPECTION DATE 10/15 (91) FREQUENCY 24 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | A) FRACTURE CRIT DETAIL- NO MO A) |
| 20000000 | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | B) UNDERWATER INSP- NO MO B) |
| | | C) OTHER SPECIAL INSP- NO MO C) |

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: 55C0123

Bridge Name: Brea Canyon Channel **Year Built:** 1939

Facility Carried: Brea Canyon BLVD

The Brea Canyon Channel at Brea Canyon Boulevard is a 3-span, simply supported, cast-in-place reinforced concrete T-beam with open end diaphragm abutments supported on concrete piles.

Caltrans BIR recommendations:

- Repair spalls in concrete baluster railings
- Repair wingwall and girder concrete spalls.
- Remove overgrown vegetation.

Field Inspection Observations

- Confirmed that the concrete railing has been damaged (photo 1), exposed reinforcement on concrete barrier.
- Missing P-markers at ends of bridge (photo 2). Recommend replacing P-markers .
- Longitudinal soffit cracks (photo 4), although no efflorescence visible. Monitor condition and consider sealing deck to prevent water from seeping through cracks if condition worsens.
- Exposed rebar on girder soffit (photo 5).
- Excessive AC on deck, which will reduce load capacity and long-term bridge health. (photo 6 & 7). Recommend no additional AC overlay, and County may consider removing some of the AC.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

- Recommend patching spalls in concrete baluster railings.
- Recommend patching spalled concrete for exposed rebar on girder soffit.
- Replace missing P-Markers.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

- Bridge barrier repair likely not eligible for BPMP funding since the repair work will not bring railing up to current standards. Cost to repair delaminated barrier and soffit concrete and patch ≈\$35,000 (includes engineering, traffic control, mobilization and contingency)
- Deck sealing not critical at this time.

APPENDIX A

Photos and BIR



Photo 1: Barrier



Missing P-marker

Photo 2: Bridge



Photo 3:

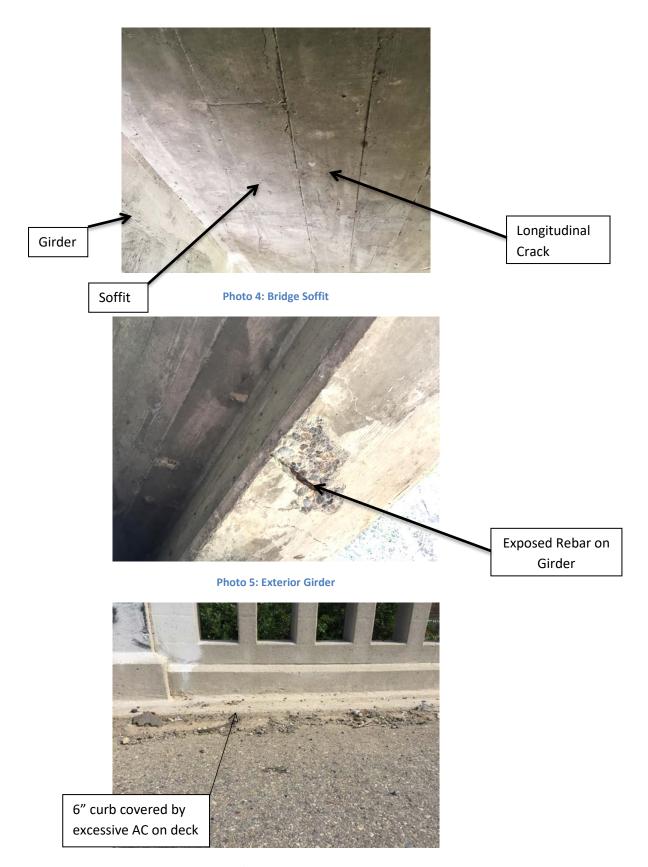


Photo 6: Barrier



Photo 7:



Photo 8:



Photo 9:



Photo 10:



Photo 11:



Photo 12:



Photo 13:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0123

Facility Carried: BREA CANYON BLVD.

Location : 0.8 MI N/O CENTRAL AVENU

Inspection Date : 10/02/2015

Inspection Type

Routine FC Underwater Special Other Х

Bridge Inspection Report

STRUCTURE NAME: BREA CANYON CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1939 Year Widened: N/A Length (m)

Skew (degrees): No. of Joints :

No. of Hinges : 0

Structure Description: Simply supported 3-span CIP/RC T-beam (5 each) with RC pier walls

and with RC open end diaphragm abutments, all supported upon

concrete piles.

Span Configuration :(W) 3 @ 9.1 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF= 0.69

Operating Rating: RF= 0.89

Calculation Method: (LRFR) LD & RES FACT RATING 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) 0.3 m br, 0.2 m cu, 9.2 m, 0.2 m cu, 0.3 m br (N)

Total Width:

10.1 m

Net Width:

9.1 m No. of Lanes: 2

Speed:

55 mph

Min. Vertical Clearance: Unimpaired

Overlay Thickness: 3.0 Inches

Rail Code: 0000

| Rail Type | Location | Length (ft |) Rail | l Modifications | |
|-----------|------------|------------|--------|-----------------|---|
| Concrete | Right/Left | 242 | | | , |
| Baluster | | | _ | | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal, RC rectangular 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. 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

The inspection was performed by walking on and under the bridge. There was about 2" of water in both spans; all elements were visually inspected. There is no shoulder and access to under the bridge was from northwest quadrant.

INSPECTION COMMENTARY

SAFE LOAD CAPACITYA

Load Rating Summary Sheet dated 8/28/2015 is on file for this structure. While this report does not include a check of that analysis, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis. The current rating is based on LRFR calculation.

| | | ON RATINGS AND NOTES | | | | | | | |
|------------------|------------------------|--|--------|--------------|--------|----------|---------|-------------------|--------|
| Elem No. | Defect Defection /Prot | ct Element Description | Env | Total Qty | Units | | | ondition St. 3 | |
| 16 | | Top Flange-RC | 2 | 283 | sq.m | 273 | 0 | 10 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 10 | | 0 | 0 | 10 | 0 |
| | 510 | Deck Wearing Surface-Asphalt | 2 | 255 | sq.m | 255 | 0 | 0 | 0 |
| x 6" x | are 10 spall 1". | s at the north edge of the deck with | expos | ed rus | ted re | pars, tl | ne aver | age size | was 6 |
| (16-51) There | | ificant defects noted. | | | | | | | |
| 110 | | Girder/Beam-RC | 2 | 140 | m | 136 | 0 | 4 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 4 | | 0 | 0 | 4 | 0 |
| spans ‡ | | (1' x 8" x 0.5") with exposed rebars | | | 1 14 | | -116- | | |
| 210 | | Pier Wall-RC | 2 | 40 | m . | 37 | 2 | 1 | - 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 3 | | 0 | 2 | 1 | 0 |
| (210-10 | 080) | ificant defects noted. s (1 - 12" x 3" x 0.75" and 2 - 6" x | 3" x | 0.75") | with e | exposed | rebars | at the | |
| northwe | est wing wall | 1. | | | | | | | |
| 215 | | Abutment-RC | 2 | 52 | m | 52 | 0 | 0 | 0 |
| (215) There w | vere no signi | ificant defects noted. | | | | | | | |
| 227 | | Pile-RC | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| | | s included to indicate the presence of inspection. No indication of pile d | | | | | | | |
| 331 | | Railing-RC | 2 | 56 | m | 28 | 28 | 0 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 28 | | 0 | 28 | 0 | 0 |
| | | s have been cracked or spalled in both is broken. | n rail | l side. | the e | nd conc | rete ra | il post | at the |

WORK RECOMMENDATIONS

WORK RECOMMENDATIONS

RecDate: 05/06/2010 Action : Sub-Patch spalls

Work By: LOCAL AGENCY

Status : PROPOSED

EstCost:

DistTarget:

StrTarget: 2 YEARS

Repair the 3 spalls (1 - 300 mm x 75 mm x 20 mm and 2 - 150 mm x 75 mm x 20 mm)

with exposed rebars at the northwest wing

wall.

RecDate: 05/06/2010

Action : Railing-Repair

Work By: LOCAL AGENCY Status : PROPOSED

EstCost:

StrTarget: 2 YEARS

Repair the spalls (100 mm \times 50mm \times 20 mm0 at the baluster of both rails

DistTarget:

EA:

EA:

EA:

RecDate: 05/30/2007 Action : Super-Patch spalls

Work By: LOCAL AGENCY

Status : PROPOSED

EstCost:

2 YEARS StrTarget:

DistTarget:

Repair the 4 spalls (300mm \times 200mm \times 15mm) with exposed rebars at the bottom

of in both exterior girders in spans #1

and #3.

Team Leader :

Mikhael T. Zaarour

Report Author :

Mikhael T. Zaarour

Inspected By :

MT.Zaarour / DH.Kim

Mikhael T. Zaarour (Registered Civil Engineer)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | ************* |
|----------|--|---|
| (1) | STATE NAME- CALIFORNIA 069 | SUFFICIENCY RATING = 63.9 |
| (8) | STRUCTURE NUMBER 55C0123 | STATUS |
| (5) | INVENTORY ROUTE(ON/UNDER) - ON 140000000 | HEALTH INDEX 97.4 |
| | HIGHWAY AGENCY DISTRICT 12 | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | ******** CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- BREA CANYON CHANNEL | (112) NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- BREA CANYON BLVD. | (104) HIGHWAY SYSTEM- NOT ON NHS |
| (9) | LOCATION- 0.8 MI N/O CENTRAL AVENUE | (26) FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) DIRECTION OF TRAFFIC- 2 WAY 2 |
| | LATITUDE 33 DEG 56 MIN 27.32 SEC | (103) TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 53 MIN 15.24 SEC | (105) FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD 3 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | TYPE- STRINGER/MULTI-BEAM OR GDR CODE 102 | (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ******* CONDITION ********* CODE |
| | TYPE- OTHER/NA CODE 000 | (58) DECK 7 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 3 | (59) SUPERSTRUCTURE 7 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) SUBSTRUCTURE 7 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) CHANNEL & CHANNEL PROTECTION 8 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) CULVERTS N |
| | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | ****** LOAD RATING AND POSTING ****** CODE |
| B) | TYPE OF MEMBRANE- NONE CODE 0 | (01) |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | (31) DESIGN LOAD- UNKNOWN 0 (63) OPERATING RATING METHOD- (LRFR) LD & RES FA 8 |
| | ********* AGE AND SERVICE ********* | (64) OPERATING RATING- (ERFR) ED & RES FA 6 |
| (27) | YEAR BUILT 1939 | (65) INVENTORY RATING METHOD- (LRFR) LD & RES FA 8 |
| (106) | YEAR RECONSTRUCTED 0000 | (66) INVENTORY RATING- RF= 0.69 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (20) | UNDER- WATERWAY 5 | (41) STRUCTURE OPEN, POSTED OR CLOSED- A |
| | LANES: ON STRUCTURE 02 UNDER STRUCTURE 00 | DESCRIPTION- OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 19000 YEAR OF ADT 2009 (109) TRUCK ADT 2 % | |
| 20775000 | | ************ APPRAISAL ********** CODE |
| | | (67) STRUCTURAL EVALUATION 5 (68) DECK GEOMETRY |
| | ******** GEOMETRIC DATA ********** | (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | LENGTH OF MAXIMUM SPAN 9.1 M | (71) WATER ADEQUACY |
| | STRUCTURE LENGTH 28.0 M | (72) APPROACH ROADWAY ALIGNMENT 8 |
| | CURB OR SIDEWALK: LEFT 0.2 M RIGHT 0.2 M BRIDGE ROADWAY WIDTH CURB TO CURB 9.1 M | (36) TRAFFIC SAFETY FEATURES 0000 |
| | DECK WIDTH OUT TO OUT 10.1 M | (113) SCOUR CRITICAL BRIDGES 8 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 8.2 M | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | (75) TYPE OF WORK- MISC STRUCTURAL WORK CODE 38 |
| | SKEW 60 DEG (35) STRUCTURE FLARED NO | |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (76) LENGTH OF STRUCTURE IMPROVEMENT 28 M (94) BRIDGE IMPROVEMENT COST \$282,000 |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 9.1 M | |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (95) ROADWAY IMPROVEMENT COST \$56,400 (96) TOTAL PROJECT COST \$473,760 |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) YEAR OF IMPROVEMENT COST ESTIMATE 2010 |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (114) FUTURE ADT 41217 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | (115) YEAR OF FUTURE ADT 2035 |
| * | *********** NAVIGATION DATA ********* | ************************************** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) INSPECTION DATE 10/15 (91) FREQUENCY 24 MO |
| (111) | PIER PROTECTION- CODE | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | A) FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | B) UNDERWATER INSP- NO MO B) |
| (40) 1 | VAVIGATION HORIZONTAL CLEARANCE 0.0 M | C) OTHER SPECIAL INSP- NO MO C) |
| | | 100 C |

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: 55C0148

Bridge Name: Santa Ana River Channel (Warner Ave) **Year Built:** 1961

Facility Carried: Warner Avenue

The Santa Ana River Channel Bridge at Warner Avenue is a continuous six span cast-in-place reinforced concrete T-beam Bridge with pier wall and open-end diaphragm abutments supported on concrete piles. OCPW noted that the existing deck was treated during the widening.

Caltrans BIR recommendations:

• Repair pothole in the AC westbound departure lane

Field Inspection Observations

- Deck appears to have been treated, likely to address severe efflorescence in several bays (photo
 1). No immediate action is required but the bridge soffit should continue to be monitored to determine if water is continuing to seep through the bridge deck.
- Pot hole in the approach (photo 2 & 3). Recommend covering utility opening, back filling the pothole, and replacing the AC.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

Repair pot hole at abutment.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

• AC pot hole in approach repair ≈\$15,000, includes traffic control

APPENDIX A

Field Review Notes, Photos, and BIR



Photo 1:

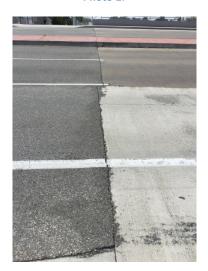


Photo 2:



Photo 3:

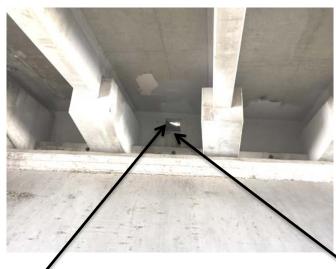


Efflorescence

Photo 4: Bridge Soffit



Photo 5: Bridge Approach



Future Utility Opening

Photo 6: Abutment Elevation

Eroded Backfill

Caltrans

DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0148
Facility Carried: WARNER AVENUE

Location : 0.1 MI W/O HARBOR BLVD

City

Inspection Date : 10/24/2014

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

55C0148/AAAG/30344

STRUCTURE NAME: SANTA ANA RIVER CHANNEL (WARNER AVE)

CONSTRUCTION INFORMATION

 Year Built : 1961
 Skew (degrees): 9

 Year Widened: 1969
 No. of Joints : 2

 Length (m) : 77.4
 No. of Hinges : 2

Structure Description: Continuous six span CIP/RC T-beam (9 each) and widened 3 girders N

and 2 girders S with RC pier walls and RC open end diaphragm

abutments, all supported upon concrete piles. Wi

Span Configuration : (W) 10.4 m, 4 @ 14.0 m, 10.4 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: ASSIGNED (LFD)
Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: ASSIGNED (LFD)

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.3 m br, 1.5 m sw, 13.4 m, 2.4 m med, 12.3 m, 1.5 m sw, 0.3 m br (N)

Total Width: 31.6 m Net Width: 24.5 m No. of Lanes: 6 Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1111

Rail Type Location Length (ft) Rail Modifications
Type 26 Right/Left 525

DESCRIPTION UNDER STRUCTURE

Channel Description: RC 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

The river was dry at inspection time. All elements were visually inspected.

DECK AND ROADWAY

There is a hole (18" x 8" x 12") in the AC westbound departure lane #1.

Printed on: Thursday 11/13/2014 12:27 PM

INSPECTION COMMENTARY

REVISIONS

The bridge name was revised to include the road carried name.

Old name: SANTA ANA RIVER CHANNEL.

New name: SANTA ANA RIVER CHANNEL (WARNER AVE).

SAFE LOAD CAPACITY

A load Rating Summary sheet is included with this bridge inspection report. This load rating was assigned in accordance with current SM&I procedures.

| | Defect | Defect Element Description | Env | | Units | | | ondition | |
|----------------|----------|-------------------------------|-----|------|-------|-------|-------|----------|-------|
| No. | /Prot | | | Qty | | St. 1 | St. 2 | St. 3 | St. 4 |
| 12 | | Deck-RC | 2 | 688 | sq.m | 688 | 0 | 0 | 0 |
| (12) | | | | | | | | | |
| There | were no | significant defects noted. | | | | | | | |
| 16 | | Top Flange-RC | 2 | 1757 | sq.m | 1757 | 0 | 0 | 0 |
| | 511 | Deck Wearing Surface-Concrete | 2 | 1571 | sq.m | 1571 | 0 | 0 | 0 |
| (16) There | were no | significant defects noted. | | | | | | | |
| (16-53 | 11) | | | | | | | | |
| There | were no | significant defects noted. | | | | | | | |
| 109 | | Girder/Beam-PS Conc. | 2 | 387 | m | 387 | 0 | 0 | 0 |
| (109) There | were no | significant defects noted. | | | | | | | |
| 110 | | Girder/Beam-RC | 2 | 697 | m | 697 | 0 | 0 | 0 |
| (110) | | | | | | | | | |
| There | were no | significant defects noted. | | | | | | | |
| 182 | | EQ Restrainer Cable-Other | 2 | 18 | ea. | 18 | 0 | 0 | 0 |
| (182) There | were no | significant defects noted. | 8 | | | | | | |
| 210 | | Pier Wall-RC | 2 | 155 | m | 155 | 0 | 0 | 0 |
| (210) | | | *** | | | | | | |
| There | were no | significant defects noted. | | | | | | | |
| 215 | | Abutment-RC | 2 | 64 | m | 64 | 0 | 0 | 0 |
| (215) | | | | | | | | - | |
| | were no | significant defects noted. | | | | | 400 | | |
| 256 | | Slope Protection | 2 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) | | similiant defeate and | | | | | | | |
| | were no | significant defects noted. | | | | | | | |
| 302 | 7 | Joint-Compression Seal | 2 | 56 | m | 56 | 0 | 0 | 0 |
| (302) | were ro | significant defects noted. | | | | | | | |
| THELE | were 110 | arguitteant defects noted. | 2 | 2 | | | | | |

| Env | Total Qty | Units | St. 1 | | | | | |
|-----|--------------|-------|---------|-------------|---------------|---------------|-----------------|-------------------|
| | | | | | | | | |
| | | | | | | | | |
| 2 | 155 | m | 155 | 0 | | 0 | |) |
| | | | | | | | | |
| | 2 | 2 155 | 2 155 m | 2 155 m 155 | 2 155 m 155 0 | 2 155 m 155 0 | 2 155 m 155 0 0 | 2 155 m 155 0 0 (|

WORK RECOMMENDATIONS

RecDate: 10/24/2014

EstCost:

Repair the hole (18" x 8" x 12") in the

OR OFESSION

Mikhael T.

No. <u>68212</u> 09/30/2015 CIVIL

Zaarour

Action : Appr. Roadway-Repair StrTarget: 2 YEARS AC westbound departure (west) lane #1.

Work By: LOCAL AGENCY

DistTarget:

Status : PROPOSED

Team Leader : Mikhael T. Zaarour

Report Author :

Mikhael T. Zaarour

Inspected By :

MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

Printed on: Thursday 11/13/2014 12:27 PM

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ********* |
|---|--|------------------|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 91.5 |
| | STRUCTURE NUMBER 55C0148 | | STATUS |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 100.0 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| 23.000 | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******* CODE |
| | | (112) | NBIS BRIDGE LENGTH- YES Y |
| | FEATURE INTERSECTED- SANTA ANA RIVER CHANNEL | | WE GUILLY CHECKEN |
| 100 1110 | FACILITY CARRIED- WARNER AVENUE | | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| | LOCATION- 0.1 MI W/O HARBOR BLVD | | DEFENSE HIGHWAY- NOT STRANNET 0 |
| | MILEPOINT/KILOMETERPOINT 0 | | MOI DIMINIDI |
| 100000000000000000000000000000000000000 | BASE HIGHWAY NETWORK- PART OF NET 1 | | PARALLEL STRUCTURE- NONE EXISTS N DIRECTION OF TRAFFIC- 2 WAY 2 |
| | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | |
| 623 | LATITUDE 33 DEG 42 MIN 51.96 SEC | | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 55 MIN 18.68 SEC | | FED. LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| , | ****** STRUCTURE TYPE AND MATERIAL ****** | | An application of the second s |
| | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE CONT | | OWNER- COUNTY HIGHWAY AGENCY 02 HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (43) | TYPE- TEE BEAM CODE 204 | (37) | AISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********* CONDITION ********* CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 6 | (59) | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 8 |
| | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) | CHANNEL & CHANNEL PROTECTION 8 |
| | | (62) | CULVERTS |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | | THE TOTAL PARTING AND DOCUMENT THE CODE |
| | TYPE OF WEARING SURFACE- CONCRETE CODE 1 TYPE OF MEMBRANE- NONE CODE 0 | 12000 | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- MS-18 OR HS-20 5 |
| | ******** AGE AND SERVICE ********** | | OPERATING RATING METHOD- ASSIGNED (LFD) A |
| (07) | | | OPERATING RATING- 54.1 |
| 2000 STATE OF THE PARTY OF THE | YEAR BUILT 1961 | | INVENTORY RATING METHOD- ASSIGNED (LFD) A |
| | YEAR RECONSTRUCTED 1969 TYPE OF SERVICE: ON- HIGHWAY 1 | 10.7.1.000000000 | INVENTORY RATING- 32.4 |
| (42) | UNDER- WATERWAY 5 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 06 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| (29) | AVERAGE DAILY TRAFFIC 25000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| (30) | YEAR OF ADT 2008 (109) TRUCK ADT 1 % | | ********** APPRAISAL ********** CODE |
| (19) | BYPASS, DETOUR LENGTH 2 KM | (67) | STRUCTURAL EVALUATION 8 |
| | ******** GEOMETRIC DATA ********** | (68) | DECK GEOMETRY 5 |
| (48) | LENGTH OF MAXIMUM SPAN 14.0 M | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 77.4 M | (71) | WATER ADEQUACY 9 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 1.5 M | (72) | APPROACH ROADWAY ALIGNMENT 7 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 24.5 M | (36) | TRAFFIC SAFETY FEATURES 1111 |
| | DECK WIDTH OUT TO OUT 31.6 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| 0.0000000000000000000000000000000000000 | APPROACH ROADWAY WIDTH (W/SHOULDERS) 25.7 M | | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- CLOSED (NO BARRIER) 2 | /75\ | TYPE OF WORK- CODE |
| | SKEW 9 DEG (35) STRUCTURE FLARED NO | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | 2000 | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 93.39 M | | |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 57703 |
| | ********** NAVIGATION DATA ******** | (112) | YEAR OF FUTURE ADT 2031 |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | ************************************** |
| | PIER PROTECTION- CODE | | INSPECTION DATE 10/14 (91) FREQUENCY 48 MO |
| | | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| | V.V.T | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0154

Bridge Name: Santa Ana River Channel **Year Built:** 1959

Facility Carried: Edinger Avenue

The Santa Ana River Channel at Edinger Avenue is a continuous 7 span cast-in-place reinforced concrete T-beam Bridge with pier wall and open-end diaphragm abutments supported on concrete piles. Bridge was widened in 2014.

Caltrans BIR recommendations:

None

Field Inspection Observations

• Efflorescence visible on the bridge soffit (photo 1). OCPW states bridge deck was treated when the bridge was widened.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

• Clean out down drains.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:

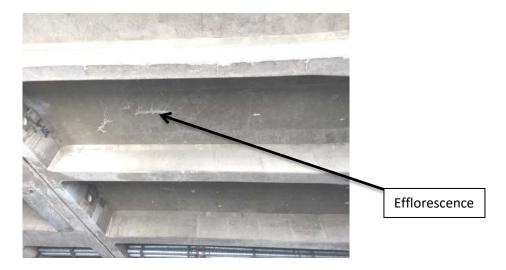


Photo 4:



Photo 5: Joint Seal



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0154

Facility Carried: EDINGER AVENUE

: 0.3 MI. E/O HARBOR BLVD Location

City

Inspection Date : 10/24/2014

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other Х

STRUCTURE NAME: SANTA ANA RIVER CHANNEL (EDINGER AVE)

CONSTRUCTION INFORMATION

Year Built : 1959 Skew (degrees): Year Widened: 2014 No. of Joints : Length (m) : 91.4 No. of Hinges :

Structure Description: Continuous seven span CIP/RC T-beam (6 each) and widened 3 girders N

and 3 girders S with RC pier walls and RC open end diaphragm

abutments, all supported upon concrete piles.

:(W) 10.4 m, 5 @ 14.0 m, 10.4 m (E) c/c Span Configuration

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: RF=1.56 =>50.5 metric tons Calculation Method: LOAD FACTOR Operating Rating: RF=2.60 =>84.2 metric tons Calculation Method: LOAD FACTOR

: PPPPP Permit Rating

Posting Load Type 3S2:Legal : Type 3: Legal Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.3 m br, 1.6 m sw, 29.2 m, 1.6 m sw, 0.3 m br (N)

Net Width: Total Width: 33.0 m 29.2 m No. of Lanes: 4 Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| Type 26 | Right/Left | 600 | |

DESCRIPTION UNDER STRUCTURE

Channel Description: RC 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

The river was dry at inspection time. All elements were visually inspected.

REVISIONS

The bridge name was revised to include the road carried name.

Old name: SANTA ANA RIVER CHANNEL.

New name: SANTA ANA RIVER CHANNEL (EDINGER AVE).

Printed on: Thursday 11/13/2014 12:27 PM

55C0154/AAAH/30344

INSPECTION COMMENTARY

Items numbers 32, 47, 50, 51, and 52 were revised to reflect the new widened.

SAFE LOAD CAPACITY

A load Rating Summary sheet was in BIRIS. The current load rating was based on calculations dated 11/19/1975.

| ELEME | NT INSPECTION RATINGS AND COMMENTARY | | | | A Company of the Assessment of | | | A STATE OF THE REAL PROPERTY. |
|-------|---|-----|--------------|-------|--|---|-------------------|-------------------------------|
| | Defect Defect Element Description /Prot | Env | Total Qty | Units | | | Condition 2 St. 3 | |
| 12 | Deck-RC | 2 | 1572 | sq.m | 1572 | 0 | 0 | 0 |
| (12) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 16 | Top Flange-RC | 2 | 1444 | sq.m | 1444 | 0 | 0 | 0 |
| (16) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 109 | Girder/Beam-PS Conc. | 2 | 546 | m | 546 | 0 | 0 | 0 |
| (109) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 110 | Girder/Beam-RC | 2 | 546 | m | 546 | 0 | 0 | 0 |
| (110) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 182 | EQ Restrainer Cable-Other | 2 | 8 | ea. | 8 | 0 | 0 | 0 |
| (182) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 210 | Pier Wall-RC | 2 | 165 | m | 165 | 0 | 0 | 0 |
| (210) | | | | | | | - | |
| There | were no significant defects noted. | | | | | | | |
| 215 | Abutment-RC | 2 | 66 | m | 66 | 0 | 0 | 0 |
| (215) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 301 | Joint-Pourable Seal | 2 | 60 | m | 60 | 0 | 0 | 0 |
| (301) | | | | | • | | | - |
| There | were no significant defects noted. | | | | | | | |
| 312 | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (312) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 331 | Railing-RC | 2 | 182 | m | 182 | 0 | 0 | 0 |
| (331) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | menus |

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

(Date)

PROFESSIONAL
Mikhael T.
Zaarour
No. 68212
09/30/2015
CIVIL
OF CALIFORNIA

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ********** |
|---|--|---|--|
| (1) | STATE NAME - CALIFORNIA 069 | | SUFFICIENCY RATING = 93.6 |
| | STRUCTURE NUMBER 55C0154 | | STATUS |
| | | | HEALTH INDEX 100.0 |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | PAINT CONDITION INDEX = N/A |
| | HIGHWAY AGENCY DISTRICT 12 | | ****** CLASSIFICATION ********* CODE |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | (112) | |
| | FEATURE INTERSECTED- SANTA ANA RIVER CHANNEL | | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- EDINGER AVENUE | | HIGHWAY SYSTEM- ROUTE ON NHS 1 |
| (9) | LOCATION- 0.3 MI. E/O HARBOR BLVD | | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- PART OF NET 1 | | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 43 MIN 38.7 SEC | | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 54 MIN 55 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | ****** OMDITOMINE MANE AND MAMBETAL ******* | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ******* | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE CONT | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | TYPE- TEE BEAM CODE 204 STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ******* CONDITION ********* CODE |
| (44) | TYPE- OTHER/NA CODE 000 | (58) | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 7 | Site and the second second | SUPERSTRUCTURE 8 |
| | | | SUBSTRUCTURE 8 |
| 10 10 | NUMBER OF APPROACH SPANS 0 | | CHANNEL & CHANNEL PROTECTION 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CULVERTS N |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (02) | CODVERTE |
| A) | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE - NONE CODE 0 | (31) | DESIGN LOAD- MS-18 OR HS-20 5 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | (63) | OPERATING RATING METHOD- LOAD FACTOR 1 |
| | ******** AGE AND SERVICE ********* | (64) | OPERATING RATING- 84.2 |
| (27) | YEAR BUILT 1959 | (65) | INVENTORY RATING METHOD- LOAD FACTOR 1 |
| (106) | YEAR RECONSTRUCTED 2014 | (66) | INVENTORY RATING- 50.5 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (20) | UNDER- WATERWAY 5 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | | DESCRIPTION- OPEN, NO RESTRICTION |
| 200000000000000000000000000000000000000 | AVERAGE DAILY TRAFFIC 31000 | | ****** APPRAISAL ******** CODE |
| | YEAR OF ADT 2007 (109) TRUCK ADT 1 % | | AMBRICANIDA I PURI IRAMI ON |
| (19) | BYPASS, DETOUR LENGTH 3 KM | | STRUCTURAL EVALUATION 8 DECK GEOMETRY |
| | ********* GEOMETRIC DATA ********** | , | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (48) | LENGTH OF MAXIMUM SPAN 14.0 M | | WATER ADEQUACY 9 |
| (49) | STRUCTURE LENGTH 91.4 M | ACCORDED | APPROACH ROADWAY ALIGNMENT 8 |
| (50) | CURB OR SIDEWALK: LEFT 1.6 M RIGHT 1.6 M | | TRAFFIC SAFETY FEATURES 1000 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 29.2 M | | SCOUR CRITICAL BRIDGES 7 |
| | DECK WIDTH OUT TO OUT 33.0 M | (113) | |
| *********** | APPROACH ROADWAY WIDTH (W/SHOULDERS) 29.2 M | | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 16 DEG (35) STRUCTURE FLARED NO | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 29.2 M | (95) | ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (114) | FUTURE ADT 51520 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | (115) | YEAR OF FUTURE ADT 2031 |
| | *********** NAVIGATION DATA ********* | | ************** INSPECTIONS *********** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (00) | |
| | PIER PROTECTION- CODE | | INSPECTION DATE 10/14 (91) FREQUENCY 24 MO CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (39) | NAVIGATION VERTICAL CLEARANCE 0.0 M | | The state of the s |
| (116) | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) |
| | | C) | OTHER DESCRIPTION TO C |

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: 55C0168

Bridge Name: Handy Creek **Year Built:** 1937

Facility Carried: Amapola Avenue

The Handy Creek Bridge at Amapola Avenue is a simply supported two span timber stringers and timber deck with a timber treated post bent and a treated timber post abutment. All timber is treated Douglas fir.

Caltrans BIR recommendations:

Replace the deteriorated timber planks.

Field Inspection Observations

- There is excessive AC on the bridge about 4"-6" thick. Recommend no additional AC overlay.
- Missing P-markers at the southeast end of bridge (photo).
- Debris builds up on pier. Recommend clearing debris from pier.
- There was limited access to the substructure due to 2-4ft of standing water.
- Unable to confirm if timber planks are deteriorating.

Maintenance Needs Assessment

BPMP Assessment

Repair timber planks

<u>General Maintenance – Non-BPMP</u>

 Recommend additional AC thickness not increased. If new pavement is needed, existing pavement should be removed.

Proposed BPMP Construction Costs

 Replace timber planks ≈\$25,000, will require existing AC to be removed and replaced (includes engineering, mobilization and contingency)

Construction Items Not Funded by BPMP

• Replace P-marker

APPENDIX A

Photos and BIR



Photo 1:



Missing P-marker

Photo 2: Bridge



Debris build up

Photo 3: Debris build up on timber columns



Photo 4:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Inspection Report

Bridge Number : 55C0168

Facility Carried: AMAPOLA AVENUE

Location : 0.2 MI E/O ORANGE PK BLV

ity

Inspection Date : 08/07/2015

Inspection Type

Routine FC Underwater Special Other

Х

STRUCTURE NAME: HANDY CREEK

CONSTRUCTION INFORMATION

Year Built : 1937 Year Widened: N/A Length (m) : 8.5 Skew (degrees): 0
No. of Joints: 0
No. of Hinges: 0

Structure Description: Simply supported two span timber stringers (19 each) and timber deck

with a timber treated timber post (6 each) bent and a treated timber post (6 each) abutments, all supported upon treated timber sills.

All timber treated Douglas Fir.

Span Configuration : (W) 2 @ 4.0 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=0.54 =>17.5 metric tons Calculation Method: ALLOWABLE STRESS Operating Rating: RF=0.77 =>24.9 metric tons Calculation Method: ALLOWABLE STRESS

Permit Rating : 00000

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.1 m br, 7.2 m, 0.1 m br (N)

Total Width: 7.3 m Net Width: 7.1 m No. of Lanes: 2 Speed: 25 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 5.0 Inches

Rail Code: 0000

| Rail Type I | Location . | Length (ft) | Rail Modifications |
|---------------|------------|-------------|--------------------|
| MBBR Ri | ight/Left | 56 | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal upstream, RC rectangular with a check dam downstream.

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

There was about 2' deep stagnate water in the creek. All elements were visually inspected.

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INSPECTION COMMENTARY

DECK AND ROADWAY

There was a (OM 3R) narrow sign road at the southwest corner and a (OM 1-3) road sign at the northeast corner.

There rail post were connected by 2 bolts one on each side.

SAFE LOAD CAPACITY

A load Rating Summary sheet was in BIRIS. The current load rating was based on calculations dated 5/25/2010.

| ELEME | NT INSPECTI | ON RATINGS AND NOTES | | | | | | | |
|------------------|----------------------------|--|-------|--------------|---------|---------|--------|-------------------|---|
| Elem No. | Defect Defect | ct Element Description | Env | Total Qty | Units | | | ondition St. 3 | |
| 31 | | Deck-Timber | 2 | 60 | sq.m | 60 | 0 | 0 | 0 |
| | 510 | Deck Wearing Surface-Asphalt | 2 | 60 | sq.m | 50 | 0 | 10 | 0 |
| | 3220 | Cracking-AC (WS) | 2 | 10 | | 0 | 0 | 10 | 0 |
| (31) There | were no sign | uificant defects noted. | | | | | | | |
| | .0-3220) was 2 tranve | erse and 1 longitudinal cracks in the | AC ov | relay 0 | .5" wid | le. | | | |
| 111 | | Girder/Beam-Timber | 2 | 162 | m | 162 | 0 | 0 | 0 |
| (111) There | were no sign | ificant defects noted. | | | | | | | |
| 206 | | Column-Timber | 3 | 18 | each | 0 | 18 | 0 | 0 |
| | 1180 | Abrasion (Timber) | 3 | 18 | | 0 | 18 | 0 | 0 |
| (206-1 There | 3050K (945 102 5 0) | e in the columns section due to the w | eathe | er. | | | | | - |
| 216 | | Abutment-Timber | 3 | 16 | m | 0 | 15 | 1 | 0 |
| | 1180 | Abrasion (Timber) | 3 | 16 | | 0 | 15 | 1 | 0 |
| | was shrinkag | e in the columns section due to the w nt north side there was a tree growin | | | n the t | imber p | lanks. | | |
| 235 | | Pier Cap-Timber | 2 | 21 | m | 0 | 21 | 0 | 0 |
| | 1180 | Abrasion (Timber) | 2 | 21 | | 0 | 21 | 0 | 0 |
| (235-1: There | | e in the columns section due to the w | eathe | r. | | | | | |
| 330 | | Railing-Metal | 2 | 17 | m | 17 | 0 | 0 | 0 |
| (330) There v | were no sign: | ificant defects noted. | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 05/18/2012 Action : Sub-Patch spalls Work By: LOCAL AGENCY Status : PROPOSED

EstCost: DistTarget:

Replace the deteriorated timber plank at StrTarget: 2 YEARS 200 mm from the bottom and remove the tree at the north side of the abutment

EA:

between timber planks.

Printed on: Wednesday 09/23/2015 08:16 AM

Mikhael T. Zaarour Team Leader :

Mikhael T. Zaarour Report Author :

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************* |
|---|---|-------|---|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 58.1 |
| (8) | STRUCTURE NUMBER 55C0168 | | STATUS |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 91.9 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- HANDY CREEK | (112) | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- AMAPOLA AVENUE | | HIGHWAY SYSTEM- NOT ON NHS |
| (9) | LOCATION- 0.2 MI E/O ORANGE PK BLVD | (26) | FUNCTIONAL CLASS- COLLECTOR URBAN 17 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| | LATITUDE 33 DEG 48 MIN 08.93 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 46 MIN 46.19 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | STRUCTURE TYPE MAIN: MATERIAL WOOD OR TIMBER | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | TYPE- STRINGER/MULTI-BEAM OR GDR CODE 702 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********* CONDITION ********* CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 2 | | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 6 |
| | DECK STRUCTURE TYPE- TIMBER CODE 8 | (61) | CHANNEL & CHANNEL PROTECTION 8 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | 15 | +++++++ TOAD DAWLING AND DOCUMENTS |
| | TYPE OF MEMBRANE- NONE CODE 0 | (22) | ******* LOAD RATING AND POSTING ****** CODE |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- UNKNOWN 0 |
| | ****** AGE AND SERVICE ********* | | OPERATING RATING METHOD- ALLOWABLE STRESS 2 |
| (27) | YEAR BUILT 1937 | | OPERATING RATING- 24.9 |
| | YEAR RECONSTRUCTED 0000 | | INVENTORY RATING METHOD- ALLOWABLE STRESS 2 INVENTORY RATING- 17 5 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | | |
| | UNDER- WATERWAY 5 | (41) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 STRUCTURE OPEN, POSTED OR CLOSED- |
| | LANES: ON STRUCTURE 02 UNDER STRUCTURE 00 | (11) | DESCRIPTION- OPEN, NO RESTRICTION |
| 4.000000000 | AVERAGE DAILY TRAFFIC 1000 | | |
| | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | | ******* APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 2 KM | | STRUCTURAL EVALUATION 4 |
| | ********** GEOMETRIC DATA ********** | | DECK GEOMETRY 4 |
| (48) | LENGTH OF MAXIMUM SPAN 4.0 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| / | STRUCTURE LENGTH 8.5 M | | WATER ADEQUACY 5 |
| (50) | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | | APPROACH ROADWAY ALIGNMENT 6 TRAFFIC SAFETY FEATURES 0.000 |
| 115710000000000000000000000000000000000 | BRIDGE ROADWAY WIDTH CURB TO CURB 7.1 M | | SCOID CDITTCAL DDIDGEG |
| 95.099999 | DECK WIDTH OUT TO OUT 7.3 M | (113) | |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 6.7 M | | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN 0 MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| (34) | | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 6.7 M MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (96) | TOTAL PROJECT COST |
| The second second | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 2061 |
| | ************** NAVIGATION DATA ********** | (115) | YEAR OF FUTURE ADT 2035 |
| | | | ************************************** |
| 200000000000000000000000000000000000000 | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | INSPECTION DATE 08/15 (91) FREQUENCY 24 MO |
| | PIER PROTECTION- CODE NAVIGATION VERTICAL CLEARANCE 0 0 M | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | A) | FRACTURE CRIT DETAIL- NO MO A) |
| | VAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| 10.7070A | 0.0 H | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0173

Bridge Name: Santiago Creek **Year Built:** 1947

Facility Carried: Modjeska Canyon Rd

The Santiago Creek Bridge at Modjeska Canyon Road is a simply supported single span steel girder with reinforced concrete open end seat abutments supported on timber piles.

Caltrans BIR recommendations:

Repair spalls and seal deck with methacrylate.

Field Inspection Observations

- Chained deck to check for delamination. Minor delamination found, recommend repairing.
- Light rust (mill scale) on girders. Recommend monitoring. No work necessary at this time.
- Drainage from the southeast house by the bridge is causing erosion issues. Recommend relocating drain.
- Concrete spall at abutment

Maintenance Needs Assessment

BPMP Assessment

- Perform deck treatment per Caltrans BIR recommendation. Cracks are condition state 2, therefore eligible for funding.
- Relocate residential drain or provide minor rock protection.

General Maintenance - Non-BPMP

• Monitor rust on girders. Not a critical issue in foreseeable future.

Proposed BPMP Construction Costs

- Repair spalled concrete
- Estimated Total deck treatment Construction Cost ≈ \$30,000 (with engineering, traffic control, mobilization and contingency)

Construction Costs Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1: Santiago Creek Bridge



Photo 2:



Photo 3:



Photo 4: Abutment View



Photo 5: Bridge Girder



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0173

Facility Carried: MODJESKA CANYON RD

Location : .4 MI. E/O MODJESKA G RD

City :

Inspection Date: 09/18/2015

0

Ω

Inspection Type

Routine FC Underwater Special Other

Х

Bridge Inspection Report

STRUCTURE NAME: SANTIAGO CREEK

CONSTRUCTION INFORMATION

Year Built : 1947 Skew (degrees):
Year Widened: N/A No. of Joints :
Length (m) : 17.1 No. of Hinges :

Structure Description: Simply supported single span steel girders (4 each) with RC open end

seat abutments, all supported upon timber piles.

Span Configuration : (W) 1 @ 16.8 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15

Inventory Rating: RF=0.61 =>19.8 metric tons Calculation Method: LOAD FACTOR Operating Rating: RF=1.02 =>33.0 metric tons Calculation Method: LOAD FACTOR

Permit Rating : 00000

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.1 m br, 0.9 m cu, 7.3 m, 0.5 m cu, 0.1 m br (N)

Total Width: 8.8 m Net Width: 7.3 m No. of Lanes: 2 Speed: 25 mph Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 Inches

Rail Code: 0000 Rail Description: Timber

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

There was 3" deep and 2 ft wide running water in the channel; all elements were visually inspection by walking on the deck and under the bridge.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet dated 10/30/2012 is on file for this structure. While this report does not include a check of that analysis, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis. The current rating is based on LF calculation.

Printed on: Wednesday 10/21/2015 07:17 AM 55C0173/AAAI/33157

| ELEME | NT INSPECTI | ON RATINGS AND NOTES | | | | | | | |
|------------------|----------------------|---|-------|--------------|---------|--------|---------|-------------------|---------|
| Elem No. | Defect Defe /Prot | ct Element Description | Env | Total Qty | Units | - | each Co | ondition St. 3 | |
| 12 | | Deck-RC | 2 | 150 | sq.m | 30 | 120 | 0 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 1 | | 0 | 1 | 0 | 0 |
| | 1130 | Cracking (RC and Other) | 2 | 59 | | 0 | 59 | 0 | 0 |
| | 1190 | Abrasion (PS Conc./RC) | 2 | 60 | | 0 | 60 | 0 | 0 |
| | are 2 small | 6" X 4" X 1/2" spalls in the deck at | west | end. | | | | | |
| (12-11 The co | / | exhibits few transverse cracks through | nout | deck, | 1 mm wi | de and | 3 ft sp | pacing ap | part. |
| | | and wearing of 75 % of the deck, the | e agg | regate | were e | xposed | but rem | nains sed | cure in |
| 107 | | Girder/Beam-Steel | 2 | 68 | m | 68 | 0 | 0 | 0 |
| | 515 | Steel Coating-Paint | 2 | 175 | sq.m | 0 | 90 | 85 | 0 |
| | 3410 | Chalking (Steel PC) | 2 | 175 | | 0 | 90 | 85 | 0 |
| | were no sign | ificant defects noted. | | | | | | | |
| | | lking and lost pigments at the edges. | | | | | | | |
| 215 | | Abutment-RC | 2 | 18 | m | 18 | 0 | 0 | 0 |
| (215) There | were no sign | ificant defects noted. | | | | | | | |
| 228 | | Pile-Timber | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| | | s included to indicate the presence of inspection. No indication of pile di | | | | | | | |
| 332 | | Railing-Timber | 2 | 36 | m | 36 | 0 | 0 | 0 |
| (332) There | were no sign | ificant defects noted. | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 05/12/2011 EstCost: Repair the spalls and provide deck
Action: Deck-Methacrylate StrTarget: 2 YEARS sealing with methacrylate or equivalent
Work By: LOCAL AGENCY DistTarget: material

Status : PROPOSED

EA:

CHANNEL X-SECTION Side : Upstream X-Section Date: 09/18/2015 Measured From : to bottom of beam

| Location | Horiz(m) | Vert(m) | Comments |
|----------|----------|---------|--------------------|
| Abut 1 | 0.00 | 2.30 | face of abut wall |
| | 6.70 | 3.00 | thalweg |
| Abut 2 | 0.00 | 1.45 | face of abut wall. |

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/DH.Kim

Mikes 10/21/15

Mikhael T. Zaarour (Registered Civil Engineer) (Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | *********** |
|------|--|-------|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 44.4 |
| | STRUCTURE NUMBER 55C0173 | | STATUS |
| | INVENTORY ROUTE(ON/UNDER) - ON 140000000 | | HEALTH INDEX 87.1 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = 50.5 |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE |
| | FEATURE INTERSECTED- SANTIAGO CREEK | | NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- MODJESKA CANYON RD | (104) | HIGHWAY SYSTEM- NOT ON NHS 0 |
| | LOCATION4 MI. E/O MODJESKA G RD | (26) | FUNCTIONAL CLASS- LOCAL RURAL 09 |
| | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 42 MIN 28.85 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 37 MIN 43.93 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| | BORDER BRIDGE STATE CODE | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (20) | TOLL- ON FREE ROAD 3 |
| | | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ******* STRUCTURE TYPE AND MATERIAL ******* | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- STEEL TYPE- STRINGER/MULTI-BEAM OR GDR CODE 302 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ******** CODITION ********* CODE |
| (44) | TYPE- OTHER/NA CODE 000 | (58) | DECK |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | (59) | SUPERSTRUCTURE 8 |
| | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE 8 |
| | | (61) | CHANNEL & CHANNEL PROTECTION 8 |
| | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| | · | | |
| | TYPE OF WEARING SURFACE- NONE CODE 0 TYPE OF MEMBRANE- NONE CODE 0 | | ******* LOAD RATING AND POSTING ****** CODE |
| - , | TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- M-13.5 OR H-15 2 |
| | ******* AGE AND SERVICE ******** | | OPERATING RATING METHOD- LOAD FACTOR 1 |
| (27) | YEAR BUILT 1947 | | OPERATING RATING- 33.0 |
| | YEAR RECONSTRUCTED 0000 | | INVENTORY RATING METHOD- LOAD FACTOR 1 |
| | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | | INVENTORY RATING- 19.8 BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| | UNDER- WATERWAY 5 | | CONTROL OF THE PROPERTY OF CLOSES |
| (28) | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) | DESCRIPTION - OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 1000 | | |
| (30) | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | | ******** APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 199 KM | (67) | STRUCTURAL EVALUATION 5 |
| | ************ GEOMETRIC DATA *********** | | DECK GEOMETRY 4 |
| (48) | LENGTH OF MAXIMUM SPAN 16.8 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) | STRUCTURE LENGTH 17.1 M | | WATER ADEQUACY 9 |
| (50) | CURB OR SIDEWALK: LEFT 0.9 M RIGHT 0.5 M | | APPROACH ROADWAY ALIGNMENT 6 TRAFFIC SAFETY FEATURES 0000 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 7.3 M | | COOLD ODIMICAL DRIDGES |
| (52) | DECK WIDTH OUT TO OUT 8.8 M | (113) | |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 7.3 M | | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN O MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| | SKEW 0 DEG (35) STRUCTURE FLARED NO | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 7.3 M MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (96) | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 1052 |
| | ************* NAVIGATION DATA *********** | (115) | YEAR OF FUTURE ADT 2035 |
| | | | ************** INSPECTIONS *********** |
| | NAVIGATION CONTROL- NO CONTROL CODE 0 PIER PROTECTION- CODE | (90) | INSPECTION DATE 09/15 (91) FREQUENCY 24 MO |
| | NAME OF THE PROPERTY OF THE PR | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| ,, | 0.0 M | C) | OTHER SPECIAL INSP- NO MO C) |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0176

Bridge Name: Silverado Canyon Creek **Year Built:** 1970

Facility Carried: Kitterman Drive

The Silverado Canyon Creek Bridge at Kettleman Drive is a simply supported single span treated timber stringer supported by masonry rock abutments. The bridge spans over a trapezoidal channel with a cobble bottom and fully grouted rock slopes.

Caltrans BIR recommendations:

• None

Field Inspection Observations

- Deck appears to have 4 inches of AC at mid-span. The AC deck has transverse cracks at about one-third spans (photo 1). Timber railing is substandard but appears to be in good shape.
 Recommend no additional AC lifts be placed on the bridge.
- Caltrans Inspection commentary noted there is a longitudinal split on the west exterior girder.
 This appears to be superficial (photo 2). No immediate action is required but the timber stringers condition on the exterior girder should continue to be monitored.
- The retaining wall at the downstream of the bridge has been undermined. The fully grouted rock slope protection is being undermined and it appears to be failing. Because failure of the wall at this location will not adversely impact the bridge, it is not eligible for BPMP funding.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

 Monitor rock slope protection. Consider removing existing and replacing with partially grouted RSP.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

• Repair erosion control at downstream retaining wall. Estimated Total Construction Cost (with engineering, mobilization and contingency) ≈ \$30,000

APPENDIX A

Photos and BIR



Photo 1: AC Deck



Photo 2: Exterior Stringer with longitudinal split



Photo 3:



Photo 4:



Photo 5:



Photo 6:



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: 12/14/2013

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

Х

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

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

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.

2

Span Configuration : (S) 1 @ 8.8 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: 19.9 metric tons Calculation Method: ALLOWABLE STRESS Operating Rating: 29.0 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) 0.2 m br, 3.8 m, 0.2 m br (E)

Total Width: 4.3 m Net Width: 3.8 m

idth: 4.3 m Net Width: 3.8 m No. of Lanes: 1 Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 0000 Rail Description: Timber

DESCRIPTION UNDER STRUCTURE

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

INSPECTION COMMENTARY

SCOPE AND ACCESS

The channel was dry, so all substructure elements were visually inspected. Pedestrian access is from any quadrant.

REVISIONS

ELI #111 (Timber girders): a quantity of 9 m was moved from state 2 to state 3. Element #215(RC Abutment): 4 m was moved from state 1 to state 2. Scour flag #361 was removed from ELI list.

MISCELLANEOUS

Photo underside of this structure was taken and is included with this report.

DECK AND ROADWAY

AC exhibits transverse cracks full width and 1" wide.

Printed on: Monday 02/10/2014 03:06 PM

55C0176/AAAI/27771

INSPECTION COMMENTARY

SUPERSTRUCTURE

There is a longitudinal horizontal split up to 3 mm wide in the westerly face of the west exterior girder.

SUBSTRUCTURE

No significant defects were found during this inspection.

| Elem | (*) | Total | , | Qt | y in eac | ch Condi | tion Sta | te | |
|--------------------------------|-----|-------|-------|-------|----------|----------|----------|-----|---|
| No. Element Description | Env | Qty | Units | St. 1 | St. 2 | St. 3 | St. 4 | St. | 5 |
| 32 Timber Deck - w/ AC Overlay | 2 | 40 | sq.m. | 40 | 0 | 0 | 0 | | |
| 111 Timber Open Girder/Beam | 2 | /70 | m. | 61 | 0 | . 9 | 0 | | |
| 215 Reinforced Conc Abutment | 2 | 9 | m. | 5 | 4 | 0 | 0 | | C |
| 256 Slope Protection | 2 | 2 | ea. | 0 | 2 | 0 | Na . | | |
| 332 Timber Bridge Railing | 2 | 18 | m. | 18 | 0 | 0 | 0 | | C |

WORK RECOMMENDATIONS - NONE

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

Ashraf Shenouda (Registered Civil Engineer)

2110/14

(Date)

Ashraf
Shenouda

No. 64332

06/30/2015

CIVIL

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | ************ |
|--------|--|--|
| (1) | STATE NAME- CALIFORNIA 069 | SUFFICIENCY RATING = 52.6 |
| | STRUCTURE NUMBER 55C0176 | STATUS FUNCTIONALLY OBSOLETE |
| 12 | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | HEALTH INDEX 90.7 |
| | HIGHWAY AGENCY DISTRICT 12 | PAINT CONDITION INDEX = N/A |
| . (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | ******** CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- SILVERADO CANYON CREEK | (112) NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- KITTERMAN DRIVE | (104) HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 0.1 MI. S/O SLVRDO CYN RD | (26) FUNCTIONAL CLASS- MAJOR COLLECTOR RURAL 07 |
| 100000 | MILEPOINT/KILOMETERPOINT 0 | (100) DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) PARALLEL STRUCTURE- NONE EXISTS N |
| | LRS INVENTORY ROUTE & SUBROUTE | (102) DIRECTION OF TRAFFIC- 1 LANE, 2 WAY 3 |
| | | (103) TEMPORARY STRUCTURE- |
| ,, | LATITUDE 33 DEG 44 MIN 48.22 SEC | A PROPERTY OF THE CONTROL OF THE CON |
| | LONGITUDE 117 DEG 38 MIN 15.5 SEC | () |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD 3 (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| , | ****** STRUCTURE TYPE AND MATERIAL ****** | STOCKES STOCKE |
| | STRUCTURE TYPE MAIN:MATERIAL- WOOD OR TIMBER | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | TYPE- STRINGER/MULTI-BEAM OR GDR CODE 702 | (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ********* CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | (58) DECK 7 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | (59) SUPERSTRUCTURE 5 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) SUBSTRUCTURE 6 |
| (107) | DECK STRUCTURE TYPE- TIMBER CODE 8 | (61) CHANNEL & CHANNEL PROTECTION 8 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) CULVERTS N |
| | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | (31) DESIGN LOAD- MS-18 OR HS-20 5 |
| | ******* AGE AND SERVICE ******** | (63) OPERATING RATING METHOD- ALLOWABLE STRESS 2 |
| | | (64) OPERATING RATING- 29.0 |
| | YEAR BUILT 1970 | (65) INVENTORY RATING METHOD- ALLOWABLE STRESS 2 |
| | YEAR RECONSTRUCTED 1983 | (66) INVENTORY RATING- |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 UNDER- WATERWAY 5 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 01 UNDER STRUCTURE 00 | (41) STRUCTURE OPEN, POSTED OR CLOSED- A |
| | AVERAGE DAILY TRAFFIC 200 | DESCRIPTION- OPEN, NO RESTRICTION |
| | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | ******** APPRAISAL ********* CODE |
| | BYPASS, DETOUR LENGTH 2 KM | /CO \ CONDITIONI THAT HAD ON |
| | | (CO) PEGY GROVERDY |
| | ******* GEOMETRIC DATA ********** | 2 |
| (48) | LENGTH OF MAXIMUM SPAN 9.1 M | (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 9.1 M | (71) WATER ADEQUACY 9 (72) APPROACH ROADWAY ALIGNMENT 6 |
| (50) | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 3.8 M | (110) 00000 00000 000000 |
| (52) | DECK WIDTH OUT TO OUT 4.3 M | (113) SCOUR CRITICAL BRIDGES 8 |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 3.8 M | ******* PROPOSED IMPROVEMENTS ******* |
| (33) | BRIDGE MEDIAN- NO MEDIAN 0 | (75) TYPE OF WORK- SUP/SUB REHAB CODE 35 |
| (34) | SKEW 0 DEG (35) STRUCTURE FLARED NO | (76) LENGTH OF STRUCTURE IMPROVEMENT 9.1 M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) BRIDGE IMPROVEMENT COST \$38,000 |
| (47) | INVENTORY ROUTE TOTAL HORIZ CLEAR 3.8 M | (95) ROADWAY IMPROVEMENT COST \$7,600 |
| (53) | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) TOTAL PROJECT COST \$63,840 |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) YEAR OF IMPROVEMENT COST ESTIMATE 2013 |
| (55) | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | A Control of the Cont |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT 206 (115) YEAR OF FUTURE ADT 2029 |
| , | ************ NAVIGATION DATA ********* | |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | ************************************** |
| | PIER PROTECTION- CODE | (90) INSPECTION DATE 12/13 (91) FREQUENCY 24 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | A) FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | B) UNDERWATER INSP- NO MO B) |
| , / | U.U II | C) OTHER SPECIAL INSP- NO MO C) |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0178

Bridge Name: Silverado Canyon Creek **Year Built:** 1947

Facility Carried: Silverado Canyon Road

Simply supported single span steel girders (4 each) with Reinforced Concrete open-end seat abutments, all supported upon spread footings.

Caltrans BIR recommendations:

• Seal deck cracks with methacrylate

Field Inspection Observations

- Steel girder paint appears to be in good condition.
- Minor to moderate deck cracking was observed during the field inspection.
- Bearing pads are encased in concrete. There appears to be asbestos in front of bearing pad.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

Although Caltrans BIR recommends deck treatment, the deck cracks are coded condition state 1.
 Therefore, the work is not eligible for BPMP funding. Recommend monitoring future BIRs and taking no action unless condition upgraded to state 2. No immediate actions required since not a high priority.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1: Silverado Canyon Creek Bridge



Photo 2: Silverado Canyon Creek Bridge



Photo 3:



Photo 4:



Photo 5:



Photo 6:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0178

Facility Carried: SILVERADO CANYN RD

Location

: 4.9 MI. E/O SANTIAGO ROA

City

Inspection Date: 12/14/2013

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

Х

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

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

No. of Hinges: 0

Structure Description: Simply supported single span steel girders (4 each) with RC open end

seat abutments, all supported upon spread footings.

Span Configuration : (W) 1 @ 12.5 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15 Inventory Rating: 25.4 metric tons Operating Rating: 40.8 metric tons

Calculation Method: NO RATING ANALYSIS Calculation Method: NO RATING ANALYSIS

Permit Rating : PGGGG

Posting Load : Type 3: Legal

Type 3S2:Legal

No. of Lanes: 2

Type 3-3:Legal

Speed:

25 mph

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.5 m br, 7.2 m, 0.5 m br (N)

Total Width: 8.2 m Net Width: 7.3 m

Min. Vertical Clearance: Unimpaired

Rail Code: 1000 Rail Description: MBBR

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The water in the channel is 8" deep, so all substructure elements were visually inspected.

REVISIONS

Smart flag 358 (Deck cracking) was added (State 2).

Smart flag 359 (Soffit) was added (State 2).

MISCELLANEOUS

Photo underside of this structure was taken and is included with this report.

A new stream section was performed at this time and is included in this report.

DECK AND ROADWAY

The concrete deck surface exhibits 60% light scaling due to weather and aging, and unsealed transverse cracks 0.5 mm wide, 12" spaced apart and 4 ft long.

Printed on: Monday 02/10/2014 03:07 PM

55C0178/AAAI/27771

INSPECTION COMMENTARY

The soffit exhibits two transverse cracks 4 ft long in the soffit with white light efflorescence in every bay.

SUPERSTRUCTURE

The steel girders are in good condition, no significant defects were visually seen during this inspection.

SUBSTRUCTURE

West abutment exhibits a vertical crack 1.0 mm wide under girder #3.

| ELEMENT INSPECTION RATINGS | | | | | | | | | |
|-------------------------------------|-----|-------|-------|-------|------|-----|----------|----------|-----|
| Elem | | Total | | Qt | y in | eac | ch Condi | tion Sta | ate |
| No. Element Description | Env | Qty | Units | St. 1 | St. | 2 | St. 3 | St. 4 | St. |
| 12 Concrete Deck - Bare | 2 | 90 | sq.m. | 90 | 9 | 0 | 0 | 0 | |
| 107 Painted Steel Open Girder/Beam | 2 | 52 | m., | 52 | | 0 | 0 | 0 | |
| 215 Reinforced Conc Abutment | 2 | 24 | m. | 24 | | 0 | 0 | 0 | |
| 337 Metal Railing (W6X25 Posts) | 2 | 26 | m. | 26 | | 0 | 0 | 0 | |
| 358 Deck Cracking | 2 | 1 | ea. | 0 | | 1 | 0 | 0 | |
| 359 Soffit of Concrete Deck or Slab | 2 | 1 | ea. | 0 | | 1 | 0 | 0 | ** |

2 YEARS

WORK RECOMMENDATIONS

RecDate: 07/12/2011

EstCost:

Seal the deck cracks with methacrylate.

Action : Deck-Methacrylate

StrTarget:

DistTarget:

Work By: LOCAL AGENCY

Status : PROPOSED EA:

| CHANNEL | X-SECTION | | | | 2 2 |
|----------|---------------|-------|--------------|----------|----------------------------|
| Side : | Upstream | | | | X-Section Date: 12/14/2013 |
| Measured | From : Top of | rail. | (North) H=1. | 04m | |
| Location | | | Horiz(m) | Vert (m) | Comments |
| Abutment | 1 | | 0.00 | 3.30 | Face of the west abutment |
| | | | 1.80 | 3.45 | toe of rock |
| | | | 2.00 | 2.95 | top of rock |
| | | | 4.15 | 2.80 | top of slope |
| | x | | 6.55 | 3.57 | west edge of water |
| | | | 7.45 | 3.75 | Thalweg |
| | | | 8.45 | 3.55 | east edge of water |
| | | | 10.20 | 3.40 | |
| Abutment | 2 | | 12.00 | 3.30 | Face of the east abutment. |

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

Ashraf Shenouda (Registered Civil Engineer)

(Date)

ROFESSIONAL
Ashraf
Shenouda
No. 64332
06/30/2015
CIVIL
OF CALIFORNIA

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | | ************ |
|----------|---|----|--|--|
| (1) | STATE NAME- CALIFORNIA 069 | | | SUFFICIENCY RATING = 54.0 |
| | STRUCTURE NUMBER 55C0178 | | | STATUS |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | | HEALTH INDEX 100.0 |
| | HIGHWAY AGENCY DISTRICT 12 | | | PAINT CONDITION INDEX = 100.0 |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | | | ******* CLASSIFICATION ******** CODE |
| | | | (112) | A CONTRACTOR SECTION AND A CONTRACTOR SECTION ASSESSMENT AND A CONTRACTOR SECTION ASSESSMENT ASSESS |
| 18.10.00 | FEATURE INTERSECTED- SILVERADO CANYON CREEK | | | HIGHERY GYORDY WAS ALL THE |
| | FACILITY CARRIED- SILVERADO CANYN RD | | | EXTENSION OF THE PROPERTY OF T |
| | LOCATION- 4.9 MI. E/O SANTIAGO ROAD | | | |
| | MILEPOINT/KILOMETERPOINT 0 | | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | | | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 44 MIN 45.99 SEC | | | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 36 MIN 20.71 SEC | | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | | TOLL- ON FREE ROAD 3 |
| | | | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ******* | | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- STEEL | | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| 4 | TYPE- STRINGER/MULTI-BEAM OR GDR CODE 302 | | | ****** CODE |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | | |
| | TYPE- OTHER/NA CODE 000 | | | DECK 5 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | | | SUPERSTRUCTURE 7 |
| (46) | NUMBER OF APPROACH SPANS 0 | | | SUBSTRUCTURE 7 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | | CHANNEL & CHANNEL PROTECTION 8 |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | | (62) | CULVERTS |
| A) | TYPE OF WEARING SURFACE- NONE CODE 0 | 1 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | | (21) | DESIGN LOAD- M-13.5 OR H-15 2 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | | - Daniel - D | |
| | ****** AGE AND SERVICE ********* | | | OPERATING RATING METHOD- NO RATING ANALYSIS 5 OPERATING RATING- 40.8 |
| | YEAR BUILT 1947 | | | |
| | YEAR RECONSTRUCTED 0000 | | | INVENTORY RATING METHOD- NO RATING ANALYSIS 5 |
| | TYPE OF SERVICE: ON- HIGHWAY 1 | | | INVENTORY RATING- 25.4 |
| (42) | UNDER- WATERWAY 5 | | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | | (41) | STRUCTURE OPEN, POSTED OR CLOSED- |
| | AVERAGE DAILY TRAFFIC 2000 | | | DESCRIPTION- OPEN, NO RESTRICTION |
| | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | | | ********** APPRAISAL ********* CODE |
| | BYPASS, DETOUR LENGTH 199 KM | | | OMDITIONIDAL DIVALUAMITON |
| (1) | | | | DEGK GEOMBERN |
| 1000 | ******* GEOMETRIC DATA ********** | | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | LENGTH OF MAXIMUM SPAN 12.5 M | | | WATER ADEQUACY 9 |
| | STRUCTURE LENGTH 12.8 M | | | APPROACH ROADWAY ALIGNMENT 6 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | | | TRAFFIC SAFETY FEATURES 1000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 7.3 M | | | |
| (52) | DECK WIDTH OUT TO OUT 8.2 M | | (113) | SCOUR CRITICAL BRIDGES 8 |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 6.4 M | | | ******* PROPOSED IMPROVEMENTS ******* |
| (33) | BRIDGE MEDIAN- NO MEDIAN 0 | | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 45 DEG (35) STRUCTURE FLARED NO | | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | | | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 7.3 M | | 200-1102 | ROADWAY IMPROVEMENT COST |
| (53) | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | | TOTAL PROJECT COST |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | | |
| (55) | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | | YEAR OF IMPROVEMENT COST ESTIMATE FUTURE ADT 4121 |
| (56) | MIN LAT UNDERCLEAR LT . 0.0 M | | | |
| | ************* NAVIGATION DATA ********** | | | YEAR OF FUTURE ADT 2029 |
| | | | | ************** INSPECTIONS *********** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | | INSPECTION DATE 12/13 (91) FREQUENCY 24 MO |
| | PIER PROTECTION- CODE | 80 | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | A) | FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | B) | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | C) | OTHER SPECIAL INSP- NO MO C) |
| | | | | v v |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0179

Bridge Name: Silverado Canyon Creek Year Built: 1947

Facility Carried: Silverado Canyon Road

The Silverado Canyon Creek Bridge at Silverado Canyon Road is a simply supported single span steel girder bridge with reinforced concrete open-end seat abutments supported on spread footings.

Caltrans BIR recommendations:

- Remove and replace broken wingwall on the north east corner.
- Replace missing metal most and two damaged metal posts on southern bridge railing.

Field Inspection Observations

- Minor delamination at the north end of bridge (photo 1).
- Efflorescence visible on soffit this is indicative of water seepage through deck cracks (photo 2). Recommend sealing deck.
- Minor delamination on top of the southeast wingwall (photo 4).
- Paint on steel girder flanges is chipping (photo 3).
- Northeast wingwall is broken (photo 6).
- Barrier on the south end have damaged metal post (photo 5).

Maintenance Needs Assessment

BPMP Assessment

- Because bridge railing does not meet current standards it is not eligible for funding. Caltrans can be contacted to determine if barrier upgrade can be performed, though typically also not eligible.
- Though not specifically covered in BPMP, petition Caltrans to fund broken wingwall repair.
- Spot paint steel girders.

<u>General Maintenance - Non-BPMP</u>

- Deck cracking condition is coded condition state 1, so deck treatment not eligible for BPMP funding.
- Repair damaged barrier posts.
- Remove and patch delaminated concrete at bridge north end. Considered low priority, and patch spalled concrete at the southeast wingwall.

Proposed BPMP Construction Costs

- Remove delaminated concrete and patch ≈ \$15,000.
- Repair broken wingwall ≈ \$25,000.
- Spot Paint girders ≈ \$25,000. Possibly much higher if existing paint contains lead.

Construction Costs Not Funded by BPMP

• Repair Damaged Railing ≈ \$15,000.

APPENDIX A

Photos and BIR



Photo 1: Silverado Canyon Creek Bridge



Photo 2: Concrete Delamination on bridge deck



Efflorescence

Photo 3: Efflorescence on Bridge Soffit



Photo 4: Paint chipping on grinder flange



Spalled Concrete

Photo 5: Concrete spalling on wingwall



Photo 6: Broken Wingwall

Damaged Wingwall

Damaged Post



Photo 7: Damaged Metal Post



Photo 8: Broken Post



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0179

Facility Carried: SILVERADO CANYN RD

Location : 5.4 MI E/O SANTIAGO CYN

City

Inspection Date : 12/14/2013

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other Х

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1947 Year Widened: N/A

Skew (degrees): 45

No. of Joints :

Length (m) : 12.2

No. of Hinges :

Structure Description: Simply supported single span steel girders (4 each) with RC open end

seat abutments, all supported upon spread footings.

Span Configuration : (W) 1 @ 11.9 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15

Inventory Rating: 20.8 metric tons Operating Rating: 33.5 metric tons

Calculation Method: NO RATING ANALYSIS Calculation Method: NO RATING ANALYSIS

Permit Rating : G0000

Posting Load : Type 3: Legal Type 3S2:Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.5 m br, 7.2 m, 0.5 m br (N)

Total Width:

8.2 m

Net Width: 7.3 m No. of Lanes: ,2

Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| MBBR | Right/Left | 78 | 2 × |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The water in the channel is 8" deep, so all substructure elements were visually inspected.

REVISIONS

ELI #215 (RC Concrete Abutment): a quantity of 2 m was moved to state 2.

Element 337 (W6X25 steel posts): The quantities were modified as follows: from [St. 1 = 18, St. 2 = 6] to [St. 1 = 12, St. 2 = 6, St. 3 = 6].

Smart flag 358 (Deck cracking) was added (State 2).

mart flag 359 (Soffit) was added (State 2).

MISCELLANEOUS

Printed on: Monday 02/10/2014 01:19 PM 55C0179/AAAI/27771

INSPECTION COMMENTARY

Photo underside of this structure was taken and is included with this report.

A new stream section was performed at this time and is included in this report.

DECK AND ROADWAY

There is missing a metal post and two damaged metal posts in the southerly bridge railing.

The concrete deck exhibits:

- * 90% light scaling due to weather and aging.
- * two areas of unsound concrete -/+ 1 ft X 1 ft at the north shoulder at 10 ft and 20 ft from the east end.
- * few transverse cracks up to 1.5 mm wide and up to 10 ft long in both lanes.

There were transverse cracks with white efflorescence, 2 cracks in every bay of the soffit.

SUPERSTRUCTURE

Freckled rust is forming on the steel girders without corrosion. In steel girder #4 (south), the bottom flange is damaged and bent at three different locations at mid-span, the total length of this deterioration is 18" total.

SUBSTRUCTURE

The wing wall adjacent to the north end of the east abutment has broken off at the base and tilted, this condition is old condition and does not appear to have any effect on the structure.

The west abutment exhibits:

- * a vertical crack 0.5 mm wide under girder #3.
- \star few spots of abrasion at 1 ft from the ground, mostly at the southern half of the abutment.

| ELEMENT INSPECTION RATINGS | | | | | | | | |
|-------------------------------------|-----|-------|-------|-------|----------|----------|----------|-------|
| Elem | | Total | | Qt | y in eac | ch Condi | tion Sta | te . |
| No. Element Description | Env | Qty | Units | St. 1 | St. 2 | St. 3 | St. 4 | St. 5 |
| 12 Concrete Deck - Bare | 2 | 60 | sq.m. | 60 | 0 | 0 | 0 | C |
| 107 Painted Steel Open Girder/Beam | 2 | 48 | m. | 0 | 0 | 48 | 0 | C |
| 215 Reinforced Conc Abutment | . 2 | 24 | m. | 22 | 2 | 0 | 0 | |
| 337 Metal Railing (W6X25 Posts) | . 2 | 24 | m. | 12 | 6 | 6 | 0 | |
| 358 Deck Cracking | 2 | 1 | ea. | . 0 | 1 | 0 | 0 | 0 |
| 359 Soffit of Concrete Deck or Slab | 2 | 1 | ea. | 0 | 1 | 0 | . 0 | 0 |

WORK RECOMMENDATIONS

RecDate: 05/18/2009 Action: Sub-Misc.

EstCost:

Remove the broken wing wall at the north

Work By: LOCAL AGENCY

StrTarget: 2 YEARS east corner and replace it within kind. DistTarget:

Status : PROPOSED

EA:

WORK RECOMMENDATIONS

RecDate: 02/09/2005

Action : Railing-Repair

EstCost:

StrTarget: 2 YEARS

DistTarget:

Replace the missing metal post and the two damaged metal posts in the southerly

Ashraf

Shenouda

No. 64332 06/30/2015 CIVIL

bridge railing.

Work By: LOCAL AGENCY Status : PROPOSED

EA:

| CHANNEL X-SECTION | | | | |
|---|---------------|---------|------------------------------------|--------|
| Side : Upstream Measured From :Top of rail | (south). H=0. | 88 m | X-Section Date: 12/1 | 4/2013 |
| Location | Horiz(m) | Vert(m) | Comments | |
| Abutment #1 | 0.00 | 4.15 | face W. abutment, thalweg, w. edge | water |
| | . 2.55 | 3.90 | mid-span | |
| | 4.25 | 3.80 | east edge of water | ž v |
| | 7.10 | 3.30 | toe of slope | |
| 10 | 9.10 | 2.80 | top of slope | |
| Abutment #2 | 11.65 | 2.75 | Face of the east abutment. | |

Team Leader :

Ashraf Shenouda

Report Author :

Ashraf Shenouda

Inspected By :

Printed on: Monday

A. Shenouda/KD. Henderson

(Registered Civil Engineer)

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ******************* IDENTIFICATION ************************************ | ************************************** |
|---|---|---|
| | STRUCTURE NUMBER 55C0179 | STATUS |
| | | HEALTH INDEX 80.1 |
| | INVENTORY ROUTE(ON/UNDER) - ON 140000000 HIGHWAY AGENCY DISTRICT 12 | PAINT CONDITION INDEX = 50.0 |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | ******* CLASSIFICATION ******** CODE |
| (6) F | FEATURE INTERSECTED- SILVERADO CANYON CREEK | (112) NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- SILVERADO CANYN RD | (104) UTCHWAY CYCEEN NOW ON THE |
| | LOCATION- 5.4 MI E/O SANTIAGO CYN | (26) FUNCTIONAL CLASS- COLLECTOR URBAN 17 |
| W. C. | | |
| | MILEPOINT/KILOMETERPOINT 0 | (100) DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) PARALLEL STRUCTURE- NONE EXISTS N |
| | RS INVENTORY ROUTE & SUBROUTE | (102) DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) L | ATITUDE 33 DEG 44 MIN 45.52 SEC | (103) TEMPORARY STRUCTURE- |
| (17) L | ONGITUDE 117 DEG 35 MIN 54.75 SEC | (105) FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) B | SORDER BRIDGE STATE CODE % SHARE % | (110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) B | ORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD |
| | | (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ***** STRUCTURE TYPE AND MATERIAL ******* | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) S | TRUCTURE TYPE MAIN: MATERIAL- STEEL | (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| | TYPE- STRINGER/MULTI-BEAM OR GDR CODE 302 | ******* CONDITION ********** CODE |
| (44) S | TRUCTURE TYPE APPR:MATERIAL- OTHER/NA | |
| | TYPE- OTHER/NA CODE 000 | (58) DECK 5 |
| (45) N | UMBER OF SPANS IN MAIN UNIT 1 | (59) SUPERSTRUCTURE 5 |
| (46) N | UMBER OF APPROACH SPANS 0 | (60) SUBSTRUCTURE |
| (107) D | ECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) CHANNEL & CHANNEL PROTECTION 8 |
| | EARING SURFACE / PROTECTIVE SYSTEM: | (62) CULVERTS N |
| | YPE OF WEARING SURFACE- NONE CODE 0 | ****** LOAD RATING AND POSTING ****** CODE |
| | YPE OF MEMBRANE- NONE CODE 0 | Nacional English designation of the Company of the |
| | YPE OF DECK PROTECTION- NONE CODE 0 | (31) DESIGN LOAD- M-13.5 OR H-15 |
| . ** | ******** AGE AND SERVICE ********* | (63) OPERATING RATING METHOD- NO RATING ANALYSIS 5 |
| | | (64) OPERATING RATING- |
| | EAR BUILT 1947 | (65) INVENTORY RATING METHOD- NO RATING ANALYSIS 5 |
| | EAR RECONSTRUCTED 0000 | (66) INVENTORY RATING- 20.8 |
| (42) Ti | YPE OF SERVICE: ON- HIGHWAY 1 UNDER- WATERWAY 5 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) LA | ANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) STRUCTURE OPEN, POSTED OR CLOSED- A |
| | /ERAGE DAILY TRAFFIC 2000 | DESCRIPTION- OPEN, NO RESTRICTION |
| | EAR OF ADT 2009 (109) TRUCK ADT 1 % | ******** APPRAISAL ********* CODE |
| | | · · · · · · · · · · · · · · · · · · · |
| | YPASS, DETOUR LENGTH 199 KM | (67) STRUCTURAL EVALUATION 5 |
| ** | ********** GEOMETRIC DATA ********** | (68) DECK GEOMETRY |
| (48) LE | ENGTH OF MAXIMUM SPAN 11.9 M | (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) ST | TRUCTURE LENGTH 12.2 M | (71) WATER ADEQUACY |
| (50) CU | JRB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | (72) APPROACH ROADWAY ALIGNMENT 8 |
| (51) BR | RIDGE ROADWAY WIDTH CURB TO CURB 7.3 M | (36) TRAFFIC SAFETY FEATURES 1000 |
| (52) DE | CCK WIDTH OUT TO OUT 8.2 M | (113) SCOUR CRITICAL BRIDGES 8 |
| (32) AP | PPROACH ROADWAY WIDTH (W/SHOULDERS) 6:4 M | ******* PROPOSED IMPROVEMENTS ******* |
| (33) BR | IDGE MEDIAN- NO MEDIAN 0 | (75) TYPE OF WORK- CODE |
| | EW 45 DEG (35) STRUCTURE FLARED NO | (76) LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) IN | VENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) BRIDGE IMPROVEMENT COST |
| | VENTORY ROUTE TOTAL HORIZ CLEAR 7.3 M | |
| | N VERT CLEAR OVER BRIDGE RDWY 99.99 M | (95) ROADWAY IMPROVEMENT COST |
| | N VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (96) TOTAL PROJECT COST |
| | N LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | . (97) YEAR OF IMPROVEMENT COST ESTIMATE |
| | N LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT 4121 |
| | | (115) YEAR OF FUTURE ADT 2029 |
| | ************ NAVIGATION DATA ********** | ************* INSPECTIONS ********** |
| | VIGATION CONTROL- NOT APPLICABLE CODE N | (90) INSPECTION DATE 12/13 (91) FREQUENCY 24 MO |
| | ER PROTECTION- CODE | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VIGATION VERTICAL CLEARANCE 0.0 M | A) FRACTURE CRIT DETAIL- NO MO A) |
| | RT-LIFT BRIDGE NAV MIN VERT CLEAR M | B) UNDERWATER INSP- NO MO B) |
| (40) NAV | VIGATION HORIZONTAL CLEARANCE 0.0 M | C) OTHER SPECIAL INSP- NO MO C) |
| | ¥ | |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0180

Bridge Name: Silverado Canyon Creek Year Built: 1971

Facility Carried: Silverado Canyon Road

The Silverado Canyon Road Bridge at Santiago Road is a single span cast-in-place reinforced concrete

rigid frame slab supported on spread footings.

Caltrans BIR recommendations:

None

Field Inspection Observations

- Minor spalling/delaminated on wingwall at the northeast side.
- Deck is covered by 4" of AC.
- Minor efflorescence on soffit.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

Repair wingwall spall. Not a high priority

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

 Repair spalled concrete estimated Total Construction Cost ≈ \$3,000 (with engineering, mobilization and contingency)

APPENDIX A

Photos and BIR



Photo 1: Silverado Canyon Creek Bridge



Photo 2: Bridge



Photo 3:

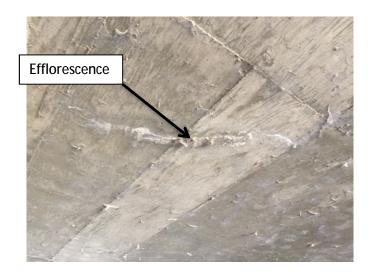


Photo 4: Bridge Soffit

albans

DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0180

Facility Carried: SILVERADO CNYN RD

: 2.7 MI E/O SANTIAGO ROAD Location

City.

Inspection Date : 12/14/2013

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

X

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1971

Skew (degrees):

Year Widened: N/A

. No. of Joints : 0

Length (m) : 16.2

No. of Hinges :

Structure Description: Single span CIP/RC rigid frame slab, all supported upon spread

footings.

Span Configuration :(W) 1 @ 7.3 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15

Inventory Rating: RF=0.75 =>24.3 metric tons

Calculation Method: FIELD EVAL/ENG JUDGMENT

Operating Rating: RF=1.25 =>40.5 metric tons

Calculation Method: FIELD EVAL/ENG JUDGMENT

Permit Rating : ppppp

Posting Load

: Type 3: Legal

Type 3S2:Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 1.2 m min deck, 0.3 m br, 2 @ 3.8 m, 0.3 m br, 1.5 m min deck (N)

Total Width:

11.0 m Net Width:

7.6 m No. of Lanes: 2

Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

Rail Type Location Length (ft) Rail Modifications MBBR Right/Left 111

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The water in the channel is 10" deep, so all substructure elements were visually inspected.

REVISIONS

Element type #330 was replaced by element type #337 with the same quantity.

MISCELLANEOUS

Photo underside of this structure was taken and is included with this report.

A new stream section was performed at this time and is included in this report.

DECK AND ROADWAY

Printed on: Monday 02/10/2014 01:19 PM

55C0180/AAAI/27771

INSPECTION COMMENTARY

Rail and deck have no significant defects during this inspection.

SUPERSTRUCTURE

There are 3 longitudinal and 2 diagonal cracks in the soffit near east abutment up to 8 ft long with light brown efflorescence.

There are 2 small spalls $8" \times 1" \times 1"$ in the soffit at the construction joint at the middle of the bridge.

SUBSTRUCTURE

East and west abutments, each has 3 vertical cracks 1.0 mm wide.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SMI procedures.

| ELEMENT INSPECTION RATINGS | | | | | | | | | | | |
|---|-----|-------|-------|------|------|-----|----------|--|-----|-------------|-----|
| Elem | 00 | Total | | Qt | y in | eac | ch Condi | tion | Sta | te | |
| No. Element Description | Env | Qty ' | Units | St.1 | St. | 2 | St. 3 | St. | 4 | St. | 5 |
| 39 Concrete Slab - Unprotected w/ AC Overlay | 2 | 60 | sq.m. | 60 | | 0 | 0 | HELP - 1871-11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - | 0 | man randiza | . 0 |
| 215 Reinforced Conc Abutment | 3 | 44 | m. | 44 | | 0 | 0 | | 0 | | 0 |
| 330 Metal Bridge Railing - coated or uncoated | 2 | 34 | m. | 34 | | 0 | 0 | | 0 | | 0 |
| 359 Soffit of Concrete Deck or Slab | 2 | 1 | ea. | 0 | | 0 | 1 | | 0 | | 0 |

WORK RECOMMENDATIONS - NONE

| CHANNEL X-SECTION | (4) | | |
|---|----------|---------|----------------------------|
| Side : Upstream Measured From :Top of slab | (North) | | X-Section Date: 12/14/2013 |
| Location | Horiz(m) | Vert(m) | Comments |
| West abutment | 0.00 | 3,30 | face of west abutment |
| 2 4 | 2.10 | 3.47 | west edge of water |
| | 4.10 | 3.60 | Thawleg |
| | 6.10 | 3.41 | east edge of water |
| East abutment | 7.40 | 3.28 | face of east abutment |

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

Shraf Shenouda (Registered Civil Engineer)

(Date)

Þ/14



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | · · · · · · · · · · · · · · · · · · · | | | |
|---|--|-------|-------|---|
| .,_, | ************************************** | | | ************************************** |
| | STATE NAME- CALIFORNIA 069 | | | STATUS |
| | STRUCTURE NUMBER 55C0180 | | | HEALTH INDEX 100.0 |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | | PAINT CONDITION INDEX = N/A |
| | HIGHWAY AGENCY DISTRICT 12 | Steam | | |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | | ******** CLASSIFICATION ********* CODE |
| (6) | FEATURE INTERSECTED- SILVERADO CANYON CREEK | | | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- SILVERADO CNYN RD | | | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 2.7 MI E/O SANTIAGO ROAD | | | FUNCTIONAL CLASS- MAJOR COLLECTOR RURAL 07 |
| | MILEPOINT/KILOMETERPOINT 0 | | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| | LRS INVENTORY ROUTE & SUBROUTE | | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 44 MIN 48.67 SEC | | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 37 MIN 52.2 SEC | | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | | TOLL- ON FREE ROAD |
| | *************************************** | | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- SLAB CODE 101 | | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | | ********* CONDITION ************ CODE |
| / | TYPE- OTHER/NA CODE 000 | | | DECK 5 |
| | NUMBER OF SPANS IN MAIN UNIT | | | SUPERSTRUCTURE 7 |
| | NUMBER OF APPROACH SPANS 0 | | | SUBSTRUCTURE 7 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | | CHANNEL & CHANNEL PROTECTION 8 |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | | (62) | CULVERTS |
| A) | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | | | ******* LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | | (31) | DESIGN LOAD- M-13.5 OR H-15 2 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | | | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | ******* AGE AND SERVICE ********* | | | OPERATING RATING- 40.5 |
| (27) | YEAR BUILT 1971 | | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| (106) | YEAR RECONSTRUCTED 0000 | | | INVENTORY RATING- 24.3 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| 4 | UNDER- WATERWAY 5 | | | STRUCTURE OPEN, POSTED OR CLOSED- |
| (28) | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | | (11) | DESCRIPTION- OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 2000 | | | w n |
| (30) | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | | | ********** APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 199 KM | | (67) | STRUCTURAL EVALUATION 6 |
| | *********** GEOMETRIC DATA ********** | | (68) | DECK GEOMETRY 4 |
| (48) | LENGTH OF MAXIMUM SPAN 7.3 M | | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) | STRUCTURE LENGTH 16.2 M | | (71) | WATER ADEQUACY 9 |
| (50) | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | | | APPROACH ROADWAY ALIGNMENT 6 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 7.6 M | | | TRAFFIC SAFETY FEATURES 1000 |
| | DECK WIDTH OUT TO OUT 11.0 M | | (113) | SCOUR CRITICAL BRIDGES 8 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 7.0 M | | | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 64 DEG (35) STRUCTURE FLARED NO | | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | | | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 7.6 M | | | ROADWAY IMPROVEMENT COST |
| 2000000 | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | | |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | | TOTAL PROJECT COST |
| (55) | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | | YEAR OF IMPROVEMENT COST ESTIMATE |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | | | FUTURE ADT 4121 YEAR OF FUTURE ADT 2029 |
| , | ************ NAVIGATION DATA ********* | | (115) | |
| 102/08/08/02 | | | | ************ INSPECTIONS ********** |
| | | | | INSPECTION DATE 12/13 (91) FREQUENCY 24 MO |
| | VALUE GAME ON A VEDERA CAN BE SERVED. | | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| 200000000000000000000000000000000000000 | WEDD I TEM DETECT MAN MEN WEDD OF THE | | | FRACTURE CRIT DETAIL- NO MO A) |
| 700000000000000000000000000000000000000 | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | | UNDERWATER INSP- NO MO B) |
| (20) | U.U M | | C) | OTHER SPECIAL INSP- NO MO C) |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0181

Bridge Name: Silverado Canyon Creek Year Built: 1970

Facility Carried: Silverado Canyon Road

The Silverado Canyon Creek Bridge at Silverado Canyon Rd is a single span cast-in-place reinforced concrete rigid frame slab supported on spread footings. The bridge spans over a natural earth trapezoidal creek with a cobble bottom.

Caltrans BIR recommendations:

None

Field Inspection Observations

- Minor efflorescence visible on soffit, this is indicative of water seepage through deck cracks (photo 2). There were no visible deck cracks. The deck has a few inches of AC overlay.
- Exposed retaining wall and bridge footing (photo 3). Caltrans BIR indicates the scour is not an issue and scour mediation not needed.
- There are several railing timber post missing (photo 4). Top of timber posts appear to be rotting. Recommend replacing the missing posts. Note that this work is not eligible for BPMP reimbursement since the barrier does not meet current barrier rail standards.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

- Replace railing timber posts.
- Efflorescence likely from water penetrating through deck. Not significant problem at this time. Condition must worsen to be eligible for BPMP funding. To repair will require deck AC removal, deck treatment, and grinding approach AC to conform to lower deck elevation.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

 Replace Railing Timber Posts Repair Spalls < \$10,000 (includes engineering, traffic control, mobilization and contingency)

APPENDIX A

Photos and BIR



Photo 1: Silverado Canyon Creek Bridge



Culvert Wall

Photo 2: Bridge Soffit



Exposed Abutment Footing

Efflorescence

Exposed RW Footing

Photo 3: Exposed footing



Missing Posts

Photo 4: Missing post



Rotting Posts

Photo 5: Rotting post



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0181

Facility Carried: SILVERADO CNYN RD.

Location

: 3.1 MI E/O SANTIAGO ROAD

City

Inspection Date : 12/14/2013

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

Х

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1970 Year Widened: N/A Skew (degrees): 59

No. of Joints: 0

Length (m): 14

No. of Hinges: 0

Structure Description: Single span CIP/RC rigid frame slab, all supported upon spread

footings.

Span Configuration : (V

: (W) 1 @ 6.1 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15

Inventory Rating: RF=0.75 =>24.3 metric tons

Calculation Method: FIELD EVAL/ENG JUDGMENT Calculation Method: FIELD EVAL/ENG JUDGMENT

Operating Rating: RF=1.25 =>40.5 metric tons
Permit Rating: PPPPP

Posting Load : Type 3: Legal

Type 3S2:Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.6 m min deck, 0.3 m br, 2 @ 4.1 m, 0.3 m br, 0.6 m min deck (N)

Total Width:

8.2 m

Net Width: 7.3 m

No. of Lanes: 2

Speed: 25 mg

Min. Vertical Clearance: Unimpaired

Rail Code: 0000

| Rail Type | Location | Length (ft) | Rail | Modifications |
|------------|------------|-------------|------|---------------|
| Miscellane | Right/Left | 124 | | |
| ous | | | | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom.

INSPECTION COMMENTARY

Printed on: Monday

SCOPE AND ACCESS

The water in the channel is 8" deep, so all substructure elements were visually inspected.

REVISIONS

The rail code was modified from 1000 to 0000, because the current rail doesn't meet the standards.

Element 215 (RC abutment): The quantities were modified as follows: from [St. 1 = 38, St. 2 = 2] to [St. 1 = 32, St. 2 = 8].

Element 333(other rails): The quantities were modified as follows: from [St. 1 = 38] to [St. 1 = 28, St. 2 = 2, St. 3 = 8].

Smart flag 359 (Soffit) was added to ELI list (State 2).

02/10/2014 03:04 PM 55C0181/AAAI/27771

INSPECTION COMMENTARY

Smart flag 361 (Scour) was upgraded from state 2 to state 1.

The inspection frequency was modified from 24 months to 48 months.

MISCELLANEOUS

Photo underside of this structure was taken and is included with this report.

A new stream section was performed at this time and is included in this report. Compared to the previous stream section, taken on 01/15/2003, there are no significant changes to the last measurements.

DECK AND ROADWAY

South rail is missing two timber posts #3 and #7 (counting from west); and post #8 (from west) has decay and section loss.

At north rail, posts 3,4,6 and 7 (counting from west) are decayed from to the top.

SUPERSTRUCTURE

The soffit exhibits 5 longitudinal cracks full length from abutment to abutment with white and brown efflorescence.

SUBSTRUCTURE

There are 10 vertical cracks at each abutment wall up to 1.5 mm wide.

Scour

The bottom of the westerly spread footing is exposed at its northerly terminus.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SMI procedures.

| ELEMENT INSPECTION RATINGS | | | | | | | | | |
|--|-----|--------|-------|----------|--------|---------|---------------------|------|-----|
| Elem | | Total | | Qty i | n eacl | h Condi | tion St | tate | |
| No. Element Description | Env | Qty -t | Units | St. 1 St | . 2 | St. 3 | St ⁻ . 4 | St | . 5 |
| 39 Concrete Slab - Unprotected w/ AC Overlay | 2 | 115 8 | sq.m. | 115 | 0 | 0 | | D | 0 |
| 215 Reinforced Conc Abutment | 3 | 40 | m. | 32 | 8 | 0 | , (| 0 | |
| 333 Other Bridge Railing | 2 | 38 | m. | 28 | 2 | 8 | | | |
| 359 Soffit of Concrete Deck or Slab | 2 | 1 | ea. | 0 | 1 . | 0 | (| O | 0 |
| 361 Scour | 2 | 1 | ea. | 1 | 0 | . 0 | | | |

WORK RECOMMENDATIONS - NONE

CHANNEL X-SECTION

Printed on: Monday 02/10/2014 03:04 PM

55C0181/AAAI/27771

| CHANNEL X-SECTION | | | |
|--------------------------------|-------------|---------|--|
| Side : Upstream | | | X-Section Date: 12/14/2013 |
| Measured From :Top of concrete | e deck (Sou | ith) | |
| Location | Horiz(m) | Vert(m) | Comments |
| South abutment | 0.00 | 3.20 | face of south abutment, top of footing |
| | 2.00 | 3.47 | south edge of water |
| | 2.50 | 3.60 | Thalweg |
| | 4.00 | 3.60 | , 0 |
| | 5.05 | 3.57 | north edge of water |
| North abutment | 6.10 | 3.40 | face of north abutment |

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

Ashraf Sherouda (Registered Civil Engineer)

211011

(Date)

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************************************** |
|-----------|--|-------|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 52.5 |
| (8) | STRUCTURE NUMBER 55C0181 | | STATUS |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 14000000 | | HEALTH INDEX 93.1 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| ****** | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******* CODE |
| • | FEATURE INTERSECTED- SILVERADO CANYON CREEK | (112) | NBIS BRIDGE LENGTH- YES Y |
| 55 | | | HIGHWAY SYSTEM- NOT ON NHS 0 |
| | FACILITY CARRIED- SILVERADO CNYN RD. | | FUNCTIONAL CLASS- COLLECTOR URBAN 17 |
| | LOCATION- 3.1 MI E/O SANTIAGO ROAD | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | MILEPOINT/KILOMETERPOINT 0 | | ioi bitaniai |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | | |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 44 MIN 49.92 SEC | | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 37 MIN 23.19 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- SLAB CODE 101 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| 100 | | | ******** CODITION ********* CODE |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | /501 | DECK 6 |
| (45) | TYPE- OTHER/NA CODE 000 | | SUPERSTRUCTURE 7 |
| | NUMBER OF SPANS IN MAIN UNIT 1 | 0.000 | A Procedural Control of the Control |
| (46) | NUMBER OF APPROACH SPANS 0 | | |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| · A) | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- M-13.5 OR H-15 2 |
| C.) | TYPE OF DECK PROTECTION- NONE CODE 0 | (63) | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | ******* AGE AND SERVICE ********* | E | OPERATING RATING- 40.5 |
| (27) | YEAR BUILT 1970 | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| (106) | YEAR RECONSTRUCTED 0000 | | INVENTORY RATING- 24.3 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| | UNDER- WATERWAY 5 | | STRUCTURE OPEN, POSTED OR CLOSED- A |
| (28) | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) | DESCRIPTION- OPEN, NO RESTRICTION |
| (29) | AVERAGE DAILY TRAFFIC 2000 | | |
| (30) | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | | ********* APPRAISAL ********** CODE |
| (19) | BYPASS, DETOUR LENGTH 199 KM | (67) | STRUCTURAL EVALUATION 6 |
| | ******** GEOMETRIC DATA ********** | | DECK GEOMETRY 4 |
| (48) | LENGTH OF MAXIMUM SPAN 6.1 M | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| 30000000 | STRUCTURE LENGTH 14.0 M | (71) | WATER ADEQUACY 9 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | (72) | APPROACH ROADWAY ALIGNMENT 8 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 7.3 M | (36) | TRAFFIC SAFETY FEATURES 0000 |
| | DECK WIDTH OUT TO OUT 8.2 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 8.2 M | | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | (25) | TYPE OF WORK- CODE |
| ********* | SKEW 59 DEG (35) STRUCTURE FLARED NO | 1 1 | PARTICIPATION CONTRACTOR SALES CONTRACTO |
| | | | E STATE OF THE STA |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M INVENTORY ROUTE TOTAL HORIZ CLEAR 7.3 M | 3 | BRIDGE IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | , , | ROADWAY IMPROVEMENT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 4121 |
| 8 8 | | (115) | YEAR OF FUTURE ADT 2029 |
| | ************ NAVIGATION DATA ********** | | ************* INSPECTIONS ********** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | INSPECTION DATE 12/13 (91) FREQUENCY 48 MO |
| | PIER PROTECTION- CODE | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | A) | FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | C) | OTHER SPECIAL INSP- NO MO C) |
| | | | |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0182

Bridge Name: Silverado Canyon Creek Year Built: 1970

Facility Carried: Silverado Canyon Road

The Silverado Canyon Creek Bridge at Silverado Canyon Rd is a single span cast-in-place reinforced concrete rigid frame slab supported on spread footings. The bridge spans over a natural earth trapezoidal creek with a cobble bottom.

Caltrans BIR recommendations:

Replace missing timber post and nuts on additional posts.

Field Inspection Observations

- Bottom of retaining wall is exposed due to erosion and lower portion of wingwall is broken (photo 4 and 5).
- Minor efflorescence visible on vertical cracks along walls (photo 2) and soffit.
- Rock pocket above wall drain (photo 6). Recommend Patching
- Confirmed missing timber posts. Top of railing post are rotting. Recommend replacing missing and rotting posts. Note this work is not eligible for BPMP reimbursement.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

- Replace railing timber posts.
- Efflorescence likely from water penetrating through deck. Not significant problem at this time. Condition must worsen to be eligible for BPMP funding. To repair will require deck AC removal, deck treatment, and grinding approach AC to conform to lower deck elevation.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

 Replace Railing Timber Posts Repair Spalls < \$10,000 (includes engineering, traffic control, mobilization and contingency)

APPENDIX A

Photos and BIR



Photo 1: Silverado Canyon Creek Road Bridge

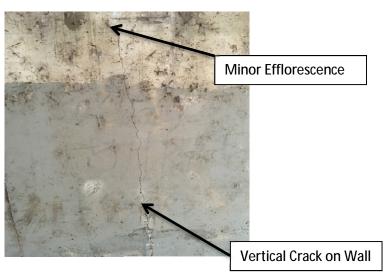


Photo 2:



Photo 3:



Photo 4:



Photo 5:



Photo 6:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0182

Facility Carried: SILVERADO CNYN RD.

Location : 3.6 MI. E/O SANTIAGO ROA

City

Inspection Date: 12/14/2013

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

X

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1970 Year Widened: N/A Length (m) : 13.1 Skew (degrees): No. of Joints : 0

No. of Hinges : 0

Structure Description: Single span CIP/RC rigid frame slab, all supported upon spread

footings.

Span Configuration :(W) 1 @ 6.7 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15

Inventory Rating: RF=0.75 =>24.3 metric tons Operating Rating: RF=1.25 =>40.5 metric tons

Calculation Method: FIELD EVAL/ENG JUDGMENT Calculation Method: FIELD EVAL/ENG JUDGMENT

Permit Rating : PPPPP

Posting Load : Type 3: Legal

Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.3 m min deck, 0.3 m br, 6.0 m, 0.3 m br, 0.3 m min deck (N)

Total Width:

6.7 m

Net Width: 6.1 m

No. of Lanes: 2

Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

| Rail Type | Location | Length (ft | Rail | Modifications | | | |
|------------|------------|------------|------|---------------|--|--|--|
| Miscellane | Right/Left | 124 | | 1 | | | |
| ous | | | | | | | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The water in the channel is 8" deep, so all substructure elements were visually inspected.

REVISIONS

The rail type was changed from MBBR to MBGR, therefore the rail code was modified from 1000 to 0000, because the current rail doesn't meet the standards.

Element 215 (RC abutment): a quantity of 2 m is moved to state 2.

Element 333: The quantities were modified as follows: from [St. 1 = 38] to [St. 1 = 24, St. 2 = 10, St. 3 = 4].

MISCELLANEOUS

Printed on: Monday 02/10/2014 03:08 PM 55C0182/AAAI/27771

INSPECTION COMMENTARY

Photo underside of this structure was taken and is included with this report.

A new stream section was performed at this time and is included in this report. Compared to the previous stream section, taken on 01/15/2003, there are no significant changes to the last measurements.

Caltrans currently does not have a set of AS-Built plans for this structure. The county should provide As-Built Plans.

DECK AND ROADWAY

AC overlay exhibits random cracks 3 mm wide and up to 4 ft long.

Timber post #4 (counting from west) is missing from the north rail; Post #8 is missing a nut; and post #10 is missing bolt and nut at the north rail.

Few timber posts are lightly decayed.

SUPERSTRUCTURE

The soffit exhibits two full length longitudinal cracks 1.5 mm wide with light brown efflorescence; and a crack 8 ft long and 1.5 mm wide with white efflorescence.

SUBSTRUCTURE

There are vertical cracks 5 cracks 0.5 mm wide in the east abutment wall. The west abutment exhibits 4 vertical cracks up to 1.5 mm wide; and a void 18" \times 15" \times 10" behind the abutment at south end at 2 ft above the ground level.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SMI procedures.

| Elem | | Total | | Qt | y in eac | h Condi | tion Sta | te |
|--|-----|-------|-------|-------|----------|---------|----------|-------|
| No. Element Description | Env | Qty | Units | St. 1 | St. 2 | St. 3 | St. 4 | St. 5 |
| 39 Concrete Slab - Unprotected w/ AC Overlay | 2 | 40 | sq.m. | 40 | . 0 | 0 | 0 | C |
| 215 Reinforced Conc Abutment | 3 | 22 | m. | 20 | 2 | 0 | 0 | |
| 333 Other Bridge Railing | 2 | 38 | m. | 24 | 10 | 4 | | |
| 359 Soffit of Concrete Deck or Slab | 2 | 1 | ea. | . 0 | 0 | 1 | 0 | C |

WORK RECOMMENDATIONS

RecDate: 12/14/2013 EstCost: Replace the missing timber post #4
Action: Railing-Repair StrTarget: 2 YEARS (counting from west); Post #8 is missing

Work By: LOCAL AGENCY DistTarget: a nut; and post #10 is missing bolt and

Status: PROPOSED EA: nut at the north rail.

CHANNEL X-SECTION

Side: Upstream X-Section Date: 12/14/2013
Measured From: Top of concrete deck (North)

Printed on: Monday 02/10/2014 03:08 PM 55C0182/AAAI/27771

| CHANNEL | X-SECTION | | | | |
|---|-----------|----|----------|---------|---------------------------|
| Side : | Upstream | | | | X-Section Date: 12/14/201 |
| Measured From :Top of concrete deck (North) | | * | | | |
| Location | | | Horiz(m) | Vert(m) | Comments |
| Abutment | 1 | 6. | 0.00 | 2.87 | Face of the west abutment |
| | • | 3 | 2.40 | 3.15 | west edge of water |
| | | | 3.75 | 3.25 | Thalweg |
| | | | 5.65 | 3.10 | east edge of water |
| Abutment | 2 | | 6.95 | 2.85 | Face of the east abutment |

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

Ashraf Shenouda (Registered Civil Engineer)

(Date)

PROFESSIONAL
Ashraf
Shenouda
No. 64332
06/30/2015
CIVIL
OF CALIFORNIA

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************** |
|---------------|--|--------------------------------|--|
| (1 |) STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 50.5 |
| (8 |) STRUCTURE NUMBER 55C0182 | | STATUS FUNCTIONALLY OBSOLETE |
| (5 |) INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 95.8 |
| |) HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3 |) COUNTY CODE 059 (4) PLACE CODE 00000 | * | ********* CLASSIFICATION ******** CODE |
| (6 |) FEATURE INTERSECTED- \$ILVERADO CANYON CREEK | (112) N | BIS BRIDGE LENGTH- YES Y |
| |) FACILITY CARRIED- SILVERADO CNYN RD. | (104) H | HIGHWAY SYSTEM- NOT ON NHS 0 |
| |) LOCATION- 3.6 MI. E/O SANTIAGO ROAD | (26) F | UNCTIONAL CLASS- COLLECTOR URBAN 17 |
| (11 |) MILEPOINT/KILOMETERPOINT 0 | (100) D | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12 | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) P. | ARALLEL STRUCTURE- NONE EXISTS N |
| (13 | LRS INVENTORY ROUTE & SUBROUTE | (102) D | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16 | LATITUDE 33 DEG 44 MIN 48.61 SEC | (103) T | EMPORARY STRUCTURE- |
| (17 | LONGITUDE 117 DEG 37 MIN 08.19 SEC | (105) F | PED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) D | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | OLL- ON FREE ROAD 3 |
| | titititi (MD)((MVD) AVD VAMDOTAT ALALALA | (21) M | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| /42 | ******* STRUCTURE TYPE AND MATERIAL ******* | | WNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- SLAB CODE 101 | (37) H | ISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ** | ******* CODE |
| (22) | TYPE- OTHER/NA CODE 000 | (58) D | |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | | UPERSTRUCTURE 7 |
| | NUMBER OF APPROACH SPANS 0 | B0000000 3000 | UBSTRUCTURE 6 |
| | | | HANNEL & CHANNEL PROTECTION 8 |
| | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (62) CI | ULVERTS |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | 200 | |
| | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 TYPE OF MEMBRANE- NONE CODE 0 | | ******* LOAD RATING AND POSTING ******* CODE |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | | ESIGN LOAD- M-13.5 OR H-15 |
| 88 | ******* AGE AND SERVICE ********* | | PERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| (27) | YEAR BUILT 1970 | | PERATING RATING- 40.5 |
| | YEAR RECONSTRUCTED 0000 | | NVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| - 2 | TYPE OF SERVICE: ON- HIGHWAY 1 | | NVENTORY RATING- 24.3 |
| | UNDER- WATERWAY 5 | | RIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES: ON STRUCTURE 02 UNDER STRUCTURE 00 | | TRUCTURE OPEN, POSTED OR CLOSED- |
| (29) | AVERAGE DAILY TRAFFIC 2000 | DE | ESCRIPTION- OPEN, NO RESTRICTION |
| (30) | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | ** | ******* APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 199 KM | (67) SI | TRUCTURAL EVALUATION 6 |
| | ******** GEOMETRIC DATA ********** | (68) DE | ECK GEOMETRY 2 |
| (48) | LENGTH OF MAXIMUM SPAN 6.7 M | (69) UN | NDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) | STRUCTURE LENGTH 13.1 M | | ATER ADEQUACY 9 |
| (50) | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | Auto-Constitution Constitution | PPROACH ROADWAY ALIGNMENT 6 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 6.1 M | CE-2014-05500 COMMO | RAFFIC SAFETY FEATURES 1000 |
| | DECK WIDTH OUT TO OUT 6.7 M | (113) SC | COUR CRITICAL BRIDGES 8 |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 6.1 M | ** | ******* PROPOSED IMPROVEMENTS ******* |
| (33) | BRIDGE MEDIAN NO MEDIAN 0 | (75) TY | PE OF WORK- MISC STRUCTURAL WORK CODE 38 |
| (34) | SKEW 53 DEG (35) STRUCTURE FLARED NO | (76) LE | ENGTH OF STRUCTURE IMPROVEMENT 13.1 M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) BR | RIDGE IMPROVEMENT COST \$88,000 |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 6.1 M | (95) RO | DADWAY IMPROVEMENT COST \$17,600 |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) TO | OTAL PROJECT COST \$147,840 |
| Same and Same | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) YE | EAR OF IMPROVEMENT COST ESTIMATE 2010 |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (114) FU | TURE ADT 4121 |
| | MIN LAT UNDERCLEAR LT 0.0 M | (115) YE | CAR OF FUTURE ADT 2029 |
| | ************ NAVIGATION DATA ********* | ** | ************ INSPECTIONS ********** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | SPECTION DATE 12/13 (91) FREQUENCY 24 MO |
| | PIER PROTECTION- CODE | | ITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | ACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | DERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | C) OT | HER SPECIAL INSP- NO MO C) |
| | · · · · · · · · · · · · · · · · · · | | |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0183

Bridge Name: Silverado Canyon Creek Year Built: 1963

Facility Carried: Belha Way

The Silverado Canyon Creek Bridge at Belha way is a single span precast pre-stressed concrete cored slab units with reinforced concrete opened end seat abutments supported on spread footing. Concrete lined channel.

Caltrans BIR recommendations:

None.

Field Inspection Observations

• There is minor damage to thrie-beam and railing post at the east end of the bridge.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

• Repair bridge railing, not a high priority.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

• Repair bridge railing < \$2,000

APPENDIX A

Photos and BIR



Photo 1: Silverado Canyon Creek Bridge



Photo 2:



Photo 3:



Photo 4: Railing

Water Stains



Photo 5:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0183

Facility Carried: BELHA WAY

: 50' N/O SILVERADO CYN RD

City

Location

Inspection Date: 12/14/2013

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other.

Х

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1963 Year Widened: N/A

Skew (degrees): No. of Joints :

No. of Hinges : Length (m) : 7

Structure Description: Single span PC/PS concrete cored slab units (3 each) with RC open

end seat abutments, all supported upon spread footings.

:(S) 1 @ 6.4 m (N) c/c Span Configuration

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15

Inventory Rating: RF=0.75 =>24.3 metric tons Operating Rating: RF=1.25 =>40.5 metric tons

Calculation Method: FIELD EVAL/ENG JUDGMENT Calculation Method: FIELD EVAL/ENG JUDGMENT

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, 3.5 m, 0.2 m br (E)

Total Width:

3.9 m

Net Width:

3.5 m No. of Lanes: Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| MBBR | Right/Left | 46 | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom and with a concreted bottom through the site.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The water in the channel is 8" deep, so all substructure elements were visually inspected.

REVISIONS

Element type #330 was replaced by element type #337 with the same quantity.

MISCELLANEOUS

Ten-year bridge roadway, elevation and underside photos were taken during this inspection.

DECK AND ROADWAY

Rail and deck have no significant defects during this inspection.

Printed on: Monday 02/10/2014 03:08 PM

55C0183/AAAH/27771

INSPECTION COMMENTARY

SUPERSTRUCTURE

There is growing vegetation at the west abutment wall and soffit between the slab units.

SUBSTRUCTURE

No significant defects were visually seen during this inspection.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SMI procedures.

| ELEMENT INSPECTION RATINGS | | | | | | | | | | | | |
|---|-----|-------|-------|-------|-------|---|-----|---|-----|---|-----|---|
| Elem | | Total | | | ty in | | | | | | | |
| No. Element Description | Env | Qty | Units | St. 1 | St. | 2 | St. | 3 | St. | 4 | St. | 5 |
| 61 PS Conc Slab - Unprotected w/ AC Overlay | 2 | 25 | sq.m. | 25 | | 0 | | 0 | | 0 | 10 | 0 |
| 215 Reinforced Conc Abutment | 2 | 8 | m. | 8 | | 0 | | 0 | | 0 | | 0 |
| 337 Metal Railing (W6X25 Posts) | . 2 | 14 | m. | 14 | | 0 | П | 0 | | 0 | | 0 |

WORK RECOMMENDATIONS - NONE

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

Ashraf Shenouda (Registered Civil Engineer) (Date)

Ashraf
Shenouda

No. 64332

06/30/2015

CIVIL

OF CALIFORNIA

Printed on: Monday 02/10/2014 03:08 PM 55C0183/AAAH/27771

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************ |
|-----------------|---|---|--|
| (1 | | | SUFFICIENCY RATING = 65.1 |
| |) STATE NAME- CALIFORNIA 069) STRUCTURE NUMBER 55C0183 | | STATUS FUNCTIONALLY OBSOLETE |
| |) INVENTORY ROUTE (ON/UNDER) - ON 14000000 | | HEALTH INDEX 100.0 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******** CLASSIFICATION ********* CODE |
| | FEATURE INTERSECTED- SILVERADO CANYON CREEK | (112) | NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- BELHA WAY | | HIGHWAY SYSTEM- NOT ON NHS 0 |
| | LOCATION- 50' N/O SILVERADO CYN RD: | (26) | FUNCTIONAL CLASS- COLLECTOR URBAN 17 |
| | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) | DIRECTION OF TRAFFIC- 1 LANE, 2 WAY 3 |
| (16) | LATITUDE 33 DEG 44 MIN 45.64 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 35 MIN 23.22 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (20) | TOLL- ON FREE ROAD 3 |
| | THE THE CONTROL WAR AND WARDING THE | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ******* | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- SLAB CODE 101 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | *********** CONDITION ********** CODE |
| (11) | TYPE- OTHER/NA CODE 000 | . (58) | DECK 7 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | | SUPERSTRUCTURE 7 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 7 |
| 197.00.000 | DECK STRUCTURE TYPE- PRECAST CONC. PA CODE 2 | (61) | CHANNEL & CHANNEL PROTECTION 8 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | . (21) | The second secon |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- M-13.5 OR H-15 2 |
| | ****** AGE AND SERVICE ********* | | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 OPERATING RATING- 40.5 |
| (27) | YEAR BUILT 1963 | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| | YEAR RECONSTRUCTED 0000 | | INVENTORY RATING- 24.3 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY 1 | 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| 10 | UNDER- WATERWAY 5 | | STRUCTURE OPEN, POSTED OR CLOSED- |
| | LANES:ON STRUCTURE 01 UNDER STRUCTURE 00 | (/ | DESCRIPTION- OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 100 | | |
| | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | | ******** APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 199 KM | | STRUCTURAL EVALUATION 6 |
| | ************** GEOMETRIC DATA *********** | | DECK GEOMETRY 3 |
| (48) | LENGTH OF MAXIMUM SPAN 6.4 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 7.0 M | | WATER ADEQUACY 9 APPROACH ROADWAY ALIGNMENT 6 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | | TRAFFIC SAFETY FEATURES 1000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 3.5 M | 100 | SCOUR CRITICAL BRIDGES 5 |
| | DECK WIDTH OUT TO OUT 3.9 M | (223) | ********* PROPOSED IMPROVEMENTS ******** |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 3.7 M | | |
| | BRIDGE MEDIAN- NO MEDIAN 0 SKEW 21 DEG (35) STRUCTURE FLARED NO | | TYPE OF WORK- MISC STRUCTURAL WORK CODE 38 |
| | | | LENGTH OF STRUCTURE IMPROVEMENT 7 M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M INVENTORY ROUTE TOTAL HORIZ CLEAR 3.5 M | | BRIDGE IMPROVEMENT COST \$26,000 |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 3.5 M MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST \$5,200 |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST \$43,680 |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE 2010 |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 103 |
| | ********** NAVIGATION DATA ********* | | YEAR OF FUTURE ADT 2029 |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | ************ INSPECTIONS ********** |
| | PIER PROTECTION- CODE | | INSPECTION DATE 12/13 (91) FREQUENCY 24 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| terilina andi t | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) OTHER SPECIAL INSP- NO MO C) |
| | | C) | OTHER STREET INST NO PIO CI |

Orange County Bridge Review Summary

Dokken Engineering performed a field review of the Orange County bridge listed below in February 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: 55C0188

Bridge Name: Silverado Canyon Creek **Year Built:** 1965

Facility Carried: Thisa Way

The Silverado Canyon Creek Bridge at Thisa Way is a single reinforced concrete box culvert.

Caltrans BIR recommendations:

 Construct a scour mitigation device downstream of the structure to prevent further streambed degradation.

Field Inspection Observations

- Retaining walls at the southwest end of bridge have been undermined. Rip rap is fully grouted and is failing. The northeast embankment is eroding. Recommend repairing erosions measures. (photo 5 and 6).
- Minor efflorescence visible on soffit (photo 4).
- Vegetation growth at abutments (photo 7).

Maintenance Needs Assessment

BPMP Assessment

Repair scour countermeasures.

<u>General Maintenance - Non-BPMP</u>

Efflorescence likely from water penetrating through deck. Not significant problem at this time.
 Condition must worsen to be eligible for BPMP funding. To repair will require deck AC removal, deck treatment, and grinding approach AC to conform to lower deck elevation.

Proposed BPMP Construction Costs

Repair scour mitigation measure ≈ \$50,000 (with engineering, mobilization and contingency)

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1: Silverado Canyon Creek Bridge



Photo 2:



Photo 3:





Photo 5:



Photo 6: Slope Protection



Vegetation growth at abutment

Photo 7: Embankment Erosion



Photo 8:

Caltrans

DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0188

Facility Carried: THISA WAY

Location

: 200' S/O SILVERADO CYN R

City

Inspection Date: 12/14/2013

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

Х

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1965 Year Widened: N/A Length (m) : 7.9 Skew (degrees): 9
No. of Joints: 0
No. of Hinges: 0

Structure Description: Single 7.3 m W x 2.7 m H x 7.4 m L RC box culvert (grade top).

Vehicular traffic ride upon an AC overlay upon the RC culvert top

slab.

Span Configuration : (S) 1 @

:(S) 1 @ 7.3 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15

Inventory Rating: RF=0.75 =>24.3 metric tons

c tons Calculation Method: FIELD EVAL/ENG JUDGMENT Calculation Method: FIELD EVAL/ENG JUDGMENT

Operating Rating: RF=1.25 =>40.5 metric tons

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u>

Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.1 m br, 7.2 m, 0.1 m br (E)

Total Width:

7.6 m

Net Width:

7.2 m

No. of Lanes: 2

Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

| | Rail | Type | Location | Length (f | t) | Rail | Modifications |
|---|------|------|------------|-----------|----|------|---------------|
| ì | MB | BR | Right/Left | 59 | | | |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with cobbled bottom.

INSPECTION COMMENTARY

SCOPE AND ACCESS

There was 4" water running through the mid-span, so all substructure elements were visually inspected. Pedestrian access is from NW corner.

MISCELLANEOUS

Photo underside of this structure was taken and is included with this report.

DECK AND ROADWAY

AC exhibits transverse cracks full width and 12 mm wide at both ends.

There was stain of debris on the rail, it maybe cause by water overtopping the bridge deck

SCOUR

Printed on: Monday 02/10/2014 03:09 PM

55C0188/AAAI/27771

INSPECTION COMMENTARY

The streambed has degraded 6 ft immediately downstream of the concrete culvert cut off wall at the thalweg. The cut off wall is protected at the downstream banks with grouted rock rip rap. The grouted rock rip rap at the northwesterly quadrant has been undermined up to 3 ft at its downstream terminus. It seems there is no change in the downstream condition since 1999

CULVERT

No significant defects were visually seen during this inspection.

SAFE LOAD CAPACITY

The current rating has been assigned in accordance with SMI procedures for culverts. Based on the field conditions and load history, the culvert is adequate to carry legal loads.

| ELEMENT INSPECTION RATINGS | | | | | | | | |
|---------------------------------|-----|--------------|-------|----|----------|---|---|-------------|
| Elem No. Element Description | Env | Total Qty | Units | | y in eac | | | te St. 5 |
| 241 Reinforced Concrete Culvert | 2 | 8 | m. | 8 | 0 | 0 | 0 | 0 |
| 337 Metal Railing (W6X25 Posts) | 2 | 18 | m. | 18 | 0 | 0 | 0 | 0 |
| 361 Scour | 2 | 1 | ea. | 0 | . 1 | 0 | 0 | 0 |

WORK RECOMMENDATIONS

RecDate: 01/28/1999

Action : Sub-Scour Mitigate

Work By: LOCAL AGENCY

Status : PROPOSED

EstCost:

StrTarget:

DistTarget:

2 YEARS

Construct a scour mitigation device downstream of the structure to prevent

further degradation of the streambed.

Team Leader :

Ashraf Shenouda

Report Author :

Ashraf Shenouda

Inspected By :

A. Shenouda/KD. Henderson

Ashraf Shenouda No. <u>64332</u> 06/30/2015 CIVIL

STRUCTURE INVENTORY AND APPRAISAL REPORT

| ************************************** | * |
|--|--|
| ************************************** | ************************************** |
| (1) STATE NAME- CALIFORNIA 069 | STATUS |
| (8) STRUCTURE NUMBER 55C0188 | HEALTH INDEX 100.0 |
| (5) INVENTORY ROUTE (ON/UNDER) - ON 140000000 | PAINT CONDITION INDEX = N/A |
| (2) HIGHWAY AGENCY DISTRICT 12 | |
| (3) COUNTY CODE 059 (4) PLACE CODE 00000 | ******* CLASSIFICATION ******** CODE |
| (6) FEATURE INTERSECTED- SILVERADO CANYON CREEK | (112) NBIS BRIDGE LENGTH- YES (104) HIGHWAY SYSTEM- NOT ON NHS |
| (7) FACILITY CARRIED- THISA WAY | (26) FUNCTIONAL CLASS- LOCAL RURAL 09 |
| (9) LOCATION- 200' S/O SILVERADO CYN RD | (100) DEFENSE HIGHWAY- NOT STRANNET 0 |
| (11) MILEPOINT/KILOMETERPOINT 0 (12) BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) PARALLEL STRUCTURE- NONE EXISTS N |
| (12) BASE HIGHWAY NETWORK- NOT ON NET 0 (13) LRS INVENTORY ROUTE & SUBROUTE | (102) DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) LATITUDE 33 DEG 44 MIN 49.56 SEC | (103) TEMPORARY STRUCTURE- |
| (17) LONGITUDE 117 DEG 38 MIN 22.62 SEC | (105) FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) BORDER BRIDGE STATE CODE | (110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD 3 |
| (99) BORDER BRIDGE STRUCTURE NUMBER | (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| ****** STRUCTURE TYPE AND MATERIAL ******* | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) STRUCTURE TYPE MAIN: MATERIAL- CONCRETE | (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| TYPE- CULVERT CODE 119 | ********* CONDITION ********** CODE |
| (44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA TYPE- OTHER/NA CODE 000 | |
| Consideration of the Considera | (58) DECK N (59) SUPERSTRUCTURE N |
| Constitution of the Consti | (59) SUPERSTRUCTURE N (60) SUBSTRUCTURE N |
| (46) NUMBER OF APPROACH SPANS 0 | (61) CHANNEL & CHANNEL PROTECTION 8 |
| (107) DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | (62) CULVERTS 7 |
| (108) WEARING SURFACE / PROTECTIVE SYSTEM: | |
| A) TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 B) TYPE OF MEMBRANE- NOT APPLICABLE CODE N | ******** LOAD RATING AND POSTING ******* CODE |
| B) TYPE OF MEMBRANE- NOT APPLICABLE CODE N C) TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N | (31) DESIGN LOAD- M-13.5 OR H-15 |
| ******** AGE AND SERVICE ********* | (63) OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| (27) YEAR BUILT 1965 | (64) OPERATING RATING- 40.5 |
| (106) YEAR RECONSTRUCTED 0000 | (65) INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| (42) TYPE OF SERVICE: ON- HIGHWAY 1 | (66) INVENTORY RATING- 24.3 |
| UNDER- WATERWAY 5 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) STRUCTURE OPEN, POSTED OR CLOSED- A DESCRIPTION- OPEN, NO RESTRICTION |
| (29) AVERAGE DAILY TRAFFIC 200 | DESCRIPTION OPEN, NO RESTRICTION |
| (30) YEAR OF ADT 2009 (109) TRUCK ADT 1 % | ********* APPRAISAL *********** CODE |
| (19) BYPASS, DETOUR LENGTH 2 KM | (67) STRUCTURAL EVALUATION 6 |
| ********* GEOMETRIC DATA ********** | (68) DECK GEOMETRY 4 |
| (48) LENGTH OF MAXIMUM SPAN 7.3 M | (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) STRUCTURE LENGTH 7.9 M | (71) WATER ADEQUACY 6 |
| (50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | (72) APPROACH ROADWAY ALIGNMENT 6 (36) TRAFFIC SAFETY FEATURES 1000 |
| (51) BRIDGE ROADWAY WIDTH CURB TO CURB 7.2 M | (112) |
| (52) DECK WIDTH OUT TO OUT . 7.6 M | |
| (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 7.3 M (33) BRIDGE MEDIAN 0 | ******* PROPOSED IMPROVEMENTS ******* |
| | (75) TYPE OF WORK- CODE |
| (34) SKEW 9 DEG (35) STRUCTURE FLARED NO | (76) LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) BRIDGE IMPROVEMENT COST |
| (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 7.2 M (53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (95) ROADWAY IMPROVEMENT COST |
| (54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (96) TOTAL PROJECT COST |
| (55) MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (97) YEAR OF IMPROVEMENT COST ESTIMATE |
| (56) MIN LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT 206 |
| ******** NAVIGATION DATA ********* | (115) YEAR OF FUTURE ADT 2029 |
| (38) NAVIGATION CONTROL- NOT APPLICABLE CODE N | ************************************** |
| (111) PIER PROTECTION- CODE | (90) INSPECTION DATE 12/13 (91) FREQUENCY 24 MO |
| (39) NAVIGATION VERTICAL CLEARANCE 0.0 M | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | A) FRACTURE CRIT DETAIL- NO MO A) |
| (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M | B) UNDERWATER INSP- NO MO B) C) OTHER SPECIAL INSP- NO MO C) |
| | C, CIMBA SERCIAL INSE- NO MO C) |

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: 55C0205

Bridge Name: Santa Ana Delhi Channel Year Built: 1960

Facility Carried: Santa Ana Avenue

The Santa Ana-Delhi Channel Bridge at Santa Ana Avenue is a single span precast prestress concrete voided deck slab with reinforced concrete pile bent abutments with sheathings walls. The bridge spans over a concrete lined channel. The bridge was widened in 1973.

Caltrans BIR recommendations:

• Remove the vegetation growing at abutment 1.

Field Inspection Observations

- Efflorescence and water stains are visible on bridge soffit. The bridge deck has several inches of AC therefore the condition of the bridge deck cannot be assessed.
- Confirmed that there is vegetation growing at abutment 1 (photo 3).
- There appears to be 8-10" of asphalt concrete. Recommend that no additional AC be placed on the bridge deck, and consider removing some of existing AC.
- Concrete spalling on exterior girder (photo 4).
- There is exposed sheathing at abut face (photo 5).

Maintenance Needs Assessment

BPMP Assessment

- N/A No known eligible maintenance activities. Need to coordinate with Caltrans to determine if AC removal is a participating BPMP work.
- Recommend treating deck or placing impermeable water barrier on deck prior to AC resurfacing.

<u>General Maintenance - Non-BPMP</u>

Remove vegetation at abutment 1.

Proposed BPMP Construction Costs

• Unknown until consult with Caltrans about AC removal.

Construction Items Not Funded by BPMP

Remove vegetation < \$2,000.

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:

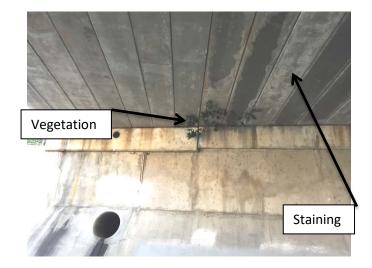


Photo 3: Abut 1



Photo 4: Elevation View

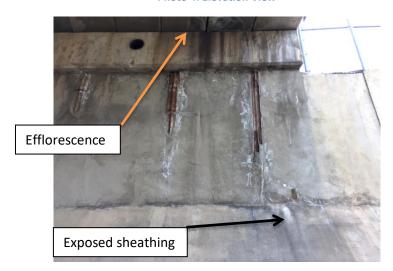


Photo 5: Exposed Sheathing





Photo 6 and 7:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0205

Facility Carried: SANTA ANA AVENUE

Location

: 0.1 MI S/O BRISTOL STREE

City

Inspection Date : 01/27/2017

Inspection Type Bridge Inspection Report

Routine FC Underwater Special Other X

STRUCTURE NAME: SANTA ANA-DELHI CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1960 Year Modified: 1973 Length (m) : 16.5

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

Structure Description: Single span PC/PS concrete beam units (22 units) on RC pile bent cap with monolithic wingwallswith sheathing walls.

Span Configuration : (S) 54.00 ft (N)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=0.52 =>16.8 metric tons Operating Rating: RF=0.87 =>28.2 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT 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) 0.67 ft br, 1.33 ft AC dike, 61.42 ft, 4.50 ft sw, 0.67 m br (E)

Total Width: 20.4 m Net Width: 18.7 m

No. of Lanes: 4

45 mph

Min. Vertical Clearance: Unimpaired

Overlay Thickness: 6.5 Inches

Rail Code: 1000

Rail Type Location Length (ft) Rail Modifications MBBR 108

DESCRIPTION UNDER STRUCTURE

Channel Description: RC rectangular.

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 sidewalks, and under the span of the superstructure. The water in the channel is about is 3 inches through a small ditch 5 feet wide in the middle of the channel. All visible substructure elements were

Pedestrian access under the bridge is from a ramp at the north-west quadrant.

INSPECTION COMMENTARY

REVISIONS

AC thickness overlay is changed from 3 inches to be 9 inches at the west side and 4 inches at the east side. The average AC thickness is about 6.5 inches. (see the attached photos 1 & 2)

Element 15 (Prestressed top flange-RC) is replaced Element 16 (Top flange-RC) with the same quantity.

The substructure element is revised to be Bent cap $20~\mathrm{m}$; and piles $\#251~(2~\mathrm{each})$ instead of element $\#215~\mathrm{RC}$ Abutment.

DECK AND ROADWAY

AC overlay exhibits two transverse cracks above both abutments, 20 feet long and 0.2 inches wide.

SUBSTRUCTURE

There is a tree growing at the seat of Abutment 1 under slab unit 9 (counting from east).

SAFE LOAD CAPACITY

The load rating for this structure is being reviewed by SMI Ratings Branch A request #7766 was sent the load rating department on 07/14/2017. An updated Load Rating Summary will be archived when this review is complete. Load Rating Summary Sheet is archived on 12/12/2014 for this structure. While this report does not include a check of that analysis, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis.

| No. | Defect De | efect Element Description | Env | Total Qty | Units | | | ondition St. 3 | |
|-------------------------|-----------|---------------------------------|-----|--------------|-------|-----|---|-------------------|---|
| 15 | | Top Flange-PS Conc. | 2 | 336 | sq.m | 336 | 0 | 0 | 0 |
| | 510 | Deck Wearing Surface-Asphalt | 2 | 308 | sq.m | 308 | 0 | 0 | 0 |
| (15) There (15-5) | | ignificant defects noted. | | | | | | | |
| There | were no s | ignificant defects noted. | | | | | | | |
| 104 | | Box Girder-PS Conc. | 2 | 17 | m | 14 | 2 | 1 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 1 | | 0 | 0 | 1 | 0 |
| | 1120 | Efflorescence/Rust Staining | 2 | 2 | | 0 | 2 | 0 | 0 |

Printed on: Tuesday 07/25/2017 09:25 AM

| ELEMEN | T INSPECTION | RATINGS AND NOTES | | | | | | | | |
|---------|------------------------|--------------------------|---------------|------|--------------|---------|---------|---------|-------------------|---|
| Elem | Defect Defect /Prot | Element Description | | Env | Total Qty | Units | | | ondition St. 3 | |
| the mid | d-span. (see t | he attached photos 4 & | 5) | | | | | | | |
| (104-11 | 120) | | | | | | | | | |
| There v | was water stai | n in soffit generated i | n between the | bog | girde: | rs unit | s. | | | |
| 215 | Al | outment-RC | | 2 | 10 | m | 10 | 0 | 0 | 0 |
| (215) | | | | | | | - | | | |
| Monolit | thic wingwalls | (with the RC bent cap) | are included | in | the to | tal qua | antity. | | | |
| 234 | Pi | ler Cap-RC | | 2 | 40 | m | 40 | 0 | 0 | 0 |
| (234) | | | | | | | | | | |
| There w | vere no signif | icant defects noted. | | | | | | | | |
| 251 | Pi | le-CISS | | 2 | 2 | ea. | 0 | 2 | 0 | 0 |
| | 1000 Co | orrosion | | 2 | 2 | | 0 | 2 | 0 | 0 |
| (251) | | | | | | | | | | |
| There a | re only two p | iles that are visbile a | t the north A | butm | ent at | the ea | st side | · . | | |
| (251-10 | 00) | | | | | | | | | |
| The ext | erior steel sh | nells of the north piles | s (east side) | is | rusted. | (see | the att | ached p | hoto 9) | |
| 330 | Ra | iling-Metal | | 2 | 33 | m | 33 | 0 | 0 | 0 |
| (330) | | | | | | | | | | |
| There w | ere no signifi | cant defects noted. | | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 06/08/2011

EstCost:

Remove the small tree that are growing in

Action : Sub-Misc.

StrTarget: 2 YEARS Abutment 1 seat.

Work By: LOCAL AGENCY

DistTarget:

Status : PROPOSED

Team Leader :

Ashraf Shenouda

Report Author :

Ashraf Shenouda

Inspected By :

A.Shenouda/KD.Henderson

Ashraf Shenouda (Registered Civil Engineer)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | MATRICAL DE PARTIE DE 10 NO VICTO DE |
|-------|--|--|
| | | ************************************** |
| | STATE NAME- CALIFORNIA 069 | STATUS |
| | STRUCTURE NUMBER 55C0205 | HEALTH TAIDAY |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | 99.4 |
| | HIGHWAY AGENCY DISTRICT 12 | PAINT CONDITION INDEX = N/A |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | ********** CLASSIFICATION *********** CODE |
| | FEATURE INTERSECTED- SANTA ANA DELHI CHANNEL | (112) NBIS BRIDGE LENGTH- YES |
| | FACILITY CARRIED- SANTA ANA AVENUE LOCATION- 0.1 MI S/O BRISTOL STREET | (104) HIGHWAY SYSTEM- NOT ON NHS |
| | LOCATION- 0.1 MI S/O BRISTOL STREET MILEPOINT/KILOMETERPOINT 0 | (26) FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 (100) DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) DARALLEI CTRICTURE |
| | LRS INVENTORY ROUTE & SUBROUTE | (102) DIDECETON OF TRAINS |
| | LATITUDE 33 DEG 39 MIN 55.22 SEC | (102) DIRECTION OF TRAFFIC- 2 WAY 2 (103) TEMPORARY STRUCTURE- |
| 10 8 | LONGITUDE 117 DEG 52 MIN 59.41 SEC | (105) PED LANDS HAVE NOT ADDITIONS |
| | BORDER BRIDGE STATE CODE % SHARE % | (110) DESIGNATED NATIONAL NETWORK |
| | BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD |
| | | (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONC | (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | TYPE- BOX BEAM OR GIRDER - MULTI CODE 505 STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ******* CONDITION ********* CODE |
| (11) | TYPE - OTHER/NA CODE 000 | (EQ) DEGY |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | (FO) GUDDO GERLIGHTE - |
| | NUMBER OF APPROACH SPANS 0 | (60) SUBSTRUCTURE 7 |
| | DECK STRUCTURE TYPE- PRECAST CONC. PA CODE 2 | (61) CHANNEL & CHANNEL PROTECTION 8 |
| 2.000 | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) CULVERTS N |
| | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | |
| | TYPE OF MEMBRANE - NONE CODE 0 | ******* LOAD RATING AND POSTING ******* CODE |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | (31) DESIGN LOAD- UNKNOWN 0 |
| | ******* AGE AND SERVICE ********* | (63) OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| (27) | YEAR BUILT 1960 | (64) OPERATING RATING ADDITION DATE (65) INVENTORY PATTING ADDITION DESCRIPTION OF THE PARTY (700) |
| (106) | YEAR RECONSTRUCTED 1973 | (65) INVENTORY RATING METHOD- FIELD EVAL/ENG JUI 0 (66) INVENTORY RATING- |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (00) | UNDER- WATERWAY 5 | (41) STRUCTURE OPEN DOCTED OF GLOCAR |
| | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | DESCRIPTION- OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 11000 YEAR OF ADT 2008 (109) TRUCK ADT 1 % | |
| | | ******* APPRAISAL ********** CODE |
| (19) | BYPASS, DETOUR LENGTH 2 KM | (67) STRUCTURAL EVALUATION (68) DECK GEOMETRY |
| (40) | ************************************** | (50) INDERCIENDANCES APPRICATE A MARINE DE |
| | LENGTH OF MAXIMUM SPAN 16.2 M STRUCTURE LENGTH 16.5 M | (71) MARIE ADDOME |
| | STRUCTURE LENGTH 16.5 M CURB OR SIDEWALK: LEFT 0.0 M RIGHT 1.4 M | (71) WATER ADEQUACY 8 (72) APPROACH ROADWAY ALIGNMENT 8 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 18.7 M | (36) TRAFFIC SAFETY FEATURES 1000 |
| | DECK WIDTH OUT TO OUT 20.4 M | (113) SCOUR CRITICAL BRIDGES 5 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 17.1 M | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | (7E) TYPE OF WORK |
| (34) | SKEW 10 DEG (35) STRUCTURE FLARED NO | (76) I PNCTH OF CERTICIPE TARRESTER |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 18.7 M | (95) ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) TOTAL PROJECT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M MIN LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT 18984 |
| | | (115) YEAR OF FUTURE ADT 2038 |
| | ************* NAVIGATION DATA ********** | ************************************** |
| | NAVIGATION CONTROL- NO CONTROL CODE 0 | (90) INSPECTION DATE 01/17 (91) FREQUENCY 24 MO |
| | PIER PROTECTION- CODE | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M //ERT-LIFT BRIDGE NAV MIN VERT CLEAR | A) FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | B) UNDERWATER INSP- NO MO B) |
| | 0.0 M | C) OTHER SPECIAL INSP- NO MO C) |
| | | |

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: 55C0283

Bridge Name: Sunset Channel Year Built: 1959

Facility Carried: Broadway

This bridge does not have a bridge inspection report therefore some general information is unknown. The Sunset channel bridge at Broadway appears to be a CIP/RC slab supported on concrete pile extensions and on seat abutments with unknown foundations.

Caltrans BIR recommendations:

• N/A. Note at the time of inspection the BIR was not available.

Field Inspection Observations

- No access to substructure (photo 1)
- After chaining the deck and sidewalk, some areas of the deck and sidewalk sounded like there may be some minor delamination.
- Spalling at the abutment back wall (photo 2).

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

- Remove and patch delaminated concrete at bridge. Low priority.
- Monitor abutment back wall. Currently not a significant problem.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos



Photo 1:

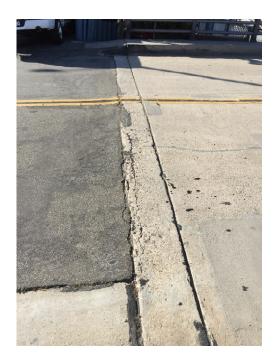


Photo 2:

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: 55C0344

Bridge Name: Santa Ana River (Adams Ave) **Year Built:** 1977

Facility Carried: Hamilton-Victoria

The Santa Ana River Channel Bridge at Adams Avenue is a continuous 5 span cast-in-place reinforced concrete Box Girder Bridge with pier wall and open end diaphragm abutments supported on concrete piles.

Caltrans BIR recommendations:

None.

Field Inspection Observations

- There was no access to the substructure. The piers were visually inspected from the access road (photo 1).
- Bridge deck appears to have been treated.
- Exposed reinforcement in concrete barrier.
- Debris build up on pier nosing.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

• Small spall around reinforcement bar on barrier. Not structural and no action needed at this time.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1: Elevation View



Photo 2: Barrier



Photo 3: Bridge Deck

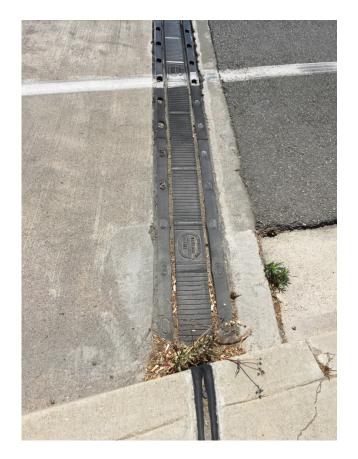


Photo 4:



Photo 5:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0344

Facility Carried: ADAMS AVENUE

Location

: 0.5 MI E/O BROOKHURST ST

City

Inspection Date : 01/27/2017

Inspection Type

Routine FC Underwater Special Other X

Bridge Inspection Report

STRUCTURE NAME: SANTA ANA RIVER (ADAMS AVE)

CONSTRUCTION INFORMATION

Year Built : 1977 Year Modified: N/A Length (m) : 164.6

Skew (degrees): No. of Joints : 2 No. of Hinges : 0

Structure Description: Continuous 5-span CIP/PS concrete box girder (10 cells) with RC pier

walls and RC open end seat abutments with monolithic wingwalls, all

supported upon concrete piles.

:(W) 89.75 ft, 3 @ 118.00 ft, 89.75 ft c/c (E) Span Configuration

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: RF=1.00 =>32.4 metric tons

Calculation Method: LOAD FACTOR

Operating Rating: RF=2.19 =>71.0 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: (S) 1.00 ft br, 4.00 ft sw, 40.00 ft, 4.00 ft cu. med, 40.00 ft, 4.00 ft sw, 1.00 ft br (N).

Total Width:

28.7 m

Net Width.

24.4 m

No. of Lanes:

Speed:

45 mph

Min. Vertical Clearance: Unimpaired

Overlay Thickness:

0.0 Inches

Rail Code: 1000

Rail Type Location Length (ft) Rail Modifications Type 11 | Right/Left 1120

DESCRIPTION UNDER STRUCTURE

Channel Description: RC vertical walls with sandy earth bottoms.

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. 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 sidewalks, and under spans 1 and 4 of the superstructure. The water in the channel is about 2-2.5 feet deep and the channel bed is not firm spans 2 to 5, except the bike path under span 4. The substructure and the superstructure elements were not inspected in spans 2, 3 and 5. Access into the channel

INSPECTION COMMENTARY

is from the north-west quadrant. All elements were visually inspected in span 1.

REVISIONS

RC-pile #227 (1 each) is added to the element table.

DECK AND ROADWAY

The curb of the southerly sidewalk exhibits few spalls with eba exposed and rusted

SAFE LOAD CAPACITY

A Structure Rating Summary Sheet, dated 05/10/2010, is on-file for this structure. The current rating is based on a BDS computer output, dated 11/30/1979 with zero AC overlay. While this report does not include a check of that analysis, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis.

| ELEME | NT INSP | ECTION RATINGS AND NOTES | | | | | | | |
|--------------------|-----------------|--|---------|--------------|---------|---------|---------|-------------------|-------------|
| | Defect /Prot | | Env | Total Qty | Units | | | ondition St. 3 | |
| 16 | | Top Flange-RC | 2 | 4724 | sq.m | 4704 | 20 | 0 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 5 | | 0 | 5 | 0 | 0 |
| | 1120 | Efflorescence/Rust Staining | 2 | 15 | | 0 | 15 | 0 | 0 |
| | 521 | Concrete Coat.(Meth/Paint/Seal) | 2 | 4016 | sq.m | 4016 | 0 | 0 | 0 |
| | are few | scattered sound patched areas 1 foot X | 1 foot | in ma | ny loca | ations. | | | |
| | ffit at | the closure pour between the two box gi at span 4. | rders e | xhibit | s few t | ransver | se crac | cks with | white |
| (16-52 There | SC-000. | significant defects noted. | | | | | | | |
| 104 | | Box Girder-PS Conc. | 2 | 329 | m | 329 | 0 | 0 | 0 |
| (104) There | were no | significant defects noted. | | | | | |) (4 | |
| 210 | | Pier Wall-RC | 2 | 118 | m | 116 | 2 | 0 | 0 |
| | 1130 | Cracking (RC and Other) | 2 | 2 | | 0 | 2 | 0 | 0 |
| (210-13 Pier wa | | hibits few vertical cracks up to 0.05 in | nches w | ide. | | | | | |
| 215 | | Abutment-RC | 2 | 74 | m | 74 | 0 | 0 | 0 |
| (215) Monolit | thic wir | gwalls are included in the total quantit | ty. | | | | | | |
| 227 | | Pile-RC | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (227) | | | | | | | | | |

ELEMENT INSPECTION RATINGS AND NOTES Elem Defect Defect Element Description Env Total Units Qty in each Condition State /Prot No. St. 1 St. 2 St. 3 St. 4 The pile element is included to indicate the presence of piles on this structure. The piles were not exposed for visual inspection. No indication of pile distress was noted in any substructure element. Joint-Assembly w/ Seal 2370 Metal Deter./Damage (Joints) 0 1 (303 - 2370)The east joint at eastbound lane 1 is missing a section 2 feet long and 3 inches wide. 312 Bearing-Enclosed each (312)The bearing element is included to indicate the presence of bearings on this structure. The bearings were not exposed for visual inspection. No indication of bearing distress was noted in any substructure element. 333 Railing-Other 330 320 0 1080 Delamination/Spall/Patched Area 5 0 0 1130 Cracking (RC and Other) 5 0 (333-1080)The concrete portion of the south rail exhibits two spalls +/- 12 inches X 10 inches X 1.5 inches with rebar exposed and rusted at 10 feet east of the west end at span 1.

The concrete portion of the north rail exhibits few spalls and unsound spalls +/- 5 inches X 5 inches

1 YEAR

WORK RECOMMENDATIONS

RecDate: 01/27/2017

(333-1130)

EstCost:

The east joint at eastbound lane 1 is

Action : Joints-Repair/Clean

StrTarget:

The concrete portion of the rails exhibits few vertical cracks up to 0.05 inches wide.

missing a section 2 feet long and 3

Work By: LOCAL AGENCY

DistTarget:

inches wide.

EA:

Status : PROPOSED

Team Leader : Ashraf Shenouda

in many locations especially at spans 1 & 2.

Report Author :

Ashraf Shenouda

Inspected By :

A. Shenouda/KD. Henderson

Ashraf Shenouda (Registered Civil Engineer)

(Date)

OR OF ESSION Ashraf Shenouda No. 64332 06/30/2019

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************************************** |
|---------------|--|-------|---|
| (1) | STATE NAME- CALIFORNIA 069 | | STATUS 91.3 |
| (8) | STRUCTURE NUMBER 55C0344 | | HEALDH INDEX |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | 99.8 |
| (2) | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******** CLASSIFICATION ******* CODE |
| (6) | FEATURE INTERSECTED- SANTA ANA RIVER CHANNEL | (112) | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- ADAMS AVENUE | (104) | HIGHWAY SYSTEM- ROUTE ON NHS 1 |
| (9) | LOCATION- 0.5 MI E/O BROOKHURST ST | (26) | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- PART OF NET 1 | | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 40 MIN 20.34 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 56 MIN 45.94 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - PART OF NET 1 |
| | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | (22) | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- PRSTR CONC CONT TYPE- BOX BEAM OR GIRDER - MULTI CODE 605 | | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ******** CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK 7 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 5 | (59) | SUPERSTRUCTURE 7 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 7 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) | CHANNEL & CHANNEL PROTECTION 8 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | | CULVERTS |
| | MUDE OF HEADING CHARLES | | |
| | TYPE OF WEARING SURFACE- NONE CODE 0 TYPE OF MEMBRANE- NONE CODE 0 | | ******* LOAD RATING AND POSTING ****** CODE |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- MS-18 OR HS-20 5 |
| | ******* AGE AND SERVICE ********* | | OPERATING RATING METHOD- LOAD FACTOR 1 |
| | YEAR BUILT 1977 | | OPERATING RATING- 71.0 |
| 100 | YEAR RECONSTRUCTED 0000 | | INVENTORY RATING METHOD- LOAD FACTOR 1 |
| | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | | INVENTORY RATING- 32.4 |
| ,, | UNDER- WATERWAY 5 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 06 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| (29) | AVERAGE DAILY TRAFFIC 39000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| (30) | YEAR OF ADT 2010 (109) TRUCK ADT 2 % | | ********** APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 3 KM | | STRUCTURAL EVALUATION 7 |
| | ********* GEOMETRIC DATA ********** | (68) | DECK GEOMETRY 5 |
| | LENGTH OF MAXIMUM SPAN 36.0 M | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 164.6 M | | WATER ADEQUACY 8 |
| | CURB OR SIDEWALK: LEFT 1.2 M RIGHT 1.2 M | (72) | APPROACH ROADWAY ALIGNMENT 8 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 24.4 M | (36) | TRAFFIC SAFETY FEATURES 1000 |
| | DECK WIDTH OUT TO OUT 28.7 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 24.4 M | | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- CLOSED NON-MOUNTABLE 3 | (75) | EUDE OF HORK |
| (34) | THE THE THE PART OF THE PART O | | |
| // Commonweal | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 12.2 M | | BRIDGE IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| (54) I | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 90704 |
| * | ******* NAVIGATION DATA ********* | | YEAR OF FUTURE ADT 2038 |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | ************************************** |
| | PIER PROTECTION- CODE | (90) | INSPECTION DATE 01/17 (91) FREQUENCY 24 MO |
| | INVITABLE OF TABANAS | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| | 0.0 M | C) | OTHER SPECIAL INSP- NO MO C) |

01/27/2017 [AAAH]

103 - PHOTO-Deck-Details



Ac thickness at the west sdie is almost 9 inches.

103 - PHOTO-Deck-Details



Ac thickness at the west sdie is almost 9 inches.

SANTA ANA-DELHI CHANNEL

0.1 MI S/O BRISTOL STREET

01/27/2017 [AAAH]



Photo No. 3

Spall 12" X8" X 1.5 at teh west face of the bog girder at mid-span.





Photo No. 4

Spall 12" X8" X 1.5 at teh west face of the bog girder at mid-span.

55C0205

SANTA ANA-DELHI CHANNEL

0.1 MI S/O BRISTOL STREET

01/27/2017 [AAAH]

107 - PHOTO-Super-Damage/Deteroration



Photo No. 5





Photo No. 6 Underside View looking South

55C0205

55C0205

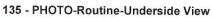




Photo No. 7 Underside View looking South





Photo No. 8 Underside View looking South

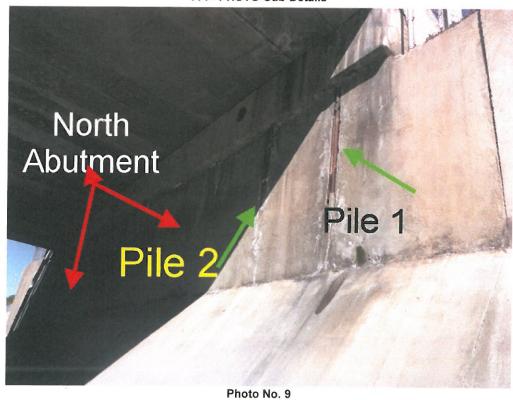
SANTA ANA-DELHI CHANNEL

0.1 MI S/O BRISTOL STREET

01/27/2017 [AAAH]

114 - PHOTO-Sub-Details





North Abutment has two piles are visible at the east side.



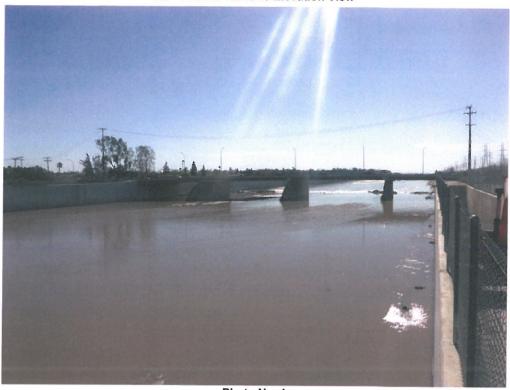


Photo No. 1 **Elevation View looking South**



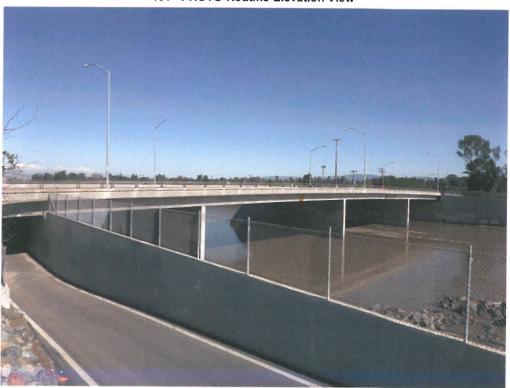


Photo No. 2 **Elevation View looking North-East**

SANTA ANA RIVER (ADAMS AVE)

0.5 MI E/O BROOKHURST ST

01/27/2017 [AAAJ]

119 - PHOTO-Rail-Damage/Deterioration



Photo No. 3

South rail has 2 spalls 12"X10"X 1.5 at 10 ft from the west end.

119 - PHOTO-Rail-Damage/Deterioration



Photo No. 4

South rail has 2 spalls 12"X10"X 1.5 at 10 ft from the west end.

55C0344

0.5 MI E/O BROOKHURST ST

01/27/2017 [AAAJ]

124 - PHOTO-Joint-Damage/Deterioration

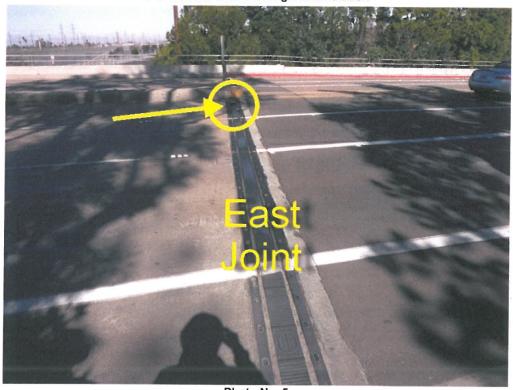


Photo No. 5

East joint is missing 2 feet section at EB lane 1.

124 - PHOTO-Joint-Damage/Deterioration



Photo No. 6

East joint is missing 2 feet section at EB lane 1.

55C0344

01/27/2017 [AAAJ]

124 - PHOTO-Joint-Damage/Deterioration





Photo No. 7
East joint is missing 2 feet section at EB lane 1.



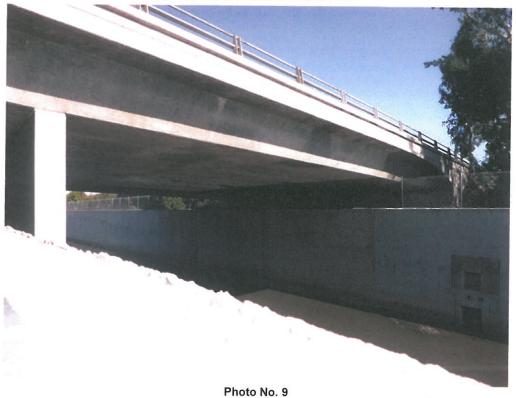


Photo No. 8

Soffit between the 2 box girders has transvsre cracks with white efflorescence at span 4.

0.5 MI E/O BROOKHURST ST

135 - PHOTO-Routine-Underside View



Underside View looking East





Sound patched spalls 1 ft X 1 ft in many locations.

55C0344

SANTA ANA RIVER (ADAMS AVE)

0.5 MI E/O BROOKHURST ST

01/27/2017 [AAAJ]

119 - PHOTO-Rail-Damage/Deterioration



Photo No. 11

The north rail exhibits few spalls 5 inches 5 inches X 1 inches in many locations.

55C0344

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: 55C0371

Bridge Name: Santa Ana River Channel **Year Built:** 1974

Facility Carried: Segerstrom-Slater

The Santa Ana River Channel Bridge at Segerstrom-Slater Avenue is a continuous 5 span cast-in-place reinforced concrete T-Beam Bridge with pier wall and open-end diaphragm abutments supported on concrete piles.

Caltrans BIR recommendations:

- Repair vertical offset of sidewalk at northeast and southwest approaches.
- Repair spalls on inside face of bridge rails.

Field Inspection Observations

- Exposed rebar in barrier at several locations. (photo 6) Recommend patching spalled concrete.
- Torn joint seal (photo 5).
- Uneven sidewalk at bridge approach (photo 7).
- Bridge deck appears to be treated.
- Efflorescence on bridge soffit. OCPW stated the bridge deck has been treated.

Maintenance Needs Assessment

BPMP Assessment

Replace torn joint seal.

General Maintenance - Non-BPMP

- Repair uneven sidewalk approach. Appears to be a result of sidewalk settling. Investigate cause
 of settling to ensure water is not removing fines under sidewalk.
- Monitor efflorescence on bridge soffit to determine if water is continuing to seep through deck.

Proposed BPMP Construction Costs

Replace Joint seal ≈ \$40,000 (with engineering, traffic control, mobilization and contingency)

Construction Items Not Funded by BPMP

 Repair barrier spalls ≈ \$50,000 (includes engineering, traffic control, mobilization and contingency)

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:



Photo 4:

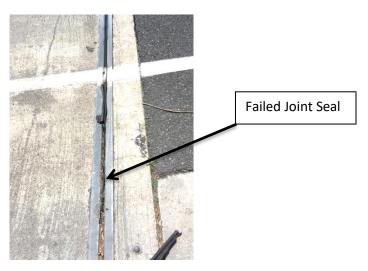


Photo 5: Failed Joint Seal



Photo 6: Barrier



Photo 7: Sidewalk

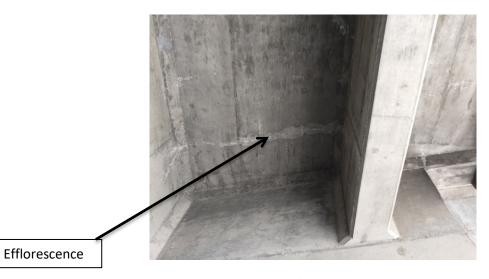


Photo 8:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0371

Facility Carried: SEGERSTROM-SLATER

Location : 0.3 MI. W/O HARBOR BLVD.

City :

Inspection Date: 10/24/2014

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

Х

STRUCTURE NAME: SANTA ANA RIVER CHANNEL (SEGERSTROM-SLATER)

CONSTRUCTION INFORMATION

 Year Built : 1974
 Skew (degrees): 13

 Year Widened: 1982
 No. of Joints : 2

 Length (m) : 100
 No. of Hinges : 0

Structure Description: Continuous 5-span CIP/RC T-beam (10 each) with RC pier walls and RC open end seat abutments, all supported upon concrete piles.

Span Configuration : (W) 16.5 m, 3 @ 21.9 m, 16.5 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: RF=1.82 =>59.0 metric tons Calculation Method: LOAD FACTOR Operating Rating: RF=3.03 =>98.2 metric tons Calculation Method: LOAD FACTOR

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.1 m br, 1.5 m sw, 19.5 m, 1.5 m sw, 0.1 m br (N)

Total Width: 23.2 m Net Width: 19.5 m No. of Lanes: 4 Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| Type 11 | Right/Left | 660 | |

DESCRIPTION UNDER STRUCTURE

Channel Description: RC 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

The river was dry at inspection time. All elements were visually inspected.

REVISIONS

The bridge name was revised to include the road carried name.

Old name: SANTA ANA RIVER CHANNEL.

New name: SANTA ANA RIVER CHANNEL (SEGERSTROM-SLATER).

Printed on: Thursday 11/13/2014 12:27 PM

55C0371/AAAH/30344

INSPECTION COMMENTARY

DECK AND ROADWAY

The approach sidewalks at the two corners northeast and southwest are vertically offset up to 2".

SAFE LOAD CAPACITY

A load Rating Summary sheet was in BIRIS. The current load rating was based on calculations dated 10/22/1982.

| No. | Defect Defect Element Description /Prot | E | | otal Qty | Units | | | Condition | |
|---------------------------------------|---|------------------|-----|-------------|---------|----------|--------|-----------|---|
| 16 | | | | 2320 | sq.m | 2260 | 60 | 0 | 0 |
| 10 | 1120 Efflorescence/Rust Stai | | 2 . | 60 | sq.m | 0 | 60 | 0 | 0 |
| | | g | | | | | 60 | | |
| (16-1 There | 1120) e are about 24 transverse cracks with | white effloresce | nce | in e | werw sr | nan | | | |
| 110 | | ** | | 1000 | m | 999 | 1 | 0 | 0 |
| | 1080 Delamination/Spall/Patc | | 2 | 1 | | 0 | 1 | 0 | 0 |
| (110- | 1080) | | | | | | | | |
| 100 | e is a spall (4" x 3" x 1") in girder | 1 (north) of spa | n 2 | at b | ottom r | near pie | er wal | 1 3. | |
| 210 | Pier Wall-RC | | 2 | 96 | m | 96 | 0 | 0 | 0 |
| (210) | | | | | - | | | | |
| There | e were no significant defects noted. | | | | | | | | |
| 215 | Abutment-RC | | 2 | 48 | m | 48 | 0 | 0 | 0 |
| (215) | | | | | | | | | |
| | were no significant defects noted. | | | | | | | | |
| 227 | Pile-RC | | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (227) | | h | | | -64 | | mb. | :1 | |
| | tile element is included to indicate to the sed for visual inspection. No indicat | | | | | | | | |
| 256 | | | 2 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) | | | | | | | | | |
| There | were no significant defects noted. | | | | | | | | |
| | Joint-Compression Seal | | 2 | 40 | m | 40 | 0 | 0 | 0 |
| 302 | | | | | | | | | |
| 302 (302) | ware no significant defeats noted | | | | | | | | |
| (302) | were no significant defects noted. | | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (302) | | i | | | - | | | | |
| (302) There 312 (312) | Bearing-Enclosed | | | | | | | | |
| (302) There 312 (312) | Bearing-Enclosed | | | | | | | | |
| (302) There 312 (312) | Bearing-Enclosed were no significant defects noted. | | 2 | 200 | m | 190 | 10 | 0 | 0 |

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem Defect Defect Element Description
No. /Prot

Env Total Units Qty in each Condition State
Qty St. 1 St. 2 St. 3 St. 4

and 21 m from west end and many small spalls at the inside face of both rails.

WORK RECOMMENDATIONS

RecDate: 10/24/2014 EstCost: Repair the approach sidewalks at the two

Action : Railing-Misc. StrTarget: 2 YEARS corners northeast and southwest are

Work By: LOCAL AGENCY DistTarget: vertically offset up to 2".

Status : PROPOSED EA:

Action : Railing-Repair StrTarget: 2 YEARS mm) with exposed rebars at the inside
Work By: LOCAL AGENCY DistTarget: face of south rail 15 m and 21 m from

Status : PROPOSED EA: west end and many small spalls at the

inside face of both rails.

Team Leader : Mikhael T. Zaarour

Report Author: Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

11/10/14

(D-+-)

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | *********** |
|---|---|--|---|
| 4-1 | | | SUFFICIENCY RATING = 95.2 |
| 0.400000 | STATE NAME- CALIFORNIA 069 | | STATUS |
| | STRUCTURE NUMBER 55C0371 | | HEALTH INDEX 99.5 |
| | INVENTORY ROUTE (ON/UNDER) - ON 14000000 | | PAINT CONDITION INDEX = N/A |
| | HIGHWAY AGENCY DISTRICT 12 | | AND |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | 7 | ******** CLASSIFICATION ********* CODE |
| (6) | FEATURE INTERSECTED- SANTA ANA RIVER CHANNEL | | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- SEGERSTROM-SLATER | | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 0.3 MI. W/O HARBOR BLVD. | | FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 |
| | MILEPOINT/KILOMETERPOINT 0 | 38.05.000.000.00 | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 42 MIN 32.3 SEC | 7. TO 10. TO 10. TO 10. | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 55 MIN 32 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| , | ****** STRUCTURE TYPE AND MATERIAL ****** | ************************************** | |
| | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE CONT | | OWNER- COUNTY HIGHWAY AGENCY 02 HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (45) | TYPE- TEE BEAM CODE 204 | (37) | NOT EDIGIBLE 3 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | *********** CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | 170,000,000,000 | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 5 | | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | , | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CHANNEL & CHANNEL PROTECTION 9 |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| A) | TYPE OF WEARING SURFACE- NONE CODE $_{0}$ | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- MS-18 OR HS-20 5 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | (63) | OPERATING RATING METHOD- LOAD FACTOR 1 |
| | ******* AGE AND SERVICE ********* | (64) | OPERATING RATING- 98.2 |
| 30.000.000 | YEAR BUILT 1974 | (65) | INVENTORY RATING METHOD- LOAD FACTOR 1 |
| The second second | YEAR RECONSTRUCTED 1982 | 11.4 (11.5) | INVENTORY RATING- 59.0 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 UNDER- WATERWAY 5 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| (29) | AVERAGE DAILY TRAFFIC 30000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| (30) | YEAR OF ADT 2012 (109) TRUCK ADT 1 % | | ********* APPRAISAL ********** CODE |
| (19) | BYPASS, DETOUR LENGTH 2 KM | (67) | STRUCTURAL EVALUATION 8 |
| | ******* GEOMETRIC DATA ********* | (68) | DECK GEOMETRY 7 |
| (48) | LENGTH OF MAXIMUM SPAN 21.9 M | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 100.0 M | (71) | WATER ADEQUACY 9 |
| 0.0000000000000000000000000000000000000 | CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M | (72) | APPROACH ROADWAY ALIGNMENT 8 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 19.5 M | (36) | TRAFFIC SAFETY FEATURES 1000 |
| | DECK WIDTH OUT TO OUT 23.2 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 20.1 M | | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 13 DEG (35) STRUCTURE FLARED NO | | LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| (47) | INVENTORY ROUTE TOTAL HORIZ CLEAR 19.5 M | (95) | ROADWAY IMPROVEMENT COST |
| (53) | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST |
| San Control | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) | YEAR OF IMPROVEMENT COST ESTIMATE |
| 25.000 | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (114) | FUTURE ADT 47242 |
| | MIN LAT UNDERCLEAR LT 0.0 M | (115) | YEAR OF FUTURE ADT 2031 |
| | ************ NAVIGATION DATA ********** | | ************************************** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | INSPECTION DATE 10/14 (91) FREQUENCY 48 MO |
| | PIER PROTECTION- CODE | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0404

Bridge Name: Anaheim-Barber City Channel **Year Built:** 1959

Facility Carried: Dale Street

The Anaheim-Barber City channel culvert at Dale Street is a reinforced concrete double box culvert.

Asphalt concrete overlay on deck.

Caltrans BIR recommendations:

• Patch east headwall spalls

Field Inspection Observations

- Spalled post pocket on east side (photo 3).
- Utility on the west side dripping water (photo 4), constantly keeping concrete wet.
- Minor soffit spall at east abutment/headwall (photo 4).
- Minor efflorescence visible on soffit (photo 5).

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

- Recommend patching spalled concrete. No immediate actions required since not a high priority.
- Efflorescence likely from water penetrating through deck. Not significant problem at this time.
 To repair will require deck AC removal, deck treatment, and grinding approach AC to conform to lower deck elevation.
- Recommend contacting utility owner to repair water drip problem.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

- Repair Spalls < \$10,000 (includes engineering, mobilization and contingency)
- Utility repair should be funded by utility company

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:

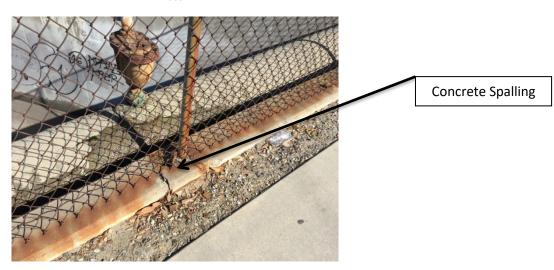


Photo 3: Railing Curb



Photo 4: Watermain



Photo 5: Bridge Soffit

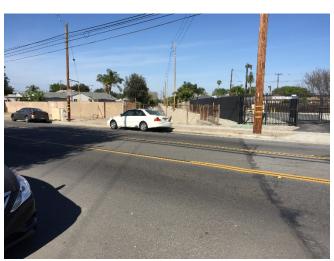


Photo 6: Bridge Deck



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Inspection Report

Bridge Number : 55C0404
Facility Carried: DALE STREET

Location : 0.1 MI N/O CHAPMAN AVENU

City

Inspection Date : 09/10/2015

Inspection Type

Routine FC Underwater Special Other

X

STRUCTURE NAME: ANAHEIM-BARBER CITY CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1959 Year Widened: N/A Length (m) : 10.1

Skew (degrees): 38
No. of Joints: 0
No. of Hinges: 0

Structure Description: Double 3.7 m W x 3.0 m H x 27.4 m L RC box culvert (grade top)

beneath 0.3 m of earth fill.

Span Configuration : (S) 2 @ 3.7 m (N) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=0.75 =>24.3 metric tons
Operating Rating: RF=1.25 =>40.5 metric tons

Calculation Method: FIELD EVAL/ENG JUDGMENT Calculation Method: FIELD EVAL/ENG JUDGMENT

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 cu, 2.5 m sw, 14.9 m, 0.2 m cu, 2.0 m ea, 1.2 m sw, 0.2 m cu (E)

Total Width: 24.4 m Net Width: 14.9 m No. of Lanes: 3 Speed: 35 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 3.0 Inches

Rail Code: 0000

Rail Type Location Length (ft) Rail Modifications

None Right/Left CLF

DESCRIPTION UNDER STRUCTURE

Channel Description: RC trapezoidal upstream and downstream.

NOTICE

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INSPECTION COMMENTARY

SCOPE AND ACCESS

There channel was dry, the inspection performed by walking on the road and under. There was no access to the channel the inspector jump the CLF. All elements were visually inspected.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures.

Printed on: Wednesday 10/21/2015 06:56 AM

| Elem No. | Defect De /Prot | fect Element Description | Env | Total Qty | Units | Qty in St. 1 | | ondition St. 3 | |
|-------------|--------------------|---------------------------------|-----|--------------|-------|-----------------|---|-------------------|---|
| 241 | | Culvert-RC | 2 | 54 | m | 44 | 9 | 1 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 2 | | 0 | 1 | 1 | 0 |
| | 1120 | Efflorescence/Rust Staining | 2 | 1 | | 0 | 1 | 0 | 0 |
| | 1130 | Cracking (RC and Other) | 2 | 7 | | 0 | 7 | 0 | 0 |

There are 2 incipient spalls 300 mm x 200mm at the inside face of headwall under posts 2 & 3. There is a spall 100 mm x 100 mm x 25 mm with exposed rebar at the bottom of east headwall of barrel

(241 - 1120)

There is white efflorescence at the soffit along the construction joint.

(241 - 1130)

There are vertical cracks 1 mm wide, 4 cracks in south wall, 7 cracks in middle wall and 3 cracks in north wall

WORK RECOMMENDATIONS

RecDate: 06/08/2011 Action : Super-Patch spalls Work By: LOCAL AGENCY

Status : PROPOSED

EstCost:

StrTarget: 2 YEARS

DistTarget:

Repair the $\,$ spall 100 mm x 100 mm x 25 mm $\,$ with exposed rebar at the bottom of east headwall of barrel #1 (south) and the 2 incipient spalls 300 mm x 200mm at the inside face of headwall under posts 2 &

Mikhael T. Zaarour Team Leader :

Report Author : Mikhael T. Zaarour

MT.Zaarour/DH.Kim Inspected By :

Mikhael T. Zaarour (Registered Civil Engineer)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | *********** |
|-------------|--|---|
| (1) | STATE NAME- CALIFORNIA 069 | SUFFICIENCY RATING = 87.9 |
| | STRUCTURE NUMBER 55C0404 | STATUS |
| | INVENTORY ROUTE(ON/UNDER) - ON 140000000 | HEALTH INDEX 93.3 |
| | HIGHWAY AGENCY DISTRICT 12 | PAINT CONDITION INDEX = N/A |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | ******* CLASSIFICATION ******* CODE |
| | FEATURE INTERSECTED- ANAHEIM-BARBER CITY CHA | (112) NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- DALE STREET | (104) HIGHWAY SYSTEM- NOT ON NHS |
| | LOCATION- 0.1 MI N/O CHAPMAN AVENUE | (26) FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 |
| 19220000 45 | MILEPOINT/KILOMETERPOINT 0 | (100) DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) PARALLEL STRUCTURE- NONE EXISTS N |
| | LRS INVENTORY ROUTE & SUBROUTE | (102) DIRECTION OF TRAFFIC- 2 WAY 2 |
| | LATITUDE 33 DEG 47 MIN 24.05 SEC | (103) TEMPORARY STRUCTURE- |
| | LONGITUDE 117 DEG 59 MIN 02.63 SEC | (105) FED.LANDS HWY- NOT APPLICABLE 0 |
| | BORDER BRIDGE STATE CODE % SHARE % | (110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| | BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD 3 |
| (55) | DONDER BRIDGE STRUCTURE NOMBER | (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| + | ******* STRUCTURE TYPE AND MATERIAL ******* | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- CULVERT CODE 119 | (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ********* CONDITION ************************************ |
| (45) | TYPE- OTHER/NA CODE 000 | (58) DECK N |
| | NUMBER OF SPANS IN MAIN UNIT 2 | (59) SUPERSTRUCTURE N |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) SUBSTRUCTURE N |
| (107) | DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | (61) CHANNEL & CHANNEL PROTECTION 9 (62) CULVERTS 7 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) CULVERTS 7 |
| A) | TYPE OF WEARING SURFACE- NOT APPLICABLE CODE $_{ m N}$ | ******* LOAD RATING AND POSTING ******* CODE |
| B) | TYPE OF MEMBRANE- NOT APPLICABLE CODE N | (31) DESIGN LOAD- UNKNOWN 0 |
| | TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N | (63) OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | ******** AGE AND SERVICE ********* | (64) OPERATING RATING- 40.5 |
| (27) | YEAR BUILT 1959 | (65) INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| | YEAR RECONSTRUCTED 0000 | (66) INVENTORY RATING- 24.3 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (20) | UNDER- WATERWAY 5 LANES:ON STRUCTURE 03 UNDER STRUCTURE 00 | (41) STRUCTURE OPEN, POSTED OR CLOSED- A |
| | | DESCRIPTION- OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 16000 YEAR OF ADT 2009 (109) TRUCK ADT 1 % | ******* APPRAISAL ********* CODE |
| | | |
| | BYPASS, DETOUR LENGTH 2 KM | (67) STRUCTURAL EVALUATION 6 |
| | ********* GEOMETRIC DATA ********** | (68) DECK GEOMETRY (60) INDEPCHENDANCES APPRICAL S HODIFONDAL |
| | LENGTH OF MAXIMUM SPAN 3.7 M | (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N (71) WATER ADEOUACY 9 |
| | STRUCTURE LENGTH 10.1 M | (71) WATER ADEQUACY 9 (72) APPROACH ROADWAY ALIGNMENT 8 |
| | CURB OR SIDEWALK: LEFT 2.5 M RIGHT 1.2 M | (36) TRAFFIC SAFETY FEATURES 0000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 14.9 M | (112) GOOLD COLUMNICAL PRINCIPA |
| | DECK WIDTH OUT TO OUT 24.4 M | |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 15.2 M | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN 0 | (75) TYPE OF WORK- CODE |
| (34) | | (76) LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 14.9 M MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (95) ROADWAY IMPROVEMENT COST |
| 2000 | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (96) TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (97) YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT 20791 |
| | STATE OF THE STATE | (115) YEAR OF FUTURE ADT 2035 |
| | ************ NAVIGATION DATA *********** | ************************************** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) INSPECTION DATE 09/15 (91) FREQUENCY 24 MO |
| | PIER PROTECTION- CODE | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VAVIGATION VERTICAL CLEARANCE 0.0 M | A) FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | B) UNDERWATER INSP- NO MO B) |
| (40) I | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | C) OTHER SPECIAL INSP- NO MO C) |

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: 55C0477

Bridge Name: Sand Canyon Wash **Year Built:** 1973

Facility Carried: Mason Regional Parkway

The Sand Canyon Wash Bridge at Mason Regional PRX is cast-in-place reinforced concrete triple box

culvert.

Caltrans BIR recommendations:

• Clean and grub channel.

Field Inspection Observations

- Minor Spalling on pier nose (photo 4). Recommend repairing spalled surface area.
- Exposed footing (photo 4).
- Diagonal and vertical cracks on culvert walls (photo 4).
- Overgrown vegetation. (photo 5)

Maintenance Needs Assessment

BPMP Assessment

- N/A No eligible maintenance activities
- However, exposed footing should be monitored. If the bridge is on piles this will not pose a
 future issue.

General Maintenance - Non-BPMP

- Repair spall and cracks on pier nose.
- Remove vegetation.

Proposed BPMP Construction Costs

Scour counter measure would be funded if become needed. No action needed at this time.

Construction Items Not Funded by BPMP

- Repair Pier nose cracks and Spalls ≈ \$15,000 (includes engineering, mobilization and contingency)
- Remove vegetation.

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:



Photo 4: Culvert Wall



Photo 5: Channel Vegetation



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0477

Facility Carried: MASON REGIONAL PRK
Location : 50' s/o University Drive

City

Inspection Date: 12/09/2014

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

STRUCTURE NAME: SAND CANYON WASH

CONSTRUCTION INFORMATION

Year Built : 1973 Skew (degrees): 99 Year Widened: N/A No. of Joints : 0 Length (m) : 12.2 No. of Hinges : 0

Structure Description: Triple 3.7 m W x 2.7 m H x 15.2 m L RC box culvert (grade top)

beneath 0.6 m of earth fill.

Span Configuration : (S) 3 @ 3.7 m (N) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.5 m br, 1.2 m sw, 6.9 m, 1.8 m cu med, 3.5 m, 1.2 m sw, 0.5 m br (E)

Total Width: 14.6 m Net Width: 10.4 m No. of Lanes: 3 Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 0000 Rail Description: Timber Railing

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with rock slopes at 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

The wash was dry at time of inspection. All elements were visually inspected.

CULVERT

The downstream live trees accumulated 300 mm dirt and water inside the barrels #1 and #3.

SAFE LOAD CAPACITY

Printed on: Monday 12/15/2014 07:47 AM 55C0477/AAAG/30795

| Elem | | RATINGS AND COMMENTARY Element Description | Env | Total Qty | Units | | | ondition St. 3 | |
|----------------|----------------|---|---------|--------------|--------|--------|---------|-------------------|---|
| 241 | (| ulvert-RC | 2 | 45 | m | 35 | 10 | 0 | 0 |
| | 1130 | racking (RC and Other) | 2 | 10 | | 0 | 10 | 0 | 0 |
| | are vertical | cracks up to 1 mm wide in the culve 2 #3, and 3 cracks in wall #4. | ert wal | .ls as | fallow | 5 crac | ks in w | all #1, | 6 |
| 332 | F | ailing-Timber | 2 | 32 | m | 32 | 0 | 0 | 0 |
| (332) There | were no signi: | ficant defects noted. | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 06/08/2011 EstCost: Action : Remove Vegetation StrTarget: 2 YEARS from live trees and accumulated dirt

Work By: LOCAL AGENCY DistTarget:

Status : PROPOSED EA:

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Printed on: Monday 12/15/2014 07:47 AM

Mikhael T. Zaarour (Registered Civil Engineer)

PROFESSIONA Mikhael T. Zaarour No. 68212 09/30/2015 CIVIL

Remove and clean the downstream channel

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************************************** |
|--------|--|---|---|
| (1) | STATE NAME- CALIFORNIA 069 | | STATUS FUNCTIONALLY OBSOLETE |
| (8) | STRUCTURE NUMBER 55C0477 | | HEALTH INDEX 94.9 |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | PAINT CONDITION INDEX = N/A |
| (2) | HIGHWAY AGENCY DISTRICT 12 | | |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ********* CODE |
| (6) | FEATURE INTERSECTED- SAND CANYON WASH | | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- MASON REGIONAL PRK | * | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 50' s/o University Drive | | FUNCTIONAL CLASS- LOCAL URBAN 19 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (8)573335032406 | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 39 MIN 25.58 SEC | | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 49 MIN 53.4 SEC | 100000 10000000000000000000000000000000 | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | , | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 TOLL- ON FREE ROAD 3 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | Michigan Mi | OWNER - COUNTY HIGHWAY AGENCY 02 |
| | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE | | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (43) | TYPE- CULVERT CODE 119 | (37) | HISTORICAL STORTFICANCE NOT BEIGIBES |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| / | TYPE- OTHER/NA CODE 000 | (58) | DECK |
| (45) | NUMBER OF SPANS IN MAIN UNIT 3 | (59) | SUPERSTRUCTURE N |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE N |
| | DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | (61) | CHANNEL & CHANNEL PROTECTION 8 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS 7 |
| 20 100 | TYPE OF WEARING SURFACE- NOT APPLICABLE CODE N | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NOT APPLICABLE CODE N | (21) | DESIGN LOAD- UNKNOWN 0 |
| | TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N | - X-100-00-00 | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | ******* AGE AND SERVICE ******** | | OPERATING RATING- FIELD EVALUE 600 0 |
| (27) | YEAR BUILT 1973 | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| | YEAR RECONSTRUCTED 0000 | | INVENTORY RATING- 32.4 |
| | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | 1000000 | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (12) | UNDER- WATERWAY 5 | | STRUCTURE OPEN, POSTED OR CLOSED- A |
| (28) | LANES: ON STRUCTURE 03 UNDER STRUCTURE 00 | (11) | DESCRIPTION- OPEN, NO RESTRICTION |
| (29) | AVERAGE DAILY TRAFFIC 300 | | |
| (30) | YEAR OF ADT 2010 (109) TRUCK ADT 1 % | | ******* APPRAISAL ******** CODE |
| (19) | BYPASS, DETOUR LENGTH 199 KM | (67) | STRUCTURAL EVALUATION 7 |
| | ******** GEOMETRIC DATA ********** | 1.7.7. | DECK GEOMETRY 2 |
| (48) | LENGTH OF MAXIMUM SPAN 3.7 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 12.2 M | | WATER ADEQUACY 9 |
| (50) | CURB OR SIDEWALK: LEFT 1.2 M RIGHT 1.2 M | 11 CONTRACTOR | APPROACH ROADWAY ALIGNMENT 6 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 10.4 M | | TRAFFIC SAFETY FEATURES 0000 |
| (52) | DECK WIDTH OUT TO OUT 14.6 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 10.4 M | | ******* PROPOSED IMPROVEMENTS ******* |
| (33) | BRIDGE MEDIAN- CLOSED (NO BARRIER) 2 | (75) | TYPE OF WORK- MISC STRUCTURAL WORK CODE 38 |
| (34) | SKEW 99 DEG (35) STRUCTURE FLARED NO | (76) | LENGTH OF STRUCTURE IMPROVEMENT 12.2 M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST \$114,000 |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 6.9 M | (95) | ROADWAY IMPROVEMENT COST \$22,800 |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST \$191,520 |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) | YEAR OF IMPROVEMENT COST ESTIMATE 2010 |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (114) | FUTURE ADT 361 |
| 8 8 | MIN LAT UNDERCLEAR LT 0.0 M | (115) | YEAR OF FUTURE ADT 2031 |
| | ************ NAVIGATION DATA ********** | | ************* INSPECTIONS ********** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | INSPECTION DATE 12/14 (91) FREQUENCY 48 MO |
| (111) | PIER PROTECTION- CODE | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | A) | FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | C) | OTHER SPECIAL INSP- NO MO C) |

Orange County Bridge Review Summary

Dokken Engineering performed field reviews of selected Orange County bridges in February and April of 2017 to identifying maintenance activities eligible for Caltrans' Bridge Preventive Maintenance Program funding. Additional maintenance activities not eligible for funding were also identified, and maintenance recommendations in the most recent Caltrans Bridge Inspection Report (BIR) were confirmed.

Bridge Number: 55C0511M

Bridge Name: Santiago Creek Year Built: 1982

Facility Carried: Villa Park Road

The Santiago Creek culvert is a single span multiple corrugated steel pipe culvert beneath 40 feet of earth fill. There was not access to the culvert and it was not visible from the road.

Caltrans BIR recommendations:

None

Field Inspection Observations

• No work recommendation can be made for this culvert. There was no access and the culvert was not visible from the road.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

• No recommendations.

Proposed BPMP Construction Costs

• N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1: Santiago Creek Bridge

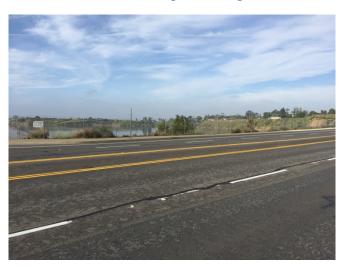


Photo 2: Santiago Creek Bridge



Photo 3:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0511M

Facility Carried: VILLA PARK ROAD

Location : 1.74 MI. E/O ROUTE 55 FW

City

Inspection Date : 08/07/2014

Inspection Type

Routine FC Underwater Special Other

Bridge Inspection Report

STRUCTURE NAME: SANTIAGO CREEK

CONSTRUCTION INFORMATION

Year Built : 1982 Year Widened: N/A Length (m) : 6.7

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

No. of Hinges: 0

Х

Structure Description: Single 6.4 m diameter x 100.5 m L corrugated steel multiplate pipe

culvert (non-grade top) beneath 12.2 m of earth fill.

Span Configuration : (W) 1 @ 6.4 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=1.00 =>32.4 metric tons

Calculation Method: FIELD EVAL/ENG JUDGMENT Calculation Method: FIELD EVAL/ENG JUDGMENT

Operating Rating: RF=1.67 =>54.1 metric tons

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u>

Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 25.0 m (N)

Total Width:

.0 m Net Width:

.0 m

No. of Lanes: 4

Speed: 45 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 0000 Rail Description: Chain link fence.

DESCRIPTION UNDER STRUCTURE

Channel Description: Earth basin reservoir downstream and natural gravel 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.

INSPECTION COMMENTARY

SCOPE AND ACCESS

The basin was dry at the north side of the culvert and subside at the south side. All elements were visually inspected.

SAFE LOAD CAPACITY

A load Rating Summary sheet was in BIRIS. This load rating was assigned in accordance with current SM&I procedures.

| ELEME | NT INS | PECTION RATINGS AND COMMENTARY | | | | | | | |
|-------------|-----------------|--------------------------------|-------|--------------|------|----|-----|--------------------|-----|
| Elem No. | Defect /Prot | Defect Element Description | Env | Total Qty | | | | Condition St. 3 | |
| 240 | | Culvert-Steel | 2 | 101 | m | 99 | 0 | 0 | 2 |
| | 516 | Steel Coating-Galvanized | 2 | 2000 | sq.m | 0 | 800 | 400 | 800 |
| | 1010 | Cracking . | 2 | 2 | | 0 | 0 | 0 | 2 |
| | | 3440 Effectiveness (Steel PC) | , 2 . | 2000 | | 0 | 800 | 400 | 800 |

(240 - 1010)

There was 2 cuts 8" and 3" in the steel plates at the south end to the east side.

(240-516-3440)

The culvert invert was rusted, the galvanized coat was gone at the pipe bottom and 2/3 of the pipe show some type of rust especially at the connection between plates.

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/M.Zolfaghari

Mikhael T. Zaarour (Registered Civil Engineer) (Date

PROFESSIONAL
Mikhael T.
Zaarour

No. 68212

09/30/2015

CIVIL

OF CALIFORNIA

STRUCTURE INVENTORY AND APPRAISAL REPORT

| ************************************** | with the control of t |
|--|--|
| (1) STATE NAME- CALIFORNIA 069 | ************************************** |
| (8) STRUCTURE NUMBER 55C0511M | STATUS |
| (5) INVENTORY ROUTE (ON/UNDER) - ON 140000000 | HEALTH INDEX 98.0 |
| (2) HIGHWAY AGENCY DISTRICT 12 | PAINT CONDITION INDEX = N/A |
| (3) COUNTY CODE 059 (4) PLACE CODE 00000 | ******* CLASSIFICATION ******** CODE |
| (6) FEATURE INTERSECTED- SANTIAGO CREEK | (112) NBIS BRIDGE LENGTH- YES Y |
| (7) FACILITY CARRIED- VILLA PARK ROAD | (104) HIGHWAY SYSTEM- NOT ON NHS |
| (9) LOCATION- 1.74 MI. E/O ROUTE 55 FWY | (26) FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| (11) MILEPOINT/KILOMETERPOINT 0 | (100) DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) BASE HIGHWAY NETWORK- PART OF NET 1 | (101) PARALLEL STRUCTURE- NONE EXISTS N |
| (13) LRS INVENTORY ROUTE & SUBROUTE 00000000000 | (102) DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) LATITUDE 33 DEG 48 MIN 37.24 SEC | (103) TEMPORARY STRUCTURE- |
| (17) LONGITUDE 117 DEG 48 MIN 19.16 SEC | (105) FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) BORDER BRIDGE STATE CODE % SHARE % | (110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD 3 |
| | (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| ******* STRUCTURE TYPE AND MATERIAL ******* | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) STRUCTURE TYPE MAIN:MATERIAL- STEEL TYPE- CULVERT CODE 319 | (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| TYPE- CULVERT CODE 319 (44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ******* CONDITION ********** CODE |
| TYPE- OTHER/NA CODE 000 | (50) DECK |
| (45) NUMBER OF SPANS IN MAIN UNIT | (59) CHDEDCTRICTIES |
| (46) NUMBER OF APPROACH SPANS | (60) CHECENICATION |
| (107) DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | (61) CHANNEL & CHANNEL PROTECTION 9 |
| (108) WEARING SURFACE / PROTECTIVE SYSTEM: | (62) CULVERTS 7 |
| A) TYPE OF WEARING SURFACE- NOT APPLICABLE CODE N | • |
| B) TYPE OF MEMBRANE- NOT APPLICABLE CODE N | ******* LOAD RATING AND POSTING ****** CODE |
| C) TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N | (31) DESIGN LOAD- UNKNOWN 0 |
| ******* AGE AND SERVICE ********* | (63) OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| (27) YEAR BUILT 1982 | (64) OPERATING RATING- 54.1 |
| (106) YEAR RECONSTRUCTED 0000 | (65) INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| (42) TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (66) INVENTORY RATING- |
| UNDER- WATERWAY 5 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | (41) STRUCTURE OPEN, POSTED OR CLOSED- |
| (29) AVERAGE DAILY TRAFFIC 26000 | DESCRIPTION- OPEN, NO RESTRICTION |
| (30) YEAR OF ADT 2003 (109) TRUCK ADT 1 % | ******** APPRAISAL ********** CODE |
| (19) BYPASS, DETOUR LENGTH 6 KM | (67) STRUCTURAL EVALUATION 7 |
| ******** GEOMETRIC DATA ********** | (68) DECK GEOMETRY N |
| (48) LENGTH OF MAXIMUM SPAN 6.4 M | (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) STRUCTURE LENGTH 6.7 M | (71) WATER ADEQUACY |
| (50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | (72) APPROACH ROADWAY ALIGNMENT 8 |
| (51) BRIDGE ROADWAY WIDTH CURB TO CURB 0.0 M | (36) TRAFFIC SAFETY FEATURES 0000 |
| (52) DECK WIDTH OUT TO OUT 0.0 M | (113) SCOUR CRITICAL BRIDGES 8 |
| (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 25.0 M | ******* PROPOSED IMPROVEMENTS ******* |
| (33) BRIDGE MEDIAN- NO MEDIAN 0 (34) SKEW 0 DEG (35) STRUCTURE FLARED NO | (75) TYPE OF WORK- CODE |
| | (76) LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 25.0 M | (94) BRIDGE IMPROVEMENT COST |
| (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 25.0 M (53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (95) ROADWAY IMPROVEMENT COST |
| (54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (96) TOTAL PROJECT COST |
| (55) MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (97) YEAR OF IMPROVEMENT COST ESTIMATE |
| (56) MIN LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT 53049 |
| ********* NAVIGATION DATA ********* | (115) YEAR OF FUTURE ADT 2029 |
| (38) NAVIGATION CONTROL- NOT APPLICABLE CODE N | ********** INSPECTIONS ********** |
| (111) PIER PROTECTION- CODE | (90) INSPECTION DATE 08/14 (91) FREQUENCY 24 MO |
| (39) NAVIGATION VERTICAL CLEARANCE 0.0 M | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | A) FRACTURE CRIT DETAIL- NO MO A) |
| (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M | B) UNDERWATER INSP- NO MO B) |
| | C) OTHER SPECIAL INSP- NO MO C) |

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: 55C0534

Bridge Name: Handy Creek Year Built: 1985

Facility Carried: Meads Avenue

The Handy Creek Bridge at Meads Avenue is a simple span cast-in-place reinforced concrete slab with end diaphragm abutments supported on concrete piles.

Caltrans BIR recommendations:

• None

Field Inspection Observations

- Fill from equestrian trial is encroaching onto the shoulder (photo 1).
- There was limited access to the substructure due to several feet of standing water (photo 2). Overall, this bridge appears to be in good condition.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

• No recommendations.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1: Bridge



Photo 2



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0534
Facility Carried: MEADS AVENUE

Location : 0.3 MI E/O ORANGE PARK B

City

Inspection Date : 08/07/2015

Inspection Type

Routine FC Underwater Special Other

Х

Bridge Inspection Report

STRUCTURE NAME: HANDY CREEK

CONSTRUCTION INFORMATION

 Year Built : 1985
 Skew (degrees): 99

 Year Widened: 1990
 No. of Joints : 0

 Length (m) : 8.5
 No. of Hinges : 0

Structure Description: Single span CIP/RC deck slab with RC open end diaphragm abutments,

all supported upon concrete piles.

Span Configuration : (W) 1 @ 7.3 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18+MOD OR HS-20+MOD

Permit Rating : PPPPP

Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (N) 0.1 m br, 2.2 m sw, 0.6 m br, 8.8 m, 0.1 m br (S)

Total Width: 11.9 m Net Width: 8.8 m No. of Lanes: 2 Speed: 25 mph Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 Inches

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| MBBR | Right/Left | 99 | |

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

There was about 2' deep stagnate water in the creek. All elements were visually inspected from the side due to clearance under the structure.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures.

Printed on: Wednesday 09/23/2015 08:16 AM

55C0534/AAAG/32864

| ELEME | NT INSPECTION RATINGS AND NOTES | | | | | | | |
|-----------------|---|-----|--------------|-------|----|---------|---|------------------|
| | Defect Defect Element Description /Prot | Env | Total Qty | Units | | each Co | | n State St. 4 |
| 38 | Slab-RC | 2 | 101 | sq.m | 91 | 10 | 0 | 0 |
| | 1130 Cracking (RC and Other) | 2 | 10 | | 0 | 10 | 0 | 0 |
| (38-11 There | 30) are 1 mm wide diagonal cracks at the corners | | W. | | | | | |
| 215 | Abutment-RC | 3 | 34 | m | 34 | 0 | 0 | 0 |
| (215) There | were no significant defects noted. | | N 10-1201- | | | 10.0 | | |
| 252 | Pile-CIDH | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| | le element is included to indicate the presence d for visual inspection. No indication of pile | | | | | | | |
| 330 | Railing-Metal | 2 | 17 | m | 17 | 0 | 0 | 0 |
| (330) There | were no significant defects noted. | | | | | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

1/23/15

Mikhael T.
Zaarour

No. 68212

09/30/2017

CIVIL

OF CALIFORNIA

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************************************** |
|---|---|-------|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 88.6 STATUS |
| (8) | STRUCTURE NUMBER 55C0534 | | |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 14000000 | | HEALTH INDEX 97.9 |
| (2) | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- HANDY CREEK | (112) | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- MEADS AVENUE | (104) | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 0.3 MI E/O ORANGE PARK BL | (26) | FUNCTIONAL CLASS- COLLECTOR URBAN 17 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 48 MIN 26.85 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 46 MIN 43.57 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| 1,000,00 | | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- SLAB CODE 101 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK 7 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | (59) | SUPERSTRUCTURE 7 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CHANNEL & CHANNEL PROTECTION 8 |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| A) | TYPE OF WEARING SURFACE- NONE CODE 0 | | ******* LOAD RATING AND POSTING ****** CODE |
| B) | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- MS-18+MOD OR HS-20+MOD 6 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | | OPERATING RATING METHOD- ASSIGNED (LFD) A |
| | ********* AGE AND SERVICE ********* | | OPERATING RATING- 54.1 |
| (27) | YEAR BUILT 1985 | | INVENTORY RATING METHOD- ASSIGNED (LFD) A |
| (106) | YEAR RECONSTRUCTED 1990 | | INVENTORY RATING- 32.4 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | UNDER- WATERWAY 5 LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | AVERAGE DAILY TRAFFIC 1000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| | YEAR OF ADT 2011 (109) TRUCK ADT 1 % | | ******* APPRAISAL ******** CODE |
| 0.00000000 | BYPASS, DETOUR LENGTH 2 KM | | STRUCTURAL EVALUATION 7 |
| *************************************** | | | DECK CEOMETRY |
| | ********* GEOMETRIC DATA ********** | | Third of the same |
| 0.000.000.000 | LENGTH OF MAXIMUM SPAN 7.3 M | | THE METER AND ADDRESS OF THE SECOND S |
| | STRUCTURE LENGTH 8.5 M | | WATER ADEQUACY 5 APPROACH ROADWAY ALIGNMENT 5 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | | TRAFFIC SAFETY FEATURES 1000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 8.8 M | | SCOUR CRITICAL BRIDGES 8 |
| | DECK WIDTH OUT TO OUT 11.9 M | | |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 6.1 M BRIDGE MEDIAN- NO MEDIAN 0 | /==: | ******* PROPOSED IMPROVEMENTS ******* |
| (34) | (1) | | TYPE OF WORK- CODE |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 8.8 M | | BRIDGE IMPROVEMENT COST |
| 80.000 May 2 | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | ROADWAY IMPROVEMENT COST |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| (55) | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE FUTURE ADT |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | | 1202 |
| * | ********* NAVIGATION DATA ********* | (113) | |
| (38) 1 | NAVIGATION CONTROL- NOT APPLICABLE CODE N | /221 | ************* INSPECTIONS ************************************ |
| 15000,0000,000 | PIER PROTECTION- CODE | | INSPECTION DATE 08/15 (91) FREQUENCY 48 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (116) | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| (40) h | VAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) OTHER SPECIAL INSP- NO MO C) |
| | | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0550

Bridge Name: Aliso Creek Year Built: 1988

Facility Carried: Aliso Creek Road

The Aliso Creek Bridge at Aliso Creek Road is a single span cast-in-place post tensioned concrete box

girder with diaphragm abutments supported on concrete piles.

Caltrans BIR recommendations:

• Seal severe cracks with epoxy at the east end of the WB lanes.

Field Inspection Observations

- Due to traffic, there was limited deck access. Efflorescence visible on bridge soffit (photo 1), this
 may be a result of a leaking utility. Recommend determining if there are utilities through bridge
 that may be leaking, since moisture must be present in bridge cells to cause the efflorescence.
- Some down drains are clogged (photo 2). Note this is not eligible for BPMP funds.

Maintenance Needs Assessment

BPMP Assessment

• Seal cracks at east end of WB lanes per Caltrans BIR recommendation. These are condition state 2, therefore eligible for funding.

<u>General Maintenance - Non-BPMP</u>

• Clean out down drains.

Proposed BPMP Construction Costs

- Seal Bridge Deck cracks ≈ \$65,000
- Traffic Control for deck sealing ≈ \$15,000

Construction Items Not Funded by BPMP

Clean Down Drain ≈ \$4,000 (performed same time as deck sealing)

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:



Photo 4: Bridge Soffit



Photo 5: Bridge Deck



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0550

Facility Carried: ALISO CREEK ROAD

Location : 100' W/O ALICIA PARKWAY

City

Inspection Date : 08/14/2015

Inspection Type

Routine FC Underwater Special Other

Х

Bridge Inspection Report

STRUCTURE NAME: ALISO CREEK

CONSTRUCTION INFORMATION

Year Built : 1988 Year Widened: N/A Length (m) : 51.8 Skew (degrees): 20
No. of Joints: 0
No. of Hinges: 0

Structure Description: Single span CIP/PS concrete box girder (16 cells) with RC open end diaphragm abutments, all supported upon concrete piles.

Span Configuration : (W) 50.0 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18+MOD OR HS-20+MOD

Inventory Rating: RF=1.00 =>32.4 metric tons
Operating Rating: RF=1.67 =>54.1 metric tons

Calculation Method: ASSIGNED (LFD)
Calculation Method: ASSIGNED (LFD)

Permit Rating : PPPPP

Posting Load : Type 3: Legal

Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (N) 0.3 m br, 1.5 m sw, 34.5 m, 1.5 m sw, 0.3 m br (N)

Total Width: 38.0 m Net Width: 34.5 m No. of Lanes: 9 Speed: 50 mph

Min. Vertical Clearance: Unimpaired

Overlay Thickness: 0.0 Inches

Rail Code: 0000

Rail Type Location Length (ft) Rail Modifications
Type 26 Right/Left 1085

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth, trapezoidal with RC slope protection 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

The channel was dry at time of inspection. The inspection was performed by walking on the deck and under the structure. All elements were visually inspected.

DECK

The 5 mm thick at the north corner of Abutment 2 (leveling concrete) is broken into pieces and peeled off.

Printed on: Wednesday 09/23/2015 08:16 AM

55C0550/AAAJ/32864

INSPECTION COMMENTARY

SAFE LOAD CAPACITY

A Load Rating Summary Sheet dated 03/30/3013 is on file for this structure. The current rating has been assigned in accordance with SM&I procedures.

SCOPE AND ACCESS

| ELEME | ENT INSPECTION RATINGS AND NOTES | | | | | | | |
|-------------|---|--------------------|--------------|-------|-----|------|-------------------|---|
| Elem No. | Defect Defect Element Description /Prot | Env | Total Qty | Units | | | ondition St. 3 | |
| 16 | Top Flange-RC | 2 | 1970 | sq.m | 183 | 1787 | 0 | 0 |
| | 1130 Cracking (RC and Other) | 2 | 1787 | | 0 | 1787 | 0 | 0 |
| (16-1 | | | | | | - | | |
| There | are cracks 1 mm wide throughout the | deck mainly in the | ends | | | | | |
| 104 | Box Girder-PS Conc. | 2 | 104 | m | 104 | 0 | 0 | 0 |
| (104) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 215 | Abutment-RC | 2 | 93 | m | 93 | 0 | 0 | 0 |
| (215) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 256 | Slope Protection | 2 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) | | 0 | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 331 | Railing-RC | 2 | 104 | m | 104 | 0 | 0 | 0 |
| (331) | | | Mile and a | | | | | |
| There | were no significant defects noted. | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 03/30/2013

EstCost:

Seal with epoxy the severe cracks (up to

Action : Deck-Methacrylate

StrTarget: 2 YEAR

2 YEARS 5 mm wide) at the east end of the WB

Work By: LOCAL AGENCY

DistTarget:

lanes.

Status : PROPOSED

EA:

Mikhael T. Zaarour

Report Author :

Team Leader :

Mikhael T. Zaarour

Inspected By :

MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

(Data)

No. 68212

O9/30/2017

CIVIL

OF CALIFORNIA

STRUCTURE INVENTORY AND APPRAISAL REPORT

| SIMPLECIBLY RATING | | ************************************** | | ************ |
|---|---------------|--|-------|--|
| REALIST LIDERX | (1) | STATE NAME- CALIFORNIA 069 | | |
| | (8) | STRUCTURE NUMBER 55C0550 | | |
| COUNTY CORE 0.99 (4) PLACE CODE 0.000 | (5) | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | /4.0 |
| (11) FRATURE INTERSECTED— ALISO CREEK CADO (104) HIGHINY STRIFT MOUTE ON MIS 1 (12) JOCATION—1 100" N/O ALICIA PARKMY (10) MICHON TRITTED AND MISS 1 (13) LAGE HIGHAY METWORK PART OF NET 1 (13) LAGE HIGHAY METWORK PART OF NET 1 (14) LAGITUDE 13 DEG 33 MIN 19.74 SEC (10) JOCATION—1 17.00 PARALLEL STRUCTURE—NONE EXISTS NEW Y 2 (17) LONGITUDE 117 DEG 43 MIN 07.56 SEC (10) PARALLEL STRUCTURE—NONE EXISTS NEW Y 2 (18) DORDER BRIDGE STWICTURE NUMBER (10) DECKET BRIDGE STRUCTURE NUMBER (10) DECKET STRUCTURE STRUCTURE NUMBER (10) DECKET STRUCTURE NUMBER | (2) | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (29) FACITITY CARRIED— (30) LOCATION— (30) LOCATION— (31) MILEROINT/KLLMERTERIOINT 0 (31) LINE RUMPHORY NOUTS & SURROUTE 00000000000 (32) ADSER RUMPHORY NOUTS & SURROUTE 000000000000 (33) LATITUDE 3 3DE0 33 NIN 19:74 SEC (39) BOURER RULDE STRUCTURE NUMBER 117 DE0 43 MIN 19:74 SEC (39) BOURER RULDE STRUCTURE NUMBER 117 DE0 43 MIN 19:74 SEC (39) BOURER RULDE STRUCTURE NUMBER 117 DE0 43 MIN 19:74 SEC (39) BOURER RULDE STRUCTURE NUMBER 117 DE0 43 MIN 19:74 SEC (39) BOURER RULDE STRUCTURE NUMBER 117 (40) STRUCTURE TYPE AND MACRETIAL 1000 1000 (41) TYPE OF HEARINA CODE 000 (42) STRUCTURE TYPE AND MACRETIAL 1000 1000 (43) TYPE OF MARKEN 117 (44) STRUCTURE TYPE AND MACRETIAL 1000 1000 (45) NUMBER OF SEARS IN MAIN UNIT 1 1998 (46) NUMBER OF APPROACH SPANS 0 1000 1000 (47) TYPE OF MARKEN 1000 1000 (48) TYPE OF MARKEN 1000 1000 (40) TYPE OF MARKEN 1000 1000 (41) TYPE OF MEMBRANS NOW 1000 1000 (42) TYPE OF MEMBRANS NOW 1000 1000 (42) TYPE OF SERVICES ON- NONE CODE 0 1000 STRUCTURE 000 1000 MDER STRUCTURE 000 1000 MDER STRUCTURE 000 MDER STRUCTURE 000 MDER STRUCTURE 000 1000 MDER STRUCTURE 000 MDER STRUCTURE MDER MATERIAL 0000 MDER STRUCTURE MDER MATERIAL 0000 MDER MIN MAY STRUCK MET MATERIAL 0000 MDER MATERIAL 0000 MDER MATERIAL 0000 MDER MATERIAL 0000 MDER MATERIAL 0000 M | (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******** CLASSIFICATION ******** CODE |
| (31) MILEDIONT/KILDMETERPOINT 0 (100) MOO ALICIA PARMAY (1)1 MILEDIONT/KILDMETERPOINT (1)1 ADAPTICAL MARTERIONE PART OR NET 1 (101) PARALLEL STRUCTURE NONE EXISTS N. (101) EARST-OTERPING 2 (102) EPENSEN HIGHMAY NOT STRUCTURE NONE EXISTS N. (101) LATITUDE 13 DEG 33 MIN 19.74 SEC (102) DIRECTION OF TRAPPIC - 2 | (6) | FEATURE INTERSECTED- ALISO CREEK | | |
| (12) BASE HIGHWAY NOTEWORK PART OF NET 1 (13) LES INVESTORY ROUTE & SIRROUTE 000000000000 (14) LAITTUDE 17 DEG 43 MIN 19.7 4 SEC 16 SEC 16 SEC 17 DEG 45 MIN 19.7 5 SEC 17 DEG 45 MIN 19.7 5 SEC 17 DEG 45 MIN 19.7 5 SEC 18 DEG 58 MIN 19.7 5 SEC 18 | (7) | | | |
| 133 LASS INVESTIONY ROUTE & SURBOURDED 0000000000000000000000000000000000 | (9) | LOCATION- 100' W/O ALICIA PARKWAY | | |
| (15) LAST INVESTORY NOUTE & SUBBOUTE 0000000000000 (15) LAST INVESTORY NOUTE & SUBBOUTE 0000000000000 (15) LAST INTUDE 13 DEG 33 MIN 19.7 \$5 SEC (17) LONGITUDE 1.17 DEG 43 MIN 10.7 \$5 SEC (18) BORDER BRIDGE STATE CODE 8 SHARE 8 (19) BORDER BRIDGE STATE CODE 8 SHARE 8 (29) BORDER BRIDGE STRUCTURE NUMBER *********************************** | (11) | MILEPOINT/KILOMETERPOINT 0 | | |
| 119 LATITUDE | (12) | BASE HIGHWAY NETWORK- PART OF NET 1 | | |
| (29) BORDER BRIDGE STATE CODE \$ SAMAKE \$ (99) BORDER BRIDGE STATE CODE \$ SAMAKE \$ (99) BORDER BRIDGE STATE CODE \$ SAMAKE \$ (99) BORDER BRIDGE STATE CODE \$ SAMAKE \$ (20) TOLL- ON PRUE ROAD 3 3 CODE OF THE STATE CODE \$ SAMAKE \$ (21) TOLL- ON PRUE ROAD 3 3 CODE OF THE STATE CODE \$ SAMAKE \$ (22) CONER- COUNTY HIGHWAY AGENCY \$ 02 CONER TYPE- BOX BEAM OR GIRDER - MULTI CODE 505 CODE OF THE STATE COME \$ (23) CONER- COUNTY HIGHWAY AGENCY \$ 02 CONER TYPE- COTHER/NA CODE 000 CODE OF THE STATE CODE \$ 05 CODE OF THE STATE | (13) | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | |
| (110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0 (99) BORDER BRIDGE STRUCTURE TYPE AND MATERIAL ***** ****************************** | | 15-201-0-110-0-110-0-110-0-1-0-110-0-1-0-1 | | |
| 199 BORDER BRIDGE STRUCTURE NUMBER 121 | | | | |
| (22) MAINTAIN COURTY HIGHWAY AGENCY 02 (37) STRUCTURE TYPE AND MATERIAL PRESTRESS CONC TYPE - BOX BEAM OR GIRDER - NULTI CODE 505 (44) STRUCTURE TYPE AND MATERIAL OTHER/MA TYPE - OTHER/MA | (98) | BORDER BRIDGE STATE CODE % SHARE % | | |
| (43) STRUCTURE TYPE AND MATERIAL PRESTRESS CONC TYPE DOX BEAM OR GIRDER - MULTI CODE 555 (44) STRUCTURE TYPE APPR.MATERIAL - PRESTRESS CONC TYPE OF BEAM OR GIRDER - MULTI CODE 505 (44) STRUCTURE TYPE - BOX BEAM OR GIRDER - MULTI CODE 505 (45) NUMBER OF SPANS IN MAIN UNIT 1 1 1 660 (45) NUMBER OF SPANS IN MAIN UNIT 1 1 1 660 (46) NUMBER OF APPROACH SPANS 0 660 SUBSTRUCTURE 8 8 (46) NUMBER OF APPROACH SPANS 0 660 SUBSTRUCTURE 8 8 (46) STRUCTURE TYPE - CIP CONCRETE CODE 1 661 CHANNEL & CHANNEL PROTECTION 9 9 THE FORE OF MEMBERANE NONE CODE 0 1 74PE OF MEMBERANE NONE CODE 0 1 74PE OF MEMBERANE NONE CODE 0 1 74PE OF DECK PROTECTION NONE CODE 0 1 74PE OF DECK PROTECTION NONE CODE 0 1 74PE OF SERVICE | (99) | BORDER BRIDGE STRUCTURE NUMBER | | MA TARRA TAL COLDANIA |
| (37) STRUCTURE TYPE MAIN MATERIAL— NUITI CODE 505 (44) STRUCTURE TYPE APPR:MATERIAL— OTHER/MA | | ****** STRUCTURE TYPE AND MATERIAL ****** | | |
| TYPE- BOX BRAM OR GIRDRE - MULTI CODE 505 (44) STRUCTURE TYPE - OTHER/NA CODE 000 (45) NUMBER OF SPANS IN MAIN UNIT 1 (46) NUMBER OF APPROACH SPANS 0 (57) DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 (50) SUBSTRUCTURE (52) SUBSTRUCTURE (53) SUBSTRUCTURE (54) SUBSTRUCTURE (55) SUBSTRUCTURE (56) SUBSTRUCTURE (57) SEAR STRUCTURE SYSTEM: (58) CLUPERTS (59) SUBSTRUCTURE (61) CHANNEL & CHANNEL PROTECTION 9 (51) FUPE OF MEMBRANE- NOBE CODE 0 (51) TYPE OF MEMBRANE- NOBE CODE 0 (51) TYPE OF MEMBRANE- NOBE CODE 0 (51) TYPE OF DECK PROTECTION- NONE CODE 0 (52) TYPE OF DECK PROTECTION- NONE CODE 0 (53) SUBSTRUCTURE (54) SUBSTRUCTURE (55) SUBSTRUCTURE (56) CLUPERTS N (57) STRUCTURE LENGTH STRUCTURE (58) SUBSTRUCTURE (59) SUBSTRUCTURE (50) CURB OF MEMBRANE- NOBE (50) CODE 0 (51) PERAP BUILT (52) SUBSTRUCTURE (53) SUBSTRUCTURE (54) CLUPERTS N (52) CLUPERTS (53) SUBSTRUCTURE (54) CLUPERTS N (54) CLUPERTS (55) SUBSTRUCTURE (56) CLUPERTS N (57) SERGINE METHOD- ASSIGNED (LPD) A (56) SUBSTRUCTURE (57) SERGINE METHOD- ASSIGNED (LPD) A (57) DECK STRUCTURE DATA (58) DECK SCROPTRIC DATA (59) STRUCTURE LENGTH STRUCTURE (59) STRUCTURE LENGTH STRUCTURE (59) STRUCTURE LENGTH STRUCTURE (59) STRUCTURE LENGTH STRUCTURE (50) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (50) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (51) BELIGE ROADMAW MIDTH (WKSHOULDERS) (52) ECK MIDTH OUT TO OUT (53) MAY SER ADEQUACY (54) MIN VERT CLEAR OVER BRIDGS EDMY (55) MIN LAT UNDERCLEAR RT REF- NOT H/RR (56) MIN LAT UNDERCLEAR RT REF- NOT H/RR (57) MAY SER ADEQUACY (58) MAY SER OF SERVICE S | (43) | STRUCTURE TYPE MAIN: MATERIAL- PRESTRESS CONC | | |
| ### TYPE- OTHER/NA CODE 000 (45) NUMBER OF SPANS IN MAIN UNIT 1 1 (55) SUBERSTRUCTURE 8 8 (46) NUMBER OF SPANS IN MAIN UNIT 1 1 (55) SUBERSTRUCTURE 8 8 (56) SUBSTRUCTURE 8 8 (57) SUBERSTRUCTURE 8 8 (57) SUBSTRUCTURE 9 8 (57) SUBSTRUCTURE 9 8 (57) SUBSTRUCTURE 1 1 (57) DECK STRUCTURE 17PE- CIP CONCRETE CODE 1 (51) CHANNEL & | | | | |
| (46) NUMBER OF SPANS IN MAIN UNIT 1 (59) SUBSTRUCTURE | (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| (46) NUMBER OF APPROACH SPANS (107) DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 (108) WEARING SURFACE / PROTECTIVE SYSTEM: A) TYPE OF WEARING SURFACE - NONE CODE 0 (B) TYPE OF MERRIANS - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF DECK PROTECTION - NONE CODE 0 (C) TYPE OF SERVICE: - NONE CODE 0 (C) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (C) TYPE OF DECK PROTECTION - NONE CODE 0 (T) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (T) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (T) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (T) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (T) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (T) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (T) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (T) TYPE OF DECK PROTECTION - TO CUT B 34.5 M (T) TYPE OF D | | | (58) | DECK 6 |
| (107) DECK STRUCTURE TYPE - CIP CONCRETE CODE 1 (108) WEARING SURPACE / PROTECTIVE SYSTEM: A) TYPE OF WEARING SURPACE - NOME CODE 0 C) TYPE OF MEMBERANE - NOME CODE 0 C) TYPE OF MEMBERANE - NOME CODE 0 C) TYPE OF MEMBERANE - NOME CODE 0 C) TYPE OF DECK PROTECTION - NOME CODE 0 C) TYPE OF DECK PROTECTION - NOME CODE 0 (31) DESIGN LOAD - MS-18-MOD OR MS-20-MOD) 6 (63) OPERATING RATING HETHOD - ASSIGNED (LFD) A (64) OPERATING RATING METHOD - ASSIGNED (LFD) A (65) INVENTORY RATING METHOD - ASSIGNED (LFD) A (66) INVENTORY RATING METHOD - ASSIGNED (LFD) A (67) OPERATING RATING METHOD - ASSIGNED (LFD) A (68) OPERATING RATING METHOD - ASSIGNED (LFD) A (69) INVENTORY RATING METHOD - ASSIGNED (LFD) A (69) OPERATING RATING METHOD - ASSIGNED (LFD) A (69) OPERATING RATING METHOD - ASSIGNED (LFD) A (61) OPERATING RATING METHOD - ASSIGNED (LFD) A (62) OPERATING RATING METHOD - ASSIGNED (LFD) A (64) OPERATING RATING METHOD - ASSIGNED (LFD) A (65) INVENTORY RATING METHOD - ASSIGNED (LFD) A (66) INVENTORY RATING METHOD - ASSIGNED (LFD) A (67) OPERATING RATING METHOD - ASSIGNED (LFD) A (67) OPERATING RATING METHOD - ASSIGNED (LFD) A (67) OPERATING RATING METHOD - ASSIGNED (LFD) A (68) OPERATING RATING METHOD - ASSIGNED (LFD) A (69) INVENTORY RATING METHOD - ASSIGNED (LFD) A (| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | (59) | SUPERSTRUCTURE 8 |
| (108) WEARING SURPACE / PROTECTIVE SYSTEM: A) TYPE OF WEARING SURPACE - NONE CODE 0 B) TYPE OF MEMBRANE NONE CODE 0 C) TYPE OF DECK PROTECTION NONE CODE 0 C) CODE 0 C) TYPE OF DECK PROTECTION NONE CODE 0 C) TYPE | (46) | NUMBER OF APPROACH SPANS 0 | | o de la companya de |
| A) Type of Memberane | (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | |
| (31) DESIGN LOAD- MS-18-MOD OR HS-20-MOD 6 CODE 0 CYPE OF DECK PROTECTION- NONE CODE 0 CYPE OF SERVICE: ***** (42) TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 (AS) LANES: ON STRUCTURE 0 9 UNDER STRUCTURE 00 (B) LANES: ON STRUCTURE 0 9 UNDER STRUCTURE 00 (CP) AVERAGE DAILY TRAFFIC 25915 (CP) AVERAGE DAILY TRAFFIC 25915 (CP) AVERAGE DAILY TRAFFIC 25915 (CP) BYPASS, DETOUR LENGTH 3 KM (67) STRUCTURE OFEN, POSTED OR CLOSED- A DESCRIPTION- OPEN, NO RESTRUCTION 8 CYPE OF SERVICE: DATA ***** (AB) LENGTH OF MAXIMUM SPAN 50.0 M (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL NO MEDIAN 0 CYPE OF SERVICE: CODE 0 CYPE OF SERVICE: CON- WITHOUT OUT 38.0 M (13) SCOUR CROSSED- A DESCRIPTION- OPEN, NO RESTRUCTION 8 CYPE OF SERVICE: CODE 0 CYPE OF SERVICE: CON- WATERWAY 4 CODE 0 CYPE OF SERVICE: ON- WATERWAY 5 CODE 0 CYPE OF SERVICE: ON- WATERWAY 5 CODE 0 | (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| CODE | A) | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| (27) YEAR BUILT 1988 (26) YEAR RECONSTRUCTED 0000 (27) YEAR BUILT 1988 (28) LANES:ON STRUCTURE 09 UNDER STRUCTURE 00 UNDER-WATERWAY 5 (28) LANES:ON STRUCTURE 09 UNDER STRUCTURE 100 UNDER STRUCTURE 1 | | | | |
| (27) YEAR BUILT 1988 (106) YEAR RECONSTRUCTED 0000 (106) YEAR RECONSTRUCTED 0000 (107) YEAR RECONSTRUCTED 0000 (108) YEAR RECONSTRUCTED 00000 (109) AVERAGE AND SERVICE: ON- UNDER- WATERNAY 5 (109) AVERAGE DAILY TRAFFIC 25915 (109) BYPASS, DETOUR LENGTH 3 KM (109) EVAN BERNAY 500 MEDICAL STRUCTURE 09 UNDER STRUCTURE 00 DESCRIPTION- OPEN, NO RESTRICTION (109) BYPASS, DETOUR LENGTH 3 KM (109) STRUCTURE LENGTH 50.0 M (109) BYPASS, DETOUR LENGTH 50.0 M (109) STRUCTURE LENGTH 50.0 M (100) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (100) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (100) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (100) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (100) STRUCTURE LENGTH 50.0 M (100) STRUCTURE LENGTH 50.0 M (100) STRUCTURE LENGTH 50.0 M (100) STRUCTURE STRUCTURE FLARED NO (100) STRUCTURE STRUCTURE FLARED NO (100) STRUCTURE STRUCTURE FLARED NO (100) INVENTORY ROUTE MIN VERT CLEAR 99.99 M (100) INVENTORY ROUTE TOTAL HORIZ CLEAR 34.5 M (100) MAVIGATION DATA ********************************** | C) | TYPE OF DECK PROTECTION- NONE CODE 0 | | |
| (27) YEAR BUILT (106) YEAR RECONSTRUCTED (106) YEAR RECONSTRUCTED (107) YEAR CONSTRUCTED (108) YEAR OF SERVICE: ON- WATERWAY (108) LANES:ON STRUCTURE (109) AVERAGE DAILY TRAFFIC (109) AVERAGE DAILY TRAFFIC (109) EXPROSED TRUCK ADT (109) T | | ********* AGE AND SERVICE ********* | | ODEDAMENIC DAMENIC |
| (42) TYPE OF SERVICE: ON- UNDER- UNDER- UNDER- UNDER- UNDER- UNDER- UNDER STRUCTURE OP UNDER STRUCTURE OPEN, POSTED OR CLOSED- A DESCRIPTION- OPEN, NO RESTRICTION *********************************** | (27) | YEAR BUILT 1988 | (65) | |
| UNDER | | 100 Marie 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | THE THOUSAND TO MAKE THE TANK |
| (28) LANES:ON STRUCTURE 09 UNDER STRUCTURE 05 DESCRIPTION 0 DESCRIPTION | (42) | | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| DESCRIPTION - OPEN, NO RESTRICTION | (28) | | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| (30) YEAR OF ADT 2011 (109) TRUCK ADT 1 % ************ APPRAISAL ************************************ | | | | |
| 19 BYPASS, DETOUR LENGTH 3 KM (67) STRUCTURAL EVALUATION 8 | | | | ********** ADDDATCAL ************************************ |
| ************************************** | | SPECIAL STATE OF THE STATE OF T | | |
| (48) LENGTH OF MAXIMUM SPAN 50.0 M (49) STRUCTURE LENGTH 51.8 M (50) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (51) BRIDGE ROADWAY WIDTH CURB TO CURB 34.5 M (52) DECK WIDTH OUT TO OUT 38.0 M (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 34.5 M (33) BRIDGE MEDIAN- NO MEDIAN 0 (34) SKEW 20 DEG (35) STRUCTURE FLARED NO (34) INVENTORY ROUTE MIN VERT CLEAR 99.99 M (54) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M (55) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (56) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (56) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (56) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (56) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (56) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (56) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (57) TYPE OF WORK- (58) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (59) ROADWAY IMPROVEMENT COST (50) MIN LAT UNDERCLEAR REF- NOT H/RR 0.00 M (50) MIN LAT UNDERCL | | | | DECK GEOMETRY |
| (49) STRUCTURE LENGTH 51.8 M (71) WATER ADEQUACY 9 (50) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (72) APPROACH ROADWAY ALIGNMENT 8 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 34.5 M (36) TRAFFIC SAFETY FEATURES 00000 (52) DECK WIDTH OUT TO OUT 38.0 M (113) SCOUR CRITICAL BRIDGES 8 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 34.5 M (113) SCOUR CRITICAL BRIDGES 8 (33) BRIDGE MEDIAN- NO MEDIAN 0 (75) TYPE OF WORK- CODE (34) SKEW 20 DEG (35) STRUCTURE FLARED NO (76) LENGTH OF STRUCTURE IMPROVEMENT MM (10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M (94) BRIDGE IMPROVEMENT COST (53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M (94) BRIDGE IMPROVEMENT COST (54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M (97) YEAR OF IMPROVEMENT COST (55) MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.00 M (97) YEAR OF IMPROVEMENT COST (114) FUTURE ADT 46252 (56) MIN LAT UNDERCLEAR LT 0.0 M (97) YEAR OF FUTURE ADT 2035 *********************************** | | | | b |
| (50) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M (72) APPROACH ROADWAY ALIGNMENT 8 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 34.5 M (36) TRAFFIC SAFETY FEATURES 0000 (52) DECK WIDTH OUT TO OUT 38.0 M (113) SCOUR CRITICAL BRIDGES 8 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 34.5 M *********************************** | | | | MATTER ADDOLLAGE |
| (51) BRIDGE ROADWAY WIDTH CURB TO CURB 34.5 M (52) DECK WIDTH OUT TO OUT 38.0 M (113) SCOUR CRITICAL BRIDGES 8 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 34.5 M (33) BRIDGE MEDIAN- NO MEDIAN 0 (75) TYPE OF WORK- CODE (34) SKEW 20 DEG (35) STRUCTURE FLARED NO (76) LENGTH OF STRUCTURE IMPROVEMENT M (10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 34.5 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 REF- NOT H/RR 0.0 M (56) MIN LAT UNDERCLEAR REF- NOT H/RR 0.0 M (57) YEAR OF IMPROVEMENT COST (114) FUTURE ADT 46252 (115) YEAR OF FUTURE ADT 2035 *********************************** | 36.55 | | (72) | ADDDOLGU DOLDUNG GEOGRAFIA |
| (52) DECK WIDTH OUT TO OUT 38.0 M (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 34.5 M *********************************** | | | (36) | MD3 DD7 C C3 DDM1. |
| (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 34.5 M *********************************** | | | (113) | SCOUR CRITICAL BRIDGES 8 |
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| (34) SKEW 20 DEG (35) STRUCTURE FLARED NO (76) LENGTH OF STRUCTURE IMPROVEMENT M (10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M (94) BRIDGE IMPROVEMENT COST (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 34.5 M (95) ROADWAY IMPROVEMENT COST (53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M (96) TOTAL PROJECT COST (54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M (97) YEAR OF IMPROVEMENT COST ESTIMATE (55) MIN LAT UNDERCLEAR LT 0.0 M (114) FUTURE ADT 46252 ********************************** | | PROPERTY OF THE PROPERTY OF TH | (75) | EVDE OF HODY |
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| (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 34.5 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 (56) MIN LAT UNDERCLEAR LT 0.0 M (58) NAVIGATION CONTROL- NOT APPLICABLE CODE N (111) PIER PROTECTION- CODE (39) NAVIGATION VERTICAL CLEARANCE 0.0 M (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M (41) STANDARD MRIVERT CLEAR M (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M (4114) FUTURE ADT (114) FUTURE ADT (115) YEAR OF FUTURE ADT (114) YEAR OF FUTURE ADT (114) YEAR OF FUTURE ADT (115) YEAR OF FUTURE ADT (115) YEAR OF FUTURE ADT (115) YEAR OF FUTURE ADT (114) YEAR OF FUTURE ADT (115) YEAR OF FUTURE ADT (115) YEAR | (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 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 *********************************** | (47) | INVENTORY ROUTE TOTAL HORIZ CLEAR 34.5 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 *********************************** | | | | |
| (38) NAVIGATION CONTROL- NOT APPLICABLE CODE N (39) NAVIGATION VERTICAL CLEARANCE O.0 M (39) NAVIGATION VERTICAL CLEARANCE O.0 M (40) NAVIGATION HORIZONTAL CLEARANCE O.0 M (40) NAVIGATION HORIZONTAL CLEARANCE O.0 M (40) NAVIGATION HORIZONTAL CLEARANCE O.0 M (414) FUTURE ADT 46252 (115) YEAR OF FUTURE ADT 2035 *********************************** | | | | |
| (38) NAVIGATION CONTROL- NOT APPLICABLE CODE N (39) NAVIGATION VERTICAL CLEARANCE (116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR (40) NAVIGATION HORIZONTAL CLEARANCE (30) NAVIGATION HORIZONTAL CLEARANCE (40) NAVIGATION HORIZONTAL CLEARANCE (315) YEAR OF FUTURE ADT (115) YEAR OF FUTURE ADT (116) YEAR OF FUTURE ADT (117) YEAR OF FUTURE ADT (118) YEAR OF FUTURE ADT (119) YEAR OF FUTURE ADT (119) YEAR OF FUTURE ADT (111) YEAR OF FUTURE ADT (111) YEAR OF FUTURE ADT (111) YEAR OF FUTURE ADT (112) YEAR OF FUTURE ADT (113) YEAR OF FUTURE ADT (114) YEAR OF FUTURE ADT (115) YEAR OF FUTURE ADT (115) YEAR OF FUTURE ADT (116) YEAR OF FUTURE ADT (117) YEAR OF FUTURE ADT (118) YEAR OF FUT | | | | PIRRIDE ADD |
| ************************************** | | | (115) | VEAD OF BURNING AND |
| (38) NAVIGATION CONTROL NOT APPLICABLE CODE N (90) INSPECTION DATE 08/15 (91) FREQUENCY 24 MO (111) PIER PROTECTION- CODE (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE (39) NAVIGATION VERTICAL CLEARANCE 0.0 M A) FRACTURE CRIT DETAIL- NO MO A) (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M B) UNDERWATER INSP- NO MO B) | , | ************* NAVIGATION DATA ********** | | |
| (39) NAVIGATION VERTICAL CLEARANCE (30) NAVIGATION VERTICAL CLEARANCE (310) VERT-LIFT BRIDGE NAV MIN VERT CLEAR (3116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR (317) MAVIGATION HORIZONTAL CLEARANCE (318) MAVIGATION HORIZONTAL CLEARANCE (319) CRITICAL FEATURE INSPECTION: (319) CRITICAL FEATURE INSPECTION: (319) CRITICAL FEATURE INSPECTION: (320) CRITICAL FEATURE INSPECTION: (321) MAVIGATION HORIZONTAL CLEARANCE (322) CRITICAL FEATURE INSPECTION: (323) CFI DATE (324) MAVIGATION HORIZONTAL CLEARANCE (324) MAVIGATION HORIZONTAL CLEARANCE (325) CRITICAL FEATURE INSPECTION: (327) MAVIGATION HORIZONTAL CLEARANCE (327) CRITICAL FEATURE INSPECTION: (328) CFI DATE (329) MAVIGATION HORIZONTAL CLEARANCE (329) CRITICAL FEATURE INSPECTION: (329) CRITICAL FEATURE INSPECTION: (329) MAVIGATION HORIZONTAL CLEARANCE (320) MAVIGATION HORIZONTAL CLEARANCE | (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | |
| (39) NAVIGATION VERTICAL CLEARANCE 0.0 M A) FRACTURE CRIT DETAIL- NO MO A) (116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR M B) UNDERWATER INSP- NO MO B) (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M B) | on the second | (ADM 10 AV 1 | | CDITICAL BEATURE INCRESS. |
| (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M B) UNDERWATER INSP- NO MO B) | | 0.0 H | | |
| (40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | | | The service of the se |
| | (4U) I | NAVIGATION MORIZONIAL CLEARANCE 0.0 M | C) | OMINITO OPPOSTAT THE |

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: 55C0561

Bridge Name: Dana Point Harbor **Year Built:** 1970

Facility Carried: Island Way

The Dana Point Harbor Bridge at Island Way is a simply supported 4-span precast prestressed concrete box girder with a continuous reinforced concrete deck. The bridge is supported on single column bents and strutted abutments supported on spread footings.

Caltrans BIR recommendations:

• Remove and repair unsound concrete in splash zone.

Field Inspection Observations

- Minor spalling on walkway
- There was minimal access to the substructure (photo 1 and 2). Overall this bridge appears to be in good condition.
- Joint seals filled with debris. (photo 3) No immediate action required.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

Recommend patching spalled concrete. No immediate actions required since not a high priority.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

 Repair Spalls ≈ \$30,000, complicated by water access and wet conditions (includes engineering, mobilization and contingency)

APPENDIX A

Photos and BIR



Photo 1:



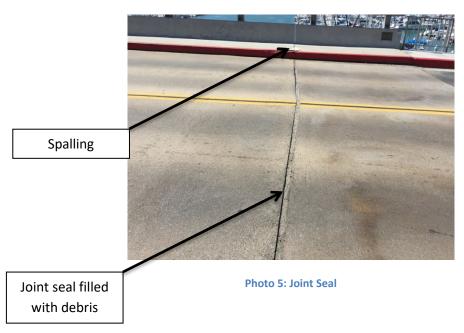
Photo 2:



Photo 3:



Photo 4:





DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0561
Facility Carried: ISLAND WAY

Location : 0.1 MI S/O DANA PT HBR D

City

Inspection Date: 02/27/2015

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

STRUCTURE NAME: DANA POINT HARBOR

CONSTRUCTION INFORMATION

Year Built : 1970 Skew (degrees): 0 Year Widened: N/A No. of Joints : 0 Length (m) : 62.5 No. of Hinges : 0

Structure Description: Simply supported 4-span PC/PS concrete box girder (8 units) with a continuous RC deck and RC single column bents and RC closed end

strutted abutments, all supported upon spread footings.

Span Configuration : (S) 4 @ 15.2 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20

Inventory Rating: $RF=1.00 \Rightarrow 32.4$ metric tons Calculation Method: ASSIGNED (LFD) Operating Rating: $RF=1.67 \Rightarrow 54.1$ metric tons Calculation Method: ASSIGNED (LFD)

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.4 m br, 1.5 m sw, 8.5 m, 1.5 m sw, 0.4 m br (E)

Total Width: 12.5 m Net Width: 8.5 m No. of Lanes: 2 Speed: 25 mph

Min. Vertical Clearance: Unimpaired AC Thickness:

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| Type 2 | Right/Left | 410 | 5 ft sidw walk |

DESCRIPTION UNDER STRUCTURE

Channel Description: Tidal basin.

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 inspection was performed by walking the deck and under spans 1 and 4. All elements above water have been visually inspected.

UNDERWATER INVESTIGATION

The inspection was performed in June 2014. No defected on the substructure were found and remain in good condition. This element will remain in condition state 1.

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55C0561/AAAN/31191

INSPECTION COMMENTARY

MISCELLANEOUS

This location in Anaheim Bay is a navigable waterway for smaller boats which is under the jurisdiction of the United States Coast Guard.

SAFE LOAD CAPACITY

| ELEME | NT INSP | ECTION RATINGS AND COMMENTARY | | | | | | | |
|------------------|-------------------|---|-----|--|---|-------|---|-------------------|---------|
| Elem No. | Defect /Prot | Defect Element Description | Env | Total Qty | Units | | | ondition St. 3 | |
| 16 | | Top Flange-RC | 3 | 781 | sq.m | 781 | 0 | 0 | 0 |
| | 511 | Deck Wearing Surface-Concrete | 3 | 533 | sq.m | 533 | 0 | 0 | 0 |
| (16) There | were no | significant defects noted. | | ************************************** | | | | | |
| (16-5] There | | significant defects noted. | | | 200000000000000000000000000000000000000 | | | | |
| 104 | | Box Girder-PS Conc. | 3 | 62 | m | 62 | 0 | 0 | 0 |
| (104) There | were no | significant defects noted. | | | | ***** | | | |
| 205 | | Column-RC | 4 | 3 | each | 3 | 0 | 0 | 0 |
| (205) There | were no | significant defects noted. | | | | | | | |
| 215 | | Abutment-RC | 2 | 30 | m | 30 | 0 | 0 | 0 |
| (215) There | were no | significant defects noted. | | | | | | | .537 |
| 234 | | Pier Cap-RC | 3 | 36 | m | 34 | 2 | 0 | 0 |
| | 1120 | Efflorescence/Rust Staining | 3 | 2 | | 0 | 2 | 0 | 0 |
| (234-1 Rust s | | the suface of pier #4 | | | | V-222 | | | |
| 256 | | Slope Protection | 3 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) There | were no | significant defects noted. | | | | | | | |
| 312 | | Bearing-Enclosed | 3 | 8 | each | 8 | 0 | 0 | 0 |
| were n | | ement is included to indicate the present for visual inspection. No indicate element. | | | | | | | earings |
| 321 | | Approach Slab-RC | 3 | 52 | sq.m | 52 | 0 | 0 | 0 |
| (321) There | were no | significant defects noted. | | | 27.5 (1) | | | | |
| 333 | | Railing-Other | 3 | 142 | m | 142 | 0 | 0 | 0 |
| (333) There | were no | significant defects noted. | | | | | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/M.Zolfaghari

Mikhael T. Zaarour (Registered Civil Engineer)

(Date



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ******* |
|---|--|---|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 61.0 |
| | | | STATUS |
| 2000 | DINOGIONE NO. IDEN | | HEALTH INDEX 99.9 |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | PAINT CONDITION INDEX = N/A |
| | HIGHWAY AGENCY DISTRICT 12 | | ****** CLASSIFICATION ******* CODE |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | (110) | F-100-7-7-00-1-00-1-00-1-00-1-00-1-00-1- |
| (6) | FEATURE INTERSECTED- DANA POINT HARBOR | | NBIS BRIDGE LENGTH- YES Y |
| 2000 | FACILITY CARRIED- ISLAND WAY | | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 0.1 MI S/O DANA PT HBR DR | | FUNCTIONAL CLASS- LOCAL URBAN 19 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | • | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 27 MIN 35.58 SEC | (103) | TEMPORARY STRUCTURE- |
| | LONGITUDE 117 DEG 41 MIN 57.87 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| | BONDER BRIDGE BINIE CODE | (20) | TOLL- ON FREE ROAD 3 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| - | ****** STRUCTURE TYPE AND MATERIAL ****** | (22) | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- PRSTR CONC CONT | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| 4.5.0504.0 | TYPE- BOX BEAM OR GIRDER - MULTI CODE 605 | | |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | *********** CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 4 | (59) | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 7 |
| 6 - 65 | | (61) | CHANNEL & CHANNEL PROTECTION 9 |
| | DECK STRUCTURE TYPE- PRECAST CONC. PA CODE 2 | (62) | CULVERTS |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | | AND DOCUMENT AND D |
| | TYPE OF WEARING SURFACE- CONCRETE CODE 1 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- MS-18 OR HS-20 5 |
| | | (63) | OPERATING RATING METHOD- ASSIGNED (LFD) A |
| | ********* AGE AND SERVICE ********* | | OPERATING RATING- 54.1 |
| (27) | YEAR BUILT 1970 | (65) | INVENTORY RATING METHOD- ASSIGNED (LFD) A |
| | YEAR RECONSTRUCTED 0000 | (66) | INVENTORY RATING- 32.4 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (00) | UNDER- WATERWAY 5 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | | DESCRIPTION- OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 3510 | | ****** APPRAISAL ******** CODE |
| 1.50 | YEAR OF ADT 2011 (109) TRUCK ADT 1 % | | |
| (19) | BYPASS, DETOUR LENGTH 199 KM | | STRUCTURAL EVALUATION 7 |
| | ******* GEOMETRIC DATA ********** | (, | DECK GEOMETRY 4 |
| (48) | LENGTH OF MAXIMUM SPAN 15.2 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) | STRUCTURE LENGTH 62.5 M | | WATER ADEQUACY 9 |
| (50) | CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M | | APPROACH ROADWAY ALIGNMENT 8 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 8.5 M | (0.000)00000000000000000000000000000000 | TRAFFIC SAFETY FEATURES 1000 |
| | DECK WIDTH OUT TO OUT 12.5 M | (113) | SCOUR CRITICAL BRIDGES 5 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 8.5 M | | ****** PROPOSED IMPROVEMENTS ******* |
| A SCHOOL | BRIDGE MEDIAN NO MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| | SKEW 0 DEG (35) STRUCTURE FLARED NO | i i i i i i i i i i i i i i i i i i i | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | 2500000000 | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 8.5 M | 3.5 .54 | ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | TOTAL PROJECT COST |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 3176 |
| | | (115) | YEAR OF FUTURE ADT 2037 |
| | ************ NAVIGATION DATA ********* | | *************** INSPECTIONS *********** |
| (38) | NAVIGATION CONTROL- NO CONTROL CODE 0 | (90) | INSPECTION DATE 02/15 (91) FREQUENCY 48 MO |
| (111) | PIER PROTECTION- CODE | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (39) | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) |
| (116) | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- YES 60 MO B) 06/14 |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) |
| | | • | |

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Orange County Bridge Review Summary

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Bridge Number: 55C0572

Bridge Name: Santa Ana Delhi Channel **Year Built:** 1988

Facility Carried: Irvine Avenue

The Santa Ana Delhi Channel Bridge at Irvine Avenue is a reinforced concrete triple box culvert.

Caltrans BIR recommendations:

None

Field Inspection Observations

- Diagonal cracks on pier nosing.
- Efflorescence visible on bridge soffit (photo 4). Difficult to determine source of water due to cover and AC on deck.

Maintenance Needs Assessment

BPMP Assessment

• Efflorescence likely from water penetrating through deck. Not significant problem at this time and no action recommended. To repair will require deck AC and fill removal, deck treatment, and replacing fill and AC. Condition of soffit should be monitored for continued deterioration.

General Maintenance - Non-BPMP

• Monitor cracks on pier nose. Epoxy seal if condition worsens.

Proposed BPMP Construction Costs

• If deck seal project initiated, cost likely exceeds \$200,000.

Construction Items Not Funded by BPMP

• N/A

APPENDIX A

Photos and BIR



Photo 1:

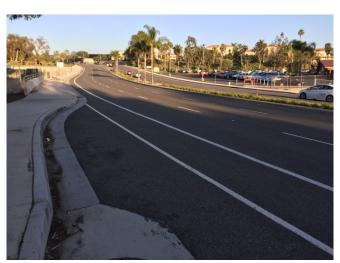


Photo 2:



Photo 3:

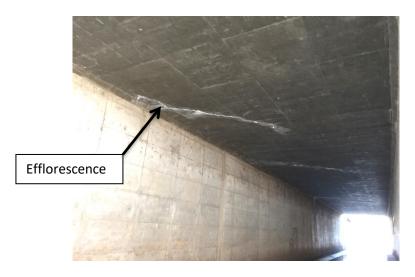


Photo 4: Bridge Soffit



Photo 5: Sidewalk



Photo 6:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0572
Facility Carried: IRVINE AVENUE

Location : 0.4 MI SW/O BRISTOL ST.

City

Inspection Date : 12/09/2014

Inspection Type

Х

Routine FC Underwater Special Other

Bridge Inspection Report

STRUCTURE NAME: SANTA ANA DELHI CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1988 Skew (degrees): 38 Year Widened: N/A No. of Joints : 0 Length (m) : 22.3 No. of Hinges : 0

Structure Description: Triple 5.5 m W \times 4.6 m H \times 45.7 m L RC box culvert (grade top)

beneath 1.5 m of earth fill.

Span Configuration : (W) 3 @ 5.5 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.3 m br, 2.8 m sw, 11.6 m, 3.75 m med, 11.5 m, 2.9 m sw, 0.3 m br (N)

Total Width: 45.1 m Net Width: 30.3 m No. of Lanes: 6 Speed: 50 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 0000 Rail Description: Concrete type 26 mod.

DESCRIPTION UNDER STRUCTURE

Channel Description: RC rectangular.

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

Access into the channel in from northwest quadrant the channel was dry at time of inspection. All elements were inspected.

Printed on: Monday 12/15/2014 07:47 AM

| Elem | Defect Defect | N RATINGS AND COMMENTARY Element Description | Env | Total | Units | Qty in | each Co | ndition | State |
|--------------------|----------------|--|-----|-------|-------|--------|---------|---------|--------|
| No. | /Prot | | | Qty | | | | St. 3 | |
| 241 | (| Culvert-RC | 2 | 138 | m | 126 | 6 | 6 | 0 |
| | 1120 I | Efflorescence/Rust Staining | 2 | 6 | | 0 | 0 | 6 | 0 |
| | 1130 | racking (RC and Other) | 2 | 6 | | 0 | 6 | 0 | 0 |
| (241-1: There a | are 2 longitud | dinal cracks in the soffit of eve vertical cracks in the walls as | | | | | | | 1 # 3, |
| 331 | R | ailing-RC | 2 | 45 | m | 39 | 6 | 0 | 0 |
| (331) There v | were no signif | icant defects noted. | | | | | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

PROFESSIONA Mikhael T. Zaarour No. 68212 09/30/2015 CIVIL

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************* | | | |
|---------|--|---|--|--|--|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 95.3 | | | |
| | STRUCTURE NUMBER 55C0572 | | STATUS | | | |
| | INVENTORY ROUTE(ON/UNDER) - ON 140000000 | | HEALTH INDEX 95.6 | | | |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A | | | |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE | | | |
| | FEATURE INTERSECTED- SANTA ANA DELHI CHANNEL | (112) | NBIS BRIDGE LENGTH- YES Y | | | |
| | FACILITY CARRIED- IRVINE AVENUE | (104) | HIGHWAY SYSTEM- NOT ON NHS 0 | | | |
| (9) | LOCATION- 0.4 MI SW/O BRISTOL ST. | (26) | FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 | | | |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 | | | |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N | | | |
| (13) | LRS INVENTORY ROUTE & SUBROUTE | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 | | | |
| (16) | LATITUDE 33 DEG 39 MIN 35.67 SEC | (103) | TEMPORARY STRUCTURE- | | | |
| (17) | LONGITUDE 117 DEG 52 MIN 52.73 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 | | | |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 | | | |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 | | | |
| | ++++++ CUDICUIDE DVDE AND MADEDIAL ++++++ | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 | | | |
| | ******* STRUCTURE TYPE AND MATERIAL ******* | | OWNER- COUNTY HIGHWAY AGENCY 02 | | | |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE TYPE- CULVERT CODE 119 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 | | | |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********* CODE | | | |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK | | | |
| (45) | NUMBER OF SPANS IN MAIN UNIT 3 | (59) | SUPERSTRUCTURE N | | | |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE N | | | |
| (107) | DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | (61) | CHANNEL & CHANNEL PROTECTION 9 | | | |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS 7 | | | |
| | TYPE OF WEARING SURFACE- NOT APPLICABLE CODE N | | ****** LOAD RATING AND POSTING ****** CODE | | | |
| | TYPE OF MEMBRANE- NOT APPLICABLE CODE N | (31) | DESIGN LOAD- UNKNOWN 0 | | | |
| C) | TYPE OF DECK PROTECTION- NOT APPLICABLE CODE $_{ m N}$ | | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 | | | |
| | ********** AGE AND SERVICE ********** | | OPERATING RATING- 54.1 | | | |
| (27) | YEAR BUILT 1988 | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 | | | |
| (106) | YEAR RECONSTRUCTED 0000 | | INVENTORY RATING- 32.4 | | | |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 | | | |
| (20) | UNDER- WATERWAY 5 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A | | | |
| | LANES:ON STRUCTURE 06 UNDER STRUCTURE 00 AVERAGE DAILY TRAFFIC 18000 | | DESCRIPTION- OPEN, NO RESTRICTION | | | |
| 200.500 | AVERAGE DAILY TRAFFIC 18000 YEAR OF ADT 2009 (109) TRUCK ADT 1 % | | ********* APPRAISAL ********* CODE | | | |
| | Properties and the Company of the Co | | CERTICATION IN THE STATE OF THE | | | |
| (19) | | | DEGIL GEOMETRIA | | | |
| 120 | ******* GEOMETRIC DATA ********** | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N | | | |
| | LENGTH OF MAXIMUM SPAN 5.5 M | | WATER ADEQUACY 9 | | | |
| | STRUCTURE LENGTH 22.3 M | | APPROACH ROADWAY ALIGNMENT 7 | | | |
| | CURB OR SIDEWALK: LEFT 2.4 M RIGHT 0.0 M | (36) | TRAFFIC SAFETY FEATURES 0000 | | | |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 30.3 M DECK WIDTH OUT TO OUT 45.1 M | (113) | SCOUR CRITICAL BRIDGES 8 | | | |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 30.3 M | | ******* PROPOSED IMPROVEMENTS ******* | | | |
| | BRIDGE MEDIAN- CLOSED (NO BARRIER) 2 | (75) | TYPE OF WORK- CODE | | | |
| (34) | | | LENGTH OF STRUCTURE IMPROVEMENT M | | | |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | | BRIDGE IMPROVEMENT COST | | | |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 30.3 M | | ROADWAY IMPROVEMENT COST | | | |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | 100000000000000000000000000000000000000 | TOTAL PROJECT COST | | | |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | YEAR OF IMPROVEMENT COST ESTIMATE | | | |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | FUTURE ADT 26553 | | | |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | 22 20020 - 20050 5 | YEAR OF FUTURE ADT 2031 | | | |
| 1 | ************ NAVIGATION DATA ********** | | ************************************** | | | |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | INSPECTION DATE 12/14 (91) FREQUENCY 48 MO | | | |
| (111) | PIER PROTECTION- CODE | | CRITICAL FEATURE INSPECTION: (93) CFI DATE | | | |
| (39) | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) | | | |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) | | | |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) | | | |

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: 55C0573

Bridge Name: Redhill Channel Year Built: 1980

Facility Carried: Riverford Road

The Redhill Channel culvert at River Road is a reinforced concrete double box culvert. There was no access to the culvert. The culvert was visually inspected from the access roads.

Caltrans BIR recommendations:

None

Field Inspection Observations

- Vertical cracks on pier nosing.
- There appears to be excessive AC overly. Recommend no addition AC lifts be placed on structure.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

 Monitor vertical cracks on pier nose. Epoxy inject of increase in size or spalling occurs. Not critical at this time.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1: Redhill Channel Bridge

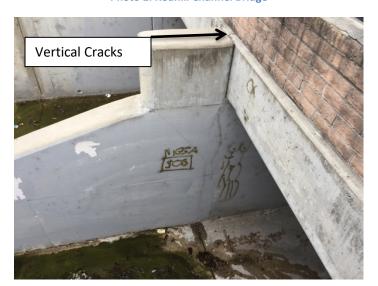


Photo 2: Pier Wall



Photo 3: Parapet View



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0573

Facility Carried: RIVERFORD ROAD

Location : 0.1 MI. NW/O BROWNING AV

City

Inspection Date : 08/05/2015

Inspection Type

Routine FC Underwater Special Other

Х

Bridge Inspection Report

CONSTRUCTION INFORMATION

STRUCTURE NAME: REDHILL CHANNEL

Year Built : 1980 Year Widened: 1989 Length (m) : 6.7 Skew (degrees): 0
No. of Joints: 0
No. of Hinges: 0

Structure Description: Double 3.7 m W and 2.6 m W x 2.4 m H x 14.3 m L RC box culvert

(grade top) beneath 0.6 m of earth fill.

Span Configuration : (W) 2.6 m, 3.7 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u>

Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.2 m br, 1.2 m sw, 11.0 m, 1.2 m sw, 0.2 m br (N)

Total Width: 14.8 m Net Width: 11.0 m No. of Lanes: 2 Speed: 25 mph Min. Vertical Clearance: Unimpaired Overlay Thickness: 3.0 Inches

Rail Code: 0000

Rail Type Location Length (ft) Rail Modifications
Masonry Right/Left 64

DESCRIPTION UNDER STRUCTURE

Channel Description: RC rectangular.

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

The inspection was performed by walking on the deck and using the ladder to access under the structure. All elements were visually inspected.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures.

Printed on: Wednesday 09/23/2015 08:16 AM

| Elem | NT INSPECTION RATINGS Defect Defect Element | | Env | Total | Units | Qty in | each C | ondition | ı State |
|-------|--|---------------------------|------|-------|-------|---------|---------|----------|---------|
| No. | /Prot | | | Qty | | | | St. 3 | |
| 241 | Culvert-RC | | 2 | 28 | m | 28 | 0 | 0 | 0 |
| (241) | | 70 | | | | | | | |
| There | are 5 hairline vertical | cracks in the middle pier | wall | with | white | efflore | scence. | | |
| 331 | Railing-RC | | 2 | 13 | m | 13 | 0 | 0 | 0 |
| (331) | | | _ | | | | | | |
| There | were no significant defe | ects noted. | | | | | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Report Author: Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

(Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| (1) | ************************************** | | ************************************** |
|---|--|-------------|---|
| | STRUCTURE NUMBER 55C0573 | | STATUS |
| | INVENTORY ROUTE(ON/UNDER) - ON 140000000 | | HEALTH INDEX 100.0 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| - | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******** CLASSIFICATION ********* CODE |
| | | | NDIC DDIDGE LENGTH TOO |
| | FEATURE INTERSECTED- REDHILL CHANNEL FACILITY CARRIED- RIVERFORD ROAD | | HIGHWAY CYCTEM NOW ON ARIC |
| | | | TUDIOTT ONLY OF TOO |
| | LOCATION- 0.1 MI. NW/O BROWNING AVE | | |
| | MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | | PARALLEL STRUCTURE- NONE EXISTS N |
| 2003 2003 | LRS INVENTORY ROUTE & SUBROUTE | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| 15 (6 10 10 10 10 | LATITUDE 33 DEG 44 MIN 17.15 SEC | | TEMPORARY STRUCTURE- |
| | LONGITUDE 117 DEG 48 MIN 08.32 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | TYPE- CULVERT CODE 119 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********* CONDITION ********* CODE |
| , | TYPE- OTHER/NA CODE 000 | | DECK |
| (45) | NUMBER OF SPANS IN MAIN UNIT 2 | Department. | SUPERSTRUCTURE N |
| | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE N |
| | William Control Contro | | CHANNEL & CHANNEL PROTECTION 9 |
| | DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | | CULVERTS 8 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | | |
| | TYPE OF WEARING SURFACE- NOT APPLICABLE CODE N | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NOT APPLICABLE CODE N TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N | | DESIGN LOAD- UNKNOWN 0 |
| | | (63) | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | ******* AGE AND SERVICE ********** | | OPERATING RATING- 54.1 |
| 140000000000000000000000000000000000000 | YEAR BUILT 1980 | (65) | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| | YEAR RECONSTRUCTED 1989 | (66) | INVENTORY RATING- 32.4 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 UNDER- WATERWAY 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | UNDER- WATERWAY 5 LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | AVERAGE DAILY TRAFFIC 1000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| 8 | YEAR OF ADT 2009 (109) TRUCK ADT 1 % | | ********* APPRAISAL ********** CODE |
| | BYPASS, DETOUR LENGTH 2 KM | | STRUCTURAL EVALUATION |
| | | | DECK GEOMETRY 8 |
| | ******* GEOMETRIC DATA ********** | | INIDEDGI EADANGEG |
| | LENGTH OF MAXIMUM SPAN 3.7 M | | LIA MIDD. A DIFFORM OVE |
| | STRUCTURE LENGTH 6.7 M | | APPROACH ROADWAY ALIGNMENT 8 |
| | CURB OR SIDEWALK: LEFT 1.2 M RIGHT 1.2 M | | TRAFFIC SAFETY FEATURES 0000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 11.0 M | 400 | CCOID CDIMICAL DRIBGES |
| | DECK WIDTH OUT TO OUT 14.8 M | ,, | |
| 3000 TODAY 02 | APPROACH ROADWAY WIDTH (W/SHOULDERS) 11.0 M | 952/32/35 | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | | TYPE OF WORK- CODE |
| (34) | | | LENGTH OF STRUCTURE IMPROVEMENT M |
| 105000000000000000000000000000000000000 | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| 100 | INVENTORY ROUTE TOTAL HORIZ CLEAR 11.0 M MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (95) | ROADWAY IMPROVEMENT COST |
| 25.000.000.000.000 | With the Author and the Company of t | (96) | TOTAL PROJECT COST |
| 0.5000.0000.0000.000 | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (97) | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR RI REF- NOI H/RR 0.0 M 0.0 M | | FUTURE ADT 2061 |
| 1511:4155211516 - 32 | | (115) | YEAR OF FUTURE ADT 2032 |
| | ************** NAVIGATION DATA ********** | | ************************************** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | INSPECTION DATE 08/15 (91) FREQUENCY 48 MO |
| | PIER PROTECTION- CODE | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) I | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) |
| | | | |

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: 55C0574

Bridge Name: Redhill Channel Year Built: 1980

Facility Carried: Bent Twig Lane

The Redhill Channel culvert at Bent Twig Lane is a reinforced concrete Triple box culvert.

Caltrans BIR recommendations:

Repair post pocket spalls.

Field Inspection Observations

- There was no access to the culvert. The culvert was visually inspected from the access roads.
- Spalling and delaminated concrete around post pockets (photo 1 & 3).
- Rusted galvanized fence post likely cause of spall (photo 3).

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities.

<u>General Maintenance - Non-BPMP</u>

• Replace fence post and repair post pocket spalls. If fence post not replaced, spall will reoccur.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

 Repair spalled concrete and replace fence post < \$15,000 (includes engineering, mobilization and contingency).

APPENDIX A

Photos and BIR



Delaminated Concrete

Photo 1:

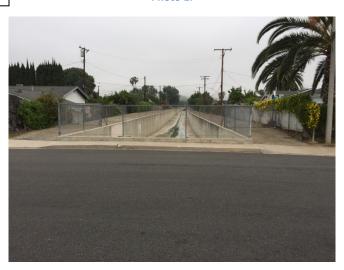


Photo 2:



Delaminated Concrete

Photo 3:



Photo 4:



Photo 5:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Inspection Report

Bridge Number : 55C0574

Facility Carried: BENT TWIG LANE

: 0.1 MI. NW/O BROWNING AV

City

Inspection Date : 08/05/2015

Inspection Type

Routine FC Underwater Special Other

Х

STRUCTURE NAME: REDHILL CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1980 Skew (degrees): Year Widened: 1989 No. of Joints : 0 Length (m) : 8.8 No. of Hinges : 0

Structure Description: Triple 2.7 m W x 1.5 m H x 14.3 m L RC box culvert (grade top)

beneath 0.3 m of earth fill.

Span Configuration : (W) 3 @ 2.7 m (E) clear, normal

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT Operating Rating: RF=1.67 =>54.1 metric tons
Permit Rating : PPPPP Calculation Method: FIELD EVAL/ENG JUDGMENT

Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.2 m cu, 1.3 m sw, 10.8 m, 1.3 m sw, 0.2 m br (N)

Total Width: 13.7 m 10.8 m No. of Lanes: 2 Net Width: Speed: 25 mph Min. Vertical Clearance: Unimpaired Overlay Thickness: 3.0 Inches

Rail Code: 0000 Rail Description: Chain link fence.

DESCRIPTION UNDER STRUCTURE

Channel Description: RC rectangular.

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

The inspection was performed by walking on the deck and using the ladder to access under the structure. All elements were visually inspected.

There is a post pocket spalls 400 mm x 300 mm x 75 mm at the CLF post #2 from west in the north headwall.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures.

Printed on: Wednesday 09/23/2015 08:16 AM

55C0574/AAAG/32864

INSPECTION COMMENTARY

| Elem Def | nspection ratings and notes ect Defect Element Description | Env | Total | Unit | g Qty in | each C | ondition | State |
|------------|---|-----|-------|------|----------|--------|----------|-------|
| No. /Pr | rot | | Qty | | | | St. 3 | |
| 241 | Culvert-RC | 2 | 42 | m | 42 | 0 | 0 | 0 |
| (241) | | | · | | | | | |
| There were | no significant defects noted. | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 07/13/2011

EstCost:

Repiar the post pocket spalls 400 mm x

Action : Super-Patch spalls

StrTarget: 2 YEARS 300 mm x 75 mm at the CLF post #2 from

Work By: LOCAL AGENCY

DistTarget:

west in the north headwall.

Status : PROPOSED

EA:

Team Leader : Mikhael T. Zaarour

Report Author :

Mikhael T. Zaarour

Inspected By :

MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

Mikhael T. Zaarour No. 68212 09/30/2017 CIVIL

STRUCTURE INVENTORY AND APPRAISAL REPORT

| (1) | ************************************** | | ************************************** |
|--|---|--|--|
| (8) | STRUCTURE NUMBER 55C0574 | | |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | HEALTH INDEX 100.0 |
| (2) | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE |
| | FEATURE INTERSECTED- REDHILL CHANNEL | | NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- BENT TWIG LANE | | HIGHWAY SYSTEM- NOT ON NHS 0 |
| 1000000 | LOCATION- 0.1 MI. NW/O BROWNING AVE | 1001 | FUNCTIONAL CLASS- COLLECTOR URBAN 17 |
| | MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | | DADALLEL CEDUCATION |
| | | | D-10-0-10-10-10-10-10-10-10-10-10-10-10-1 |
| Alexandria | LRS INVENTORY ROUTE & SUBROUTE | | TEMPORARY STRUCTURE- |
| 0.0000000000000000000000000000000000000 | LATITUDE 33 DEG 44 MIN 19.55 SEC | | DDD I ANDO IUU NOB ADDITIONED |
| A 400000000000 | LONGITUDE 117 DEG 48 MIN 06.11 SEC | | 9 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| , | ****** STRUCTURE TYPE AND MATERIAL ****** | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | STRUCTURE TYPE MAIN:MATERIAL- CONCRETE | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | TYPE- CULVERT CODE 119 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| (44) | TYPE- OTHER/NA CODE 000 | | The same of the sa |
| (45) | NUMBER OF SPANS IN MAIN UNIT 3 | /==> | |
| | | ((0) | STATE OF THE STATE |
| (46) | NUMBER OF APPROACH SPANS 0 | | |
| (107) | DECK STRUCTURE TYPE- NOT APPLICABLE CODE N | | CHANNEL & CHANNEL PROTECTION 9 CULVERTS |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | | COLVERTS |
| A) | TYPE OF WEARING SURFACE- NOT APPLICABLE CODE $_{\rm N}$ | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NOT APPLICABLE CODE $_{ m N}$ | (31) | DESIGN LOAD- UNKNOWN 0 |
| C) | TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N | | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | ******** AGE AND SERVICE ********* | | OPERATING RATING- 54.1 |
| (27) | YEAR BUILT 1980 | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| (106) | YEAR RECONSTRUCTED 1989 | | |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | | 31.1 |
| | UNDER- WATERWAY 5 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- |
| (29) | AVERAGE DAILY TRAFFIC 500 | | DESCRIPTION- OPEN, NO RESTRICTION |
| (30) | YEAR OF ADT 2011 (109) TRUCK ADT 1 % | | ******** APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 2 KM | (67) | STRUCTURAL EVALUATION 8 |
| | ******* GEOMETRIC DATA ********* | (68) | DECK GEOMETRY 6 |
| (40) | LENGTH OF MAXIMUM SPAN 2.7 M | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| 100000000000000000000000000000000000000 | | | WATER ADEQUACY 9 |
| | STRUCTURE LENGTH 8.8 M CURB OR SIDEWALK: LEFT 1.3 M RIGHT 1.3 M | (72) | APPROACH ROADWAY ALIGNMENT 8 |
| | | (36) | TRAFFIC SAFETY FEATURES 0000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 10.8 M | | SCOUR CRITICAL BRIDGES 8 |
| S 187 | DECK WIDTH OUT TO OUT 13.7 M | 2002-02-02-02-02-02-02-02-02-02-02-02-02 | <u>U</u> |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 10.8 M | (State at Season | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- CLOSED (NO BARRIER) 2 | | TYPE OF WORK- CODE |
| (34) | | | LENGTH OF STRUCTURE IMPROVEMENT M |
| 1-00-00-00-00-00-00-00-00-00-00-00-00-00 | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| 15 | INVENTORY ROUTE TOTAL HORIZ CLEAR 10.8 M | (95) | ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (114) | FUTURE ADT 921 |
| 350,000,000,000 | MIN LAT UNDERCLEAR LT 0.0 M | (115) | YEAR OF FUTURE ADT 2032 |
| , | ************* NAVIGATION DATA ********** | | ************************************** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | |
| (111) | PIER PROTECTION- CODE | | INSPECTION DATE 08/15 (91) FREQUENCY 48 MO |
| (39) | NAVIGATION VERTICAL CLEARANCE 0.0 M | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (116) | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| (40) 1 | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) OTHER SPECIAL INSP- NO MO C) |
| | | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0606

Bridge Name: Arroyo Trabuco **Year Built:** 1991

Facility Carried: Oso Parkway

The Arroyo Trabuco Bridge at Oso Parkway is a continuous five span cast-in-place concrete box girder with reinforced concrete open-end seat abutments supported on concrete piles.

Caltrans BIR recommendations:

- The County investigate the dripping water through bridge soffit openings, cells, and vent holes.
- BIR notes nearly 60,000 ft² of deck should be considered for deck treatment. However, all treatment is listed under condition state 1 and is therefore ineligible for BPMP funding.

Field Inspection Observations

- Efflorescence near each wetted area indicating water is seeping through soffit slab. Water dripping in span 1, this appears to be from a utility line in the bridge. Recommend contacting utility and have utility owner correct problem before significant damage, such as corrosion, occurs to soffit. Note, if the leaking utility is sewer water then much more corrosive. Soffit opening cover appears to be corroding (Photo 4). Note this work is not eligible for BPMP funds.
- Joint seal detached at north end. (photo 5)
- Significant bank erosion. It is unclear if the water is from weep hole drainage system or detached joint seal. Since there does not appear to be water coming from the seat, it is assumed it is from the weep holes system. Investigate source of water and repair leak before condition worsens. Note this is not eligible for BPMP funds. (Photo 6 & 7)
- Minor deck cracking, not a priority to address.

Maintenance Needs Assessment

BPMP Assessment

- Repair joint seals.
- Identify water source causing bank erosion and repair problem.

General Maintenance - Non-BPMP

- Clean out down drains.
- Deck cracks are condition state 1, so are not considered significant and are not eligible for BPMP funding.
- Have utility owner stop leaks.

Proposed BPMP Construction Costs

- Joint Seal = 104 ft * \$150/LF ≈ \$16,000
- Traffic Control ≈ \$15,000
- Bank erosion ≈ \$20,000. Difficult to estimate until water source identified
- Estimated Total Construction Cost (with engineering, mobilization and contingency) ≈ \$65,000

Construction Items Not Funded by BPMP

- Bridge deck treatment (low priority due to relatively minor cracking) ≈ \$200,000 (includes engineering, mobilization and contingency)
- Clean deck drains ≈ \$10,000, includes traffic control and assumes pipes clogged
- Utility repair should be covered by utility owner

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:



Photo 4: Bridge Soffit showing efflorescence and corroded cover plate

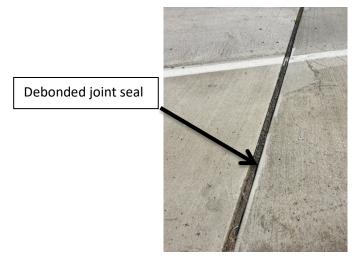


Photo 5: Detached joint seal at north end of bridge

Deep Rutting



Photo 6: Rutting at abutment



Photo 7: Erosion at abutment weep hole drainage system



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0606

Inspection Date: 01/29/2015

Facility Carried: OSO PARKWAY : 0.6 MI E/O FELIPE ROAD Location

City

Bridge Inspection Report

Inspection Type

Routine FC Underwater Special Other

X

STRUCTURE NAME: ARROYO TRABUCO

CONSTRUCTION INFORMATION

Year Built : 1991 Skew (degrees): Year Widened: N/A No. of Joints: 3 No. of Hinges: Length (m) : 202.7

Structure Description: Continuous 5 span CIP/PS concrete box girder (11 cells) with RC 2-

column bents and RC open end seat abutments, all supported upon

concrete piles (Abutment 1 has steel piles).

:(W) 45.7 m, 3 @ 36.6 m, 45.7 m (E) c/c Span Configuration

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18+MOD OR HS-20+MOD

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: ASSIGNED (LFD) Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: ASSIGNED (LFD)

Permit Rating : PPPPP

Posting Load : Type 3: Legal Type 3S2:Legal Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 0.3 m br, 1.5 m sw, 13.4 m, 1.2 m cu med, 13.4 m, 1.5 m sw, 0.3 m br (N)

Total Width: 31.7 m Net Width: 26.8 m No. of Lanes: 6 Speed: 55 mph Min. Vertical Clearance: Unimpaired AC Thickness: 0.0 Inches

Rail Code: 0110

Length (ft) Rail Modifications Rail Type Location Type 26 Right/Left 1410

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth open wash with a cobbled streambed.

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

There is 4" deep water in span 4, all elements have been visually inspected.

There is water dripping from the soffit vent hole in south side of span # 1.

SAFE LOAD CAPACITY

Printed on: Monday 03/30/2015 01:23 PM 55C0606/AAAJ/31191

INSPECTION COMMENTARY

A Load Rating Summary Sheet dated 05/27/2014 is on file for this structure. The current rating has been assigned in accordance with SM&I procedures.

| ELEME | NT INSPECTION RATINGS AND COMMENTARY | | | | | | | |
|---------------------------|--|---|---|--|---------|---|--------|----------|
| | Defect Defect Element Description /Prot | Env | Total Qty | Units | 200 | | | on State |
| 16 | Top Flange-RC | 2 | 6425 | sq.m | 6425 | 0 | 0 | 0 |
| | 521 Concrete Coat.(Meth/Paint/Seal) | 2 | 5420 | sq.m | 5420 | 0 | 0 | 0 |
| (16) There | were no significant defects noted. | Hardina — — — — — — — — — — — — — — — — — — — | *************************************** | | | AUGUST | | |
| (16-52 There | 21) were no significant defects noted. | VII. 100 | 1100000 | | | | | |
| 104 | Box Girder-PS Conc. | 2 | 203 | m | 195 | 8 | 0 | 0 |
| | 1120 Efflorescence/Rust Staining | 2 | 8 | | 0 | 8 | 0 | 0 |
| (104- | | | | | | | 191 | |
| - | are cracks with water stain in the soffit of th | | | | | | | |
| 205 | Column-RC | 2 | 8 | each | 8 | 0 | 0 | 0 |
| (205) There | were no significant defects noted. | | | | | | | |
| 215 | Abutment-RC | 2 | 88 | m | 88 | 0 | 0 | 0 |
| (215) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 225 | Pile-Steel | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (225) | | | | Maria de la compania | | | | |
| | tle element is included to indicate the presence of for visual inspection. No indication of pile | | | | | | _ | |
| 227 | Pile-RC | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (227) | | | | | | | | |
| P. March Strategy Control | le element is included to indicate the presence | of pil | es on | this st | ructure | e. The | piles | were not |
| expose | ed for visual inspection. No indication of pile | distre | ss was | noted | in any | substr | ucture | element. |
| 300 | Joint-Strip Seal Exp | 2 | 80 | m | 80 | 0 | 0 | 0 |
| (300) | were no significant defects noted. | | | | | | | |
| 302 | Joint-Compression Seal | 2 | 40 | m | 40 | 0 | 0 | 0 |
| (302) | | | | | | | 7 | |
| | were no significant defects noted. | | | | | | | |
| 312 | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (312) | | 10.1 | 10 | | | *************************************** | | |
| - | were no significant defects noted. | | | | | | | |
| 321 | Approach Slab-RC | 2 | 264 | sq.m | 264 | 0 | 0 | 0 |
| (321) | | | | | | | | |

Printed on: Monday 03/30/2015 01:23 PM

| | Sect Defect Element Description rot | Env | Total Qty | | s Qty in St. 1 | | | |
|------------|-------------------------------------|-----|--------------|---|-------------------|---|---|---|
| There were | e no significant defects noted. | | | | (1) | | | |
| 331 | Railing-RC | 2 | 404 | m | 404 | 0 | 0 | 0 |
| (331) | | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 02/22/2011

EstCost:

The city should investigate the dripping

PROFESSIONA

Mikhael T.

Zaarour

No. <u>68212</u>

Action : Drainage Issue

StrTarget: 2 YEARS water through the bridge cell.

Work By: LOCAL AGENCY

DistTarget:

Status : PROPOSED

EA:

Team Leader : Mikhael T. Zaarour

Report Author :

Mikhael T. Zaarour

Inspected By :

MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************ |
|---|--|----------|--|
| 74.5 | | | SUFFICIENCY RATING = 85.1 |
| Second. | STATE NAME- CALIFORNIA 069 | | STATUS |
| | STRUCTURE NUMBER 55C0606 | | HEALTH INDEX 99.9 |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | | PAINT CONDITION INDEX = N/A |
| | HIGHWAY AGENCY DISTRICT 12 | | E. C. |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | (4.4.0) | ********* CLASSIFICATION ********* CODE |
| (6) | FEATURE INTERSECTED- ARROYO TRABUCO | | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- OSO PARKWAY | | HIGHWAY SYSTEM- ROUTE ON NHS 1 |
| (9) | LOCATION- 0.6 MI E/O FELIPE ROAD | | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- PART OF NET 1 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE 000000000000 | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 35 MIN 04.43 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 38 MIN 04.21 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| | BORDER BRIDGE STRUCTURE NUMBER | (20) | TOLL- ON FREE ROAD 3 |
| (33) | DONDER DRIDGE DIROCIONE NOMBER | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| 1 | ****** STRUCTURE TYPE AND MATERIAL ****** | (22) | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN:MATERIAL- PRSTR CONC CONT TYPE- BOX BEAM OR GIRDER - MULTI CODE 605 | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 5 | (59) | SUPERSTRUCTURE 7 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) | CHANNEL & CHANNEL PROTECTION 9 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| | | | THE TOTAL DAMENTS AND DOCUMENTS THE THE CODE |
| | TYPE OF WEARING SURFACE- NONE CODE 0 TYPE OF MEMBRANE- NONE CODE 0 | | ******* LOAD RATING AND POSTING ****** CODE |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- MS-18+MOD OR HS-20+MOD 6 |
| | ****** AGE AND SERVICE ********** | | OPERATING RATING METHOD- ASSIGNED (LFD) A |
| | | | OPERATING RATING- 54.1 |
| | YEAR BUILT 1991 | (65) | INVENTORY RATING METHOD- ASSIGNED (LFD) A |
| 420000000000000000000000000000000000000 | YEAR RECONSTRUCTED 0000 | (66) | INVENTORY RATING- 32.4 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 UNDER- WATERWAY 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | UNDER- WATERWAY 5 LANES:ON STRUCTURE 06 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | AVERAGE DAILY TRAFFIC 27000 | | DESCRIPTION- OPEN, NO RESTRICTION |
| | YEAR OF ADT 2013 (109) TRUCK ADT 1 % | | ******* APPRAISAL ********* CODE |
| | | | CONDITIONING TO THE PART OF TH |
| (19) | BYPASS, DETOUR LENGTH 11 KM | | STRUCTURAL EVALUATION 7 |
| | ********* GEOMETRIC DATA ********** | | DECK GEOMETRY 7 |
| (48) | LENGTH OF MAXIMUM SPAN 45.7 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | STRUCTURE LENGTH 202.7 M | | WATER ADEQUACY 9 |
| (50) | CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M | | APPROACH ROADWAY ALIGNMENT 8 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 26.8 M | | TRAFFIC SAFETY FEATURES 0110 |
| (52) | DECK WIDTH OUT TO OUT 31.7 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 26.8 M | | ******* PROPOSED IMPROVEMENTS ******* |
| (33) | BRIDGE MEDIAN- CLOSED NON-MOUNTABLE 3 | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 99 DEG (35) STRUCTURE FLARED NO | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| (47) | INVENTORY ROUTE TOTAL HORIZ CLEAR 13.4 M | 25000000 | ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | | TOTAL PROJECT COST |
| (54) | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | |
| (55) | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | YEAR OF IMPROVEMENT COST ESTIMATE FUTURE ADT 56200 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | | |
| , | ************ NAVIGATION DATA ********* | | 27/02/0 = 27/02/0 = 21 |
| | | | ************************************** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N PIER PROTECTION- CODE | (90) | INSPECTION DATE 01/15 (91) FREQUENCY 24 MO |
| | | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | | A) | FRACTURE CRIT DETAIL- NO MO A) |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| , 20, | U.U.T | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0628

Bridge Name: San Juan Creek **Year Built:** 1997

Facility Carried: Antonio Parkway

The San Juan Creek Bridge at Antonio Parkway is a continuous five span cast-in-place post tension concrete box girder with two column bents and closed end seat abutments supported on driven steel H-piles and CIDH piles. The bridge was widened in 2013.

Caltrans BIR recommendations:

None

• Although not noted in recommendations, the element inspection report indicates the bridge will qualify for deck treatment since ~68,000 ft² of deck is in condition state 2.

Field Inspection Observations

• Expansion joints and deck drains are full of dirt.

• Sand is piling up on the northeast side of sidewalk.

Maintenance Needs Assessment

BPMP Assessment

• Deck treatment is eligible for funding. However, consider low priority at this time.

<u>General Maintenance - Non-BPMP</u>

• Clean deck drains and remove sand from sidewalk.

Proposed BPMP Construction Costs

• Seal bridge deck ≈ \$200,000

• Estimated Total Construction Cost ≈ \$250,000 (with engineering, traffic control, mobilization and contingency)

Construction Items Not Funded by BPMP

Unplug deck drains ≈ \$10,000, includes traffic control and assumes pipes clogged

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:

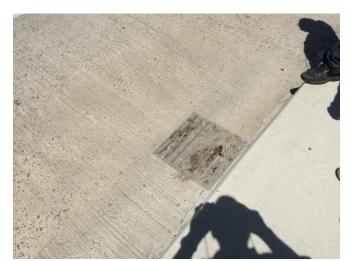


Photo 3:



Photo 4:



Photo 5:



Photo 6:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Inspection Report

Bridge Number : 55C0670

Facility Carried: HICKS CNYN HAUL RD

: 4.6 MI. SE/O CHAPMAN AVE

City

Inspection Date : 08/13/2015

Inspection Type

Routine FC Underwater Special Other

Х

STRUCTURE NAME: HICKS CANYON HAUL ROAD OC

CONSTRUCTION INFORMATION

Year Built : 1995 Year Widened: N/A Length (m) : 36.5

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

Structure Description: Simply supported two span PC/PS concrete channel girders (3 each)

with a continuous composite CIP concrete deck, and with an RC two column bent, and with RC open end diaphragm abutments, all supported

upon driven Class 70C piles.

Span Configuration : (S) 13.0 m, 22.3 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT

: PGGGG Permit Rating

Posting Load : Type 3: Legal Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.2 m br, 0.7 m sw, 7.3 m, 0.7 m sw, 0.2 m br (E)

Total Width: 9.1 m Net Width: 7.3 m No. of Lanes:

Speed: mph Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 Inches

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail | Modifications |
|-----------|------------|-------------|------|---------------|
| Type 26 | Right/Left | 150 | | |

DESCRIPTION UNDER STRUCTURE

| | Func | Lanes | Horiz Clr | Vert Clr |
|----------------------|-------|-------|-----------|----------|
| Facility Name | Class | | (m) | (m) |
| Santiago Canyon Road | 14 | 2 | 18.30 | 4.80 |

Channel Description: Under span #1 natural with riprap under the structure.

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

The channel was dry during this inspection, and substructure elements were visually inspected. The top did not inspected

INSPECTION COMMENTARY

DECK AND ROADWAY

The roadway on the structure is closed there is no public access.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures

| ELEME | NT INSPECTION RATINGS AND NOTES | | | | | | | |
|---------------|---|--|-------|-------|--------|--------|---------|----------|
| Elem | Defect Defect Element Description | Env | Total | Units | Qty in | each C | onditio | on State |
| No. | /Prot | | Qty | | St. 1 | St. 2 | St. 3 | St. 4 |
| 15 | Top Flange-PS Conc. | 2 | 333 | sq.m | 333 | 0 | 0 | 0 |
| (15) There | were no significant defects noted. | | | | | | | |
| | 511 Deck Wearing Surface-Concrete | 2 | 266 | sq.m | 266 | 0 | 0 | 0 |
| (16-51 | 11) | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 109 | Girder/Beam-PS Conc. | 2 | 105 | m | 105 | 0 | 0 | 0 |
| (109) | | | | | | | 10000 | |
| There | were no significant defects noted. | | | | | | | |
| 205 | Column-RC | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (205) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 215 | Abutment-RC | 2 | 24 | m | 24 | 0 | 0 | 0 |
| (215) | | | | | | | | |
| There | were no significant defects noted. | | | | | AUX . | | |
| 226 | Pile-PS Conc. | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (226) | | | | | | | | |
| | le element is included to indicate the presence d for visual inspection. No indication of pile | 200 Sept. 100 Se | | | | | | |
| | | | | | | 43.000 | | |
| 234 | Pier Cap-RC | 2 | 18 | m | 18 | 0 | 0 | 0 |
| (234) | | - | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 312 | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (312) | | | | | | 8 | | |
| There | were no significant defects noted. | | | | | | | |
| 331 | Railing-RC | 2 | 72 | m | 72 | 0 | 0 | 0 |
| (331) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Mikhael T. Zaarour Report Author :

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************************************** |
|---|--|---------|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 97.0 |
| (8) | STRUCTURE NUMBER 55C0670 | | STATUS |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 1!800000 | | HEALTH INDEX 100.0 |
| (2) | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- SANTIAGO CANYON ROAD | (112) | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- HICKS CNYN HAUL RD | | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 4.6 MI. SE/O CHAPMAN AVE. | (26) | FUNCTIONAL CLASS- LOCAL URBAN 19 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 45 MIN 34.8 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 42 MIN 10.15 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | STRUCTURE TYPE MAIN:MATERIAL PRESTRESS CONC | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| | TYPE- STRINGER/MULTI-BEAM OR GDR CODE 502 | | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 ************** CONDITION ************************************ |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA TYPE- OTHER/NA CODE 000 | | |
| (45) | | | DECK 8 |
| | NUMBER OF SPANS IN MAIN UNIT 2 | | SUPERSTRUCTURE 8 SUBSTRUCTURE 8 |
| | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE 8 CHANNEL & CHANNEL PROTECTION N |
| | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CULVERTS N |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | B.S.T.S | SANCE AND ARREST |
| | TYPE OF WEARING SURFACE- NONE CODE 0 TYPE OF MEMBRANE- NONE CODE 0 | | ******* LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- UNKNOWN 0 |
| | ******** AGE AND SERVICE ******** | | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | | | OPERATING RATING- 54.1 |
| 100000000000000000000000000000000000000 | YEAR BUILT 1995 YEAR RECONSTRUCTED 0000 | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| 200000000000000000000000000000000000000 | TYPE OF SERVICE: ON- HIGHWAY 1 | | INVENTORY RATING- 32.4 |
| (12) | UNDER- HIGHWAY W/WO PEDESTF 1 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 02 UNDER STRUCTURE 02 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- |
| (29) | AVERAGE DAILY TRAFFIC 1 | | DESCRIPTION- OPEN, NO RESTRICTION |
| (30) | YEAR OF ADT 2009 (109) TRUCK ADT 0 % | | ********* APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 22 KM | (67) | STRUCTURAL EVALUATION 8 |
| | *********** GEOMETRIC DATA ********** | (68) | DECK GEOMETRY 6 |
| (48) | LENGTH OF MAXIMUM SPAN 22.6 M | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL 5 |
| | STRUCTURE LENGTH 36.5 M | (71) | WATER ADEQUACY N |
| (50) | CURB OR SIDEWALK: LEFT 0.7 M RIGHT 0.7 M | | APPROACH ROADWAY ALIGNMENT 8 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 7.3 M | | TRAFFIC SAFETY FEATURES 1000 |
| (52) | DECK WIDTH OUT TO OUT 9.1 M | (113) | SCOUR CRITICAL BRIDGES N |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 7.3 M | | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 0 DEG (35) STRUCTURE FLARED NO | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 7.3 M | (95) | ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST |
| | MIN VERT UNDERCLEAR REF- HIGHWAY 4.87 M MIN LAT UNDERCLEAR RT REF- HIGHWAY 3.6 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 1 |
| | ************* NAVIGATION DATA ********* | (115) | YEAR OF FUTURE ADT 2035 |
| | | | ************** INSPECTIONS *********** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N PIER PROTECTION- CODE | (90) | INSPECTION DATE 08/15 (91) FREQUENCY 48 MO |
| | INVICATION UPPERCAL OF PARAMET | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| se 959 | , | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0629

Bridge Name: Wildlife Undercrossing **Year Built:** 1997

Facility Carried: Antonio Parkway

The existing Wildlife undercrossing Bridge at Antonio Parkway is a continuous three span cast-in-place reinforced concrete box girder with reinforced concrete three column bents, and reinforced concrete open seat abutments, all supported on CIDH concrete piles.

Caltrans BIR recommendations:

None

Field Inspection Observations

• Minor deck cracking observed. No action needed.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

General Maintenance - Non-BPMP

No recommendations.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:

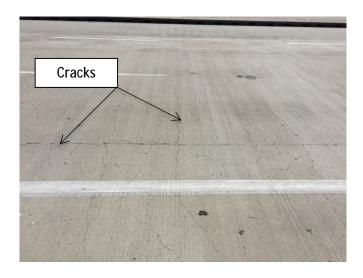


Photo 4: Bridge Deck



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0629

Facility Carried: ANTONIO PARKWAY

Location : 0.5 MI. S/O OSO PARKWAY

City

Inspection Date : 01/29/2015

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

Х

STRUCTURE NAME: WILDLIFE UNDERCROSSING

CONSTRUCTION INFORMATION

 Year Built : 1997
 Skew (degrees): 0

 Year Widened: 2008
 No. of Joints : 2

 Length (m) : 71.6
 No. of Hinges : 0

Structure Description: Continuous three span CIP/RC box girder (seven cells) with RC three

column bents, and RC open seat abutments, all supported upon 406 $\ensuremath{\mathsf{mm}}$

diameter CIDh concrete piles.

Span Configuration : (S) 20.9 m, 29.0 m, 20.9 m (N)

widened (S) 8.5 m, 9 m, 20.9 m, 29.0 m, 20.9 m (N)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18+MOD OR HS-20+MOD

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: ASSIGNED (LFD) Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: ASSIGNED (LFD)

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.5 m br, 1.3 m sw, 13.3 m, 1.2 m med, 13.3, 1.3 m sw, 0.5 m br (E)

Total Width: 31.2 m Net Width: 26.6 m No. of Lanes: 4 Speed: 55 mph
Min. Vertical Clearance: Unimpaired AC Thickness: 0.0 Inches

Rail Code: 1111

Rail Type Location Length (ft) Rail Modifications

Type 26 Right/Left 528 Timber top

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth canyon

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

The channel was dry ot time of inspection, all elements have been visually inspected.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures.

Printed on: Monday 03/30/2015 01:23 PM 55C0629/AAAE/31191

| | THE THEORETON PARTIES AND COMMENTARY | | | | | | | |
|----------------|--|--|--------------|---------|------------------------|-----------|--------------|---|
| | NT INSPECTION RATINGS AND COMMENTARY | | | | | | | |
| Elem No. | Defect Defect Element Description /Prot | Env | Total Qty | Units | - 10 m | | St. 3 | |
| 16 | Top Flange-RC | 2 | 2270 | sq.m | 2270 | 0 | 0 | 0 |
| (16) There | were no significant defects noted. | | | | | | | |
| 38 | Slab-RC | 2 | 200 | sq.m | 200 | 0 | 0 | 0 |
| (38) There | were no significant defects noted. | | | | | | | |
| 105 | Box Girder-RC | 2 | 142 | m | 142 | 0 | 0 | 0 |
| (105) There | were no significant defects noted. | 01 V. 1 V. | | | | 5. 15.400 | | |
| 205 | Column-RC | 2 | 13 | each | 13 | 0 | 0 | 0 |
| (205) There | were no significant defects noted. | | | 45 2220 | 180 - Walter S. (1999) | | | |
| 215 | Abutment-RC | 2 | 80 | m | 80 | 0 | 0 | 0 |
| (215) There | were no significant defects noted. | | 34.00 | Mark . | st=86.00 | | | |
| 252 | Pile-CIDH | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| 100 | le element is included to indicate the presence d for visual inspection. No indication of pile | | | | | | | |
| 302 | Joint-Compression Seal | 2 | 42 | m | 42 | 0 | 0 | 0 |
| (302) There | were no significant defects noted. | | | | | | 18 (BW) 12 E | |
| 312 | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (312) There | were no significant defects noted. | | | | | | | |
| 321 | Approach Slab-RC | 2 | 478 | sq.m | 478 | 0 | 0 | 0 |
| (321) There | were no significant defects noted. | | | | | | | |
| 331 | Railing-RC | 2 | 142 | m | 142 | 0 | 0 | 0 |
| (331) There | were no significant defects noted. | | Wadding. | 2000 | | | | |

WORK RECOMMENDATIONS - NONE

Printed on: Monday 03/30/2015 01:23 PM 55C0629/AAAE/31191

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

PROFESSIONAL
Mikhael T.
Zaarour
No. 68212
09/30/2015
CIVIL
OF CALIFORNIA

Printed on: Monday 03/30/2015 01:23 PM 55C0629/AAAE/31191

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************ |
|--|--|---|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 87.9 |
| ,-, | STRUCTURE NUMBER 55C0629 | | STATUS |
| | INVENTORY ROUTE (ON/UNDER) - ON 14000000 | | HEALTH INDEX 100.0 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******** CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- WILDLIFE UNDERCROSSING | (112) | NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- ANTONIO PARKWAY | (104) | HIGHWAY SYSTEM- ROUTE ON NHS 1 |
| (9) | LOCATION- 0.5 MI. S/O OSO PARKWAY | (26) | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- PART OF NET 1 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 34 MIN 34.64 SEC | (103) | TEMPORARY STRUCTURE- |
| 200.000.000 | LONGITUDE 117 DEG 37 MIN 57.64 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| 100000000000000000000000000000000000000 | BORDER BRIDGE STATE CODE % SHARE % | (110) | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| | BORDER BRIDGE STRUCTURE NUMBER | (20) | TOLL- ON FREE ROAD 3 |
| | | (21) | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ******* | (22) | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE CONT | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| | TYPE- BOX BEAM OR GIRDER - MULTI CODE 205 | | ****** CODE |
| (44) | STRUCTURE TYPE APPR:MATERIAL- CONCRETE CONT | 1400000 | |
| (45) | TYPE- SLAB CODE 201 | | DECK 8 SUPERSTRUCTURE 8 |
| - 15 | NUMBER OF SPANS IN MAIN UNIT 3 | 10.000000000000000000000000000000000000 | published to the published and |
| (46) | NUMBER OF APPROACH SPANS 2 | | SUBSTRUCTURE 8 CHANNEL & CHANNEL PROTECTION N |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | 7.00 | CHANNEL & CHANNEL PROTECTION N CULVERTS N |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (02) | COLVERIS |
| | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- MS-18+MOD OR HS-20+MOD 6 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | (63) | OPERATING RATING METHOD- ASSIGNED (LFD) A |
| | ******** AGE AND SERVICE ********* | (64) | OPERATING RATING- 54.1 |
| (27) | YEAR BUILT 1997 | (65) | INVENTORY RATING METHOD- ASSIGNED (LFD) A |
| (106) | YEAR RECONSTRUCTED 2008 | (66) | INVENTORY RATING- 32.4 |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (70) | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (20) | UNDER- OTHER 0 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | | DESCRIPTION- OPEN, NO RESTRICTION |
| 1021000110020 | AVERAGE DAILY TRAFFIC 23400 | | ****** APPRAISAL ********* CODE |
| | YEAR OF ADT 2011 (109) TRUCK ADT 1 % BYPASS, DETOUR LENGTH 11 KM | | OMDITOMID & T. DIVATIANTON |
| (19) | BYPASS, DETOUR LENGTH 11 KM | *************************************** | STRUCTURAL EVALUATION 8 DECK GEOMETRY |
| | ******** GEOMETRIC DATA ********** | | <u> </u> |
| (48) | LENGTH OF MAXIMUM SPAN 29.0 M | | |
| as magazin | STRUCTURE LENGTH 71.6 M | | WATER ADEQUACY N APPROACH ROADWAY ALIGNMENT 8 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | 351500000 | TRAFFIC SAFETY FEATURES 1111 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 26.6 M | | CONTRACTOR PROPERTY |
| | DECK WIDTH OUT TO OUT 31.2 M | (113) | |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 26.6 M | | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 0 DEG (35) STRUCTURE FLARED NO | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| 08.000.000 | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| 2.0 | INVENTORY ROUTE TOTAL HORIZ CLEAR 13.3 M | (95) | ROADWAY IMPROVEMENT COST |
| Commence of the Commence of th | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (114) | FUTURE ADT 42329 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | (115) | YEAR OF FUTURE ADT 2037 |
| | ********** NAVIGATION DATA ********* | | ************** INSPECTIONS *********** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | | INSPECTION DATE 01/15 (91) FREQUENCY 48 MO |
| (111) | PIER PROTECTION- CODE | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (39) | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) |
| (116) | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) |

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: 55C0631

Bridge Name: Santa Anna River Channel Year Built: 1994

Facility Carried: Harbor Boulevard

The existing Santa Ana River Channel at Harbor Boulevard is a continuous 5 span precast, prestressed I-girder bridge with reinforced concrete piers wall and open end diaphragm abutments supported on driven class 70 & class 100 piles and prestressed concrete pile.

Caltrans BIR recommendations:

Clean clogged drains

Field Inspection Observations

- Plugged drain inlets.
- Efflorescence visible on the bridge soffit (photo 1). Per site inspection it appears the bridge deck has been treated. Need to confirm with OCPW.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities, unless bridge deck has not been treated. Treating the deck is eligible for BPMP funding since deck is condition state 2.

<u>General Maintenance - Non-BPMP</u>

Clean clogged drains.

Proposed BPMP Construction Costs

• None, unless bridge deck has not been treated.

Construction Items Not Funded by BPMP

• Clean deck drains < \$5,000

APPENDIX A

Photos and BIR



Photo 1: Santa Anna River Channel



Photo 2:

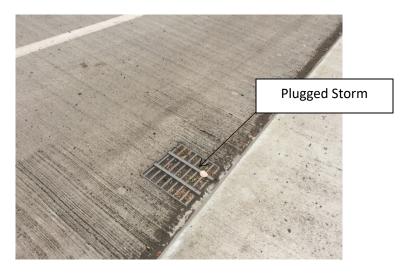


Photo 3: Deck Drain



Photo 4: Sidewalk

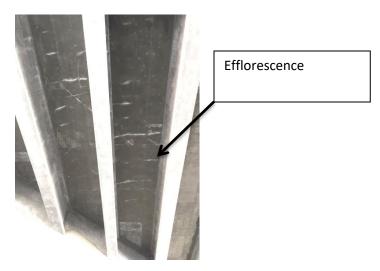


Photo 5: Bridge Soffit



Photo 6:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0205

Facility Carried: SANTA ANA AVENUE

Location

: 0.1 MI S/O BRISTOL STREE

City

Inspection Date : 01/27/2017

Inspection Type Bridge Inspection Report

Routine FC Underwater Special Other X

STRUCTURE NAME: SANTA ANA-DELHI CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1960 Year Modified: 1973 Length (m) : 16.5

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

Structure Description: Single span PC/PS concrete beam units (22 units) on RC pile bent cap with monolithic wingwallswith sheathing walls.

Span Configuration : (S) 54.00 ft (N)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=0.52 =>16.8 metric tons Operating Rating: RF=0.87 =>28.2 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT 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) 0.67 ft br, 1.33 ft AC dike, 61.42 ft, 4.50 ft sw, 0.67 m br (E)

Total Width: 20.4 m Net Width: 18.7 m

No. of Lanes: 4

45 mph

Min. Vertical Clearance: Unimpaired

Overlay Thickness: 6.5 Inches

Rail Code: 1000

Rail Type Location Length (ft) Rail Modifications MBBR 108

DESCRIPTION UNDER STRUCTURE

Channel Description: RC rectangular.

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 sidewalks, and under the span of the superstructure. The water in the channel is about is 3 inches through a small ditch 5 feet wide in the middle of the channel. All visible substructure elements were

Pedestrian access under the bridge is from a ramp at the north-west quadrant.

INSPECTION COMMENTARY

REVISIONS

AC thickness overlay is changed from 3 inches to be 9 inches at the west side and 4 inches at the east side. The average AC thickness is about 6.5 inches. (see the attached photos 1 & 2)

Element 15 (Prestressed top flange-RC) is replaced Element 16 (Top flange-RC) with the same quantity.

The substructure element is revised to be Bent cap $20~\mathrm{m}$; and piles $\#251~(2~\mathrm{each})$ instead of element $\#215~\mathrm{RC}$ Abutment.

DECK AND ROADWAY

AC overlay exhibits two transverse cracks above both abutments, 20 feet long and 0.2 inches wide.

SUBSTRUCTURE

There is a tree growing at the seat of Abutment 1 under slab unit 9 (counting from east).

SAFE LOAD CAPACITY

The load rating for this structure is being reviewed by SMI Ratings Branch A request #7766 was sent the load rating department on 07/14/2017. An updated Load Rating Summary will be archived when this review is complete. Load Rating Summary Sheet is archived on 12/12/2014 for this structure. While this report does not include a check of that analysis, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis.

| No. | Defect De | efect Element Description | Env | Total Qty | Units | | | ondition St. 3 | |
|-------------------------|-----------|---------------------------------|-----|--------------|-------|-----|---|-------------------|---|
| 15 | | Top Flange-PS Conc. | 2 | 336 | sq.m | 336 | 0 | 0 | 0 |
| | 510 | Deck Wearing Surface-Asphalt | 2 | 308 | sq.m | 308 | 0 | 0 | 0 |
| (15) There (15-5) | | ignificant defects noted. | | | | | | | |
| There | were no s | ignificant defects noted. | | | | | | | |
| 104 | | Box Girder-PS Conc. | 2 | 17 | m | 14 | 2 | 1 | 0 |
| | 1080 | Delamination/Spall/Patched Area | 2 | 1 | | 0 | 0 | 1 | 0 |
| | 1120 | Efflorescence/Rust Staining | 2 | 2 | | 0 | 2 | 0 | 0 |

Printed on: Tuesday 07/25/2017 09:25 AM

| ELEMEN | T INSPECTION | RATINGS AND NOTES | | | | | | | | |
|---------|------------------------|--------------------------|---------------|------|--------------|---------|---------|---------|-------------------|---|
| Elem | Defect Defect /Prot | Element Description | | Env | Total Qty | Units | | | ondition St. 3 | |
| the mid | d-span. (see t | he attached photos 4 & | 5) | | | | | | | |
| (104-11 | 120) | | | | | | | | | |
| There v | was water stai | n in soffit generated i | n between the | bog | girde: | rs unit | s. | | | |
| 215 | Al | outment-RC | | 2 | 10 | m | 10 | 0 | 0 | 0 |
| (215) | | | | | | | - | | | |
| Monolit | thic wingwalls | (with the RC bent cap) | are included | in | the to | tal qua | antity. | | | |
| 234 | Pi | ler Cap-RC | | 2 | 40 | m | 40 | 0 | 0 | 0 |
| (234) | | | | | | | | | | |
| There w | vere no signif | icant defects noted. | | | | | | | | |
| 251 | Pi | le-CISS | | 2 | 2 | ea. | 0 | 2 | 0 | 0 |
| | 1000 Co | orrosion | | 2 | 2 | | 0 | 2 | 0 | 0 |
| (251) | | | | | | | | | | |
| There a | re only two p | iles that are visbile a | t the north A | butm | ent at | the ea | st side | · . | | |
| (251-10 | 00) | | | | | | | | | |
| The ext | erior steel sh | nells of the north piles | s (east side) | is | rusted. | (see | the att | ached p | hoto 9) | |
| 330 | Ra | iling-Metal | | 2 | 33 | m | 33 | 0 | 0 | 0 |
| (330) | | | | | | | | | | |
| There w | ere no signifi | cant defects noted. | | | | | | | | |

WORK RECOMMENDATIONS

RecDate: 06/08/2011

EstCost:

Remove the small tree that are growing in

Action : Sub-Misc.

StrTarget: 2 YEARS Abutment 1 seat.

Work By: LOCAL AGENCY

DistTarget:

Status : PROPOSED

Team Leader :

Ashraf Shenouda

Report Author :

Ashraf Shenouda

Inspected By :

A.Shenouda/KD.Henderson

Ashraf Shenouda (Registered Civil Engineer)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | MATRICA NO PORT RE DI NO MONTO CO- |
|-------|--|--|
| | | ************************************** |
| | STATE NAME- CALIFORNIA 069 | STATUS |
| | STRUCTURE NUMBER 55C0205 | HEALTH TAIDAY |
| | INVENTORY ROUTE (ON/UNDER) - ON 140000000 | 99.4 |
| | HIGHWAY AGENCY DISTRICT 12 | PAINT CONDITION INDEX = N/A |
| | COUNTY CODE 059 (4) PLACE CODE 00000 | ********** CLASSIFICATION ********* CODE |
| | FEATURE INTERSECTED- SANTA ANA DELHI CHANNEL | (112) NBIS BRIDGE LENGTH- YES |
| | FACILITY CARRIED- SANTA ANA AVENUE LOCATION- 0.1 MI S/O BRISTOL STREET | (104) HIGHWAY SYSTEM- NOT ON NHS |
| | LOCATION- 0.1 MI S/O BRISTOL STREET MILEPOINT/KILOMETERPOINT 0 | (26) FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 (100) DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) DARALLEI CTRICTURE |
| | LRS INVENTORY ROUTE & SUBROUTE | (102) DIDECETON OF TRAINS |
| | LATITUDE 33 DEG 39 MIN 55.22 SEC | (102) DIRECTION OF TRAFFIC- 2 WAY 2 (103) TEMPORARY STRUCTURE- |
| 10 8 | LONGITUDE 117 DEG 52 MIN 59.41 SEC | (105) PED LANDS HAVE NOT ADDITIONS |
| | BORDER BRIDGE STATE CODE % SHARE % | (110) DESIGNATED NATIONAL NETWORK |
| | BORDER BRIDGE STRUCTURE NUMBER | (20) TOLL- ON FREE ROAD |
| | | (21) MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | (22) OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONC | (37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | TYPE- BOX BEAM OR GIRDER - MULTI CODE 505 STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | ******* CONDITION ********* CODE |
| (11) | TYPE - OTHER/NA CODE 000 | (EQ) DECK |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | (FO) GUDDO GERLIGHTE - |
| | NUMBER OF APPROACH SPANS 0 | (60) SUBSTRUCTURE 7 |
| | DECK STRUCTURE TYPE- PRECAST CONC. PA CODE 2 | (61) CHANNEL & CHANNEL PROTECTION 8 |
| 2.000 | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) CULVERTS N |
| | TYPE OF WEARING SURFACE- BITUMINOUS CODE 6 | |
| | TYPE OF MEMBRANE - NONE CODE 0 | ******* LOAD RATING AND POSTING ******* CODE |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | (31) DESIGN LOAD- UNKNOWN 0 |
| | ******* AGE AND SERVICE ********* | (63) OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| (27) | YEAR BUILT 1960 | (64) OPERATING RATING ADDITION DATE (65) INVENTORY PATTING ADDITION DESCRIPTION OF THE PARTY (700) |
| (106) | YEAR RECONSTRUCTED 1973 | (65) INVENTORY RATING METHOD- FIELD EVAL/ENG JUI 0 (66) INVENTORY RATING- |
| (42) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | (70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (00) | UNDER- WATERWAY 5 | (41) STRUCTURE OPEN DOCTED OF GLOCAR |
| | LANES:ON STRUCTURE 04 UNDER STRUCTURE 00 | DESCRIPTION- OPEN, NO RESTRICTION |
| | AVERAGE DAILY TRAFFIC 11000 YEAR OF ADT 2008 (109) TRUCK ADT 1 % | |
| | | ******* APPRAISAL ********** CODE |
| (19) | BYPASS, DETOUR LENGTH 2 KM | (67) STRUCTURAL EVALUATION (68) DECK GEOMETRY |
| (40) | ************************************** | (50) INDERCIENDANCES APPRICATE A MARINE DE |
| | LENGTH OF MAXIMUM SPAN 16.2 M STRUCTURE LENGTH 16.5 M | (71) MARIE ADDOME |
| | STRUCTURE LENGTH 16.5 M CURB OR SIDEWALK: LEFT 0.0 M RIGHT 1.4 M | (71) WATER ADEQUACY 8 (72) APPROACH ROADWAY ALIGNMENT 8 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 18.7 M | (36) TRAFFIC SAFETY FEATURES 1000 |
| | DECK WIDTH OUT TO OUT 20.4 M | (113) SCOUR CRITICAL BRIDGES 5 |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 17.1 M | ******** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | (7E) TYPE OF WORK |
| (34) | SKEW 10 DEG (35) STRUCTURE FLARED NO | (76) I PNCTH OF CERTICIPE TARRESTER |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 18.7 M | (95) ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) TOTAL PROJECT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M MIN LAT UNDERCLEAR LT 0.0 M | (114) FUTURE ADT 18984 |
| | | (115) YEAR OF FUTURE ADT 2038 |
| | ************* NAVIGATION DATA ********** | ************************************** |
| | NAVIGATION CONTROL- NO CONTROL CODE 0 | (90) INSPECTION DATE 01/17 (91) FREQUENCY 24 MO |
| | PIER PROTECTION- CODE | (92) CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M //ERT-LIFT BRIDGE NAV MIN VERT CLEAR | A) FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | B) UNDERWATER INSP- NO MO B) |
| | 0.0 M | C) OTHER SPECIAL INSP- NO MO C) |
| | | |

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: 55C0637

Bridge Name: Arroyo Trabuco **Year Built:** 2005

Facility Carried: Crown Valley PKWY

The Arroyo Trabuco Bridge at Oso Parkway is a continuous four span cast-in-place prestressed concrete box girder with reinforced concrete (RC), 2 column bents and RC closed end cantilever abutments supported on CIDH concrete piles.

Caltrans BIR recommendations:

- Weld back the sheared off middle steel bar of the joint seal assembly. (From 2013 BIR, although not repaired not in 2015 BIR).
- Clean out all dirt and debris in all joint seals.

Field Inspection Observations

- There is efflorescence visible on soffit near the soffit opening cover plate which is heavily corroded. Water leaking/dripping in span 1, this appears to be a water line.
- Torn joint seal (photo 1).

Maintenance Needs Assessment

BPMP Assessment

Repair joint seal assembly.

General Maintenance - Non-BPMP

• Recommend contacting utility owner of water line. Note this will not eligible for BPMP funds but should be covered by the utility owner.

Proposed BPMP Construction Costs

- Joint Seal Assembly = 168 ft * \$200/LF ≈ \$ 34,000
- Traffic Control = \$10,000
- Estimated Total Construction Cost (with engineering, mobilization and contingency) ≈ \$50,000

Construction Items Not Funded by BPMP

- Utility repair should be funded by utility company
- Soffit cover plate replacement

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 5:



Photo 6:

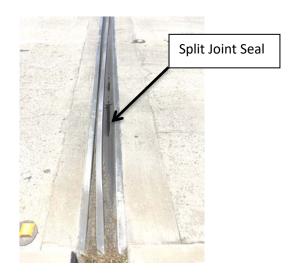


Photo 7: Joint Seal

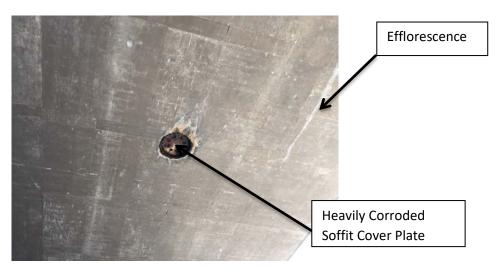


Photo 8: Bridge Soffit



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0637

Facility Carried: CROWN VALLEY PKWY

Location : 0.5 MI E/O MARGUERITE PW

City

Inspection Date : 01/29/2015

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other

Х

STRUCTURE NAME: ARROYO TRABUCO

CONSTRUCTION INFORMATION

Year Built : 2000 Skew (degrees): 0 Year Widened: 2005 No. of Joints : 2 Length (m) : 238 No. of Hinges : 0

Structure Description: Continuous 4-span CIP/PS concrete box girder (5 cells) with RC 2-

column bents and RC closed end backfilled cantilever abutments, all supported upon 610 mm diameter (abutments) and 3050 mm diameter

(bents) CIDH concrete piles.

Widen (North side): Continuous 4-span CIP/PS concrete box girder (3

cells) with RC 1-column bents and RC closed end backfilled

cantilever abutments.

Span Configuration

: (W) 51.3 m, 67.0 m, 67.0 m, 51.3 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: HL 93

Inventory Rating: RF= 1.00 Calculation Method: ASSIGNED (LRFD)
Operating Rating: RF= 1.30 Calculation Method: ASSIGNED (LRFD)

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: <u>Legal</u> Type 3-3: <u>Legal</u>

DESCRIPTION ON STRUCTURE

Deck X-Section: (N) 0.3 m br, 1.5 m sw, 16.7 m, 1.5 m median, 16.8 m; 1.5 m sw, 0.3 m br (S) $^{\circ}$

Total Width: 38.3 m Net Width: 33.5 m No. of Lanes: 7 Speed: 55 mph
Min. Vertical Clearance: Unimpaired AC Thickness: 0.0 Inches

Rail Code: 0110

Rail Type Location Length (ft) Rail Modifications
Type 26 Right/Left 1640

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth canyon.

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

The channel was dry ot time of inspection, all elements have been visually inspected.

SAFE LOAD CAPACITY

Printed on: Monday 03/30/2015 01:23 PM 55C0637/AAAG/31191

INSPECTION COMMENTARY

A Load Rating Summary Sheet dated 03/19/2013 is on file for this structure. The current rating has been assigned in accordance with SMI procedures.

| ET EME | NAME TAIGUE CONTON DAMENGO AND CONGENITADA | | | | | | | |
|-----------------|---|-----------|---------------------|---------|-------|---|----------|---|
| | ENT INSPECTION RATINGS AND COMMENTARY | | | | | | | |
| No. | Defect Defect Element Description /Prot | Env | Total Qty | Units | | each Co | | |
| 16 | Top Flange-RC | 2 | 9115 | sq.m | 9115 | 0 | 0 | 0 |
| (16) | were no significant defects noted. | 1 | | | | *************************************** | | |
| l ——— | | | 17.6 | 14500 | 160 | | | |
| 104 | | 2 | 476 | m | 468 | 8 | 0 | 0 |
| | 1110 Cracking (PS Conc.) | 2 | 8 | | 0 | 8 | 0 | 0 |
| (104-) There | 1110) are few longitudinal cracks in the soffit of t | the box g | irder | in spar | n #4. | | | |
| 205 | Column-RC | 2 | 9 | each | 9 | 0 | 0 | 0 |
| (205) There | were no significant defects noted. | | | | | | | |
| 215 | Abutment-RC | 2 | 90 | m | 90 | 0 | 0 | 0 |
| (215) There | were no significant defects noted. | | | | | | | |
| 252 | | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| | ile element is included to indicate the presenced for visual inspection. No indication of pil | | | | | | | Total Control of the |
| 256 | Slope Protection | 2 | 2 | ea. | 2 | 0 | 0 | 0 |
| (256) There | were no significant defects noted. | | | | | | _ | |
| 303 | Joint-Assembly w/ Seal | 2 | 76 | m | 76 | 0 | 0 | 0 |
| (303) There | were no significant defects noted. | | | | | | V | |
| 312 | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (312) There | were no significant defects noted. | | | , | | *************************************** | | |
| 321 | Approach Slab-RC | 2 | 555 | sq.m | 555 | 0 | 0 | 0 |
| (321) There | were no significant defects noted. | - | 10 10 10 m Par 30 m | - 1 11 | | | | |
| 331 | Railing-RC | 2 | 476 | m | 476 | 0 | 0 | 0 |
| (331) There | were no significant defects noted. | | | | | | # £ 1181 | |

WORK RECOMMENDATIONS

RecDate: 02/10/2013

Action : Super-Misc.

Work By: LOCAL AGENCY Status : PROPOSED

EstCost:

DistTarget:

EA:

The county has to check the utility pipes StrTarget: 2 YEARS inside the box cells where the soffit access is leaking water and the cover place is heavily rusted and corroded in

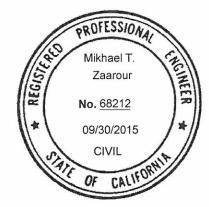
span 4.

Team Leader : Mikhael T. Zaarour

Mikhael T. Zaarour Report Author :

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************ |
|---------------------------|--|---------------|---|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 84.0 |
| | STRUCTURE NUMBER 55C0637 | | STATUS |
| | INVENTORY ROUTE (ON/UNDER) - ON 150000000 | | HEALTH INDEX 100.0 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| 000000 | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******* CODE |
| | FEATURE INTERSECTED- ARROYO TRABUCO | (112) | NBIS BRIDGE LENGTH- YES Y |
| 270 (100) | FACILITY CARRIED- CROWN VALLEY PKWY | 600 1000 1000 | HIGHWAY SYSTEM- ROUTE ON NHS 1 |
| | | | FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14 |
| | LOCATION- 0.5 MI E/O MARGUERITE PWY MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | | | PARALLEL STRUCTURE- NONE EXISTS N |
| | BASE HIGHWAY NETWORK- PART OF NET 1 | | DIRECTION OF TRAFFIC- 2 WAY 2 |
| 2.00 | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | | TEMPORARY STRUCTURE- |
| 200 300 500 | LATITUDE 33 DEG 33 MIN 46.01 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| | LONGITUDE 117 DEG 39 MIN 10.4 SEC | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| | BORDER BRIDGE STATE CODE % SHARE % | N., | TOLL- ON FREE ROAD 3 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| , | ****** STRUCTURE TYPE AND MATERIAL ****** | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- PRSTR CONC CONT | | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| | TYPE- BOX BEAM OR GIRDER - MULTI CODE 605 | (0,, | NOT EDIGIDLE |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | ********** CONDITION ********** CODE |
| | TYPE- OTHER/NA CODE 000 | (58) | DECK 8 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 4 | (59) | SUPERSTRUCTURE 8 |
| (46) | NUMBER OF APPROACH SPANS 0 | (60) | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | (61) | CHANNEL & CHANNEL PROTECTION 9 |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- HL 93 A |
| | TYPE OF DECK PROTECTION- NONE CODE 0 | 92444 | OPERATING RATING METHOD- ASSIGNED (LRFD) F |
| | ******* AGE AND SERVICE ******** | | OPERATING RATING METHOD ASSIGNED (ERFD) F |
| (27) | YEAR BUILT 2000 | | INVENTORY RATING METHOD- ASSIGNED (LRFD) F |
| | YEAR RECONSTRUCTED 2005 | | INVENTORY RATING- RF= 1.00 |
| (*) = D = (*) = (*) | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | 3.000 | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| | UNDER- WATERWAY 5 | | STRUCTURE OPEN, POSTED OR CLOSED- |
| (28) | LANES:ON STRUCTURE 07 UNDER STRUCTURE 00 | (11) | DESCRIPTION- OPEN, NO RESTRICTION |
| (29) | AVERAGE DAILY TRAFFIC 33160 | | |
| (30) | YEAR OF ADT 2011 (109) TRUCK ADT 1 % | | ******** APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 20 KM | | STRUCTURAL EVALUATION 8 |
| | *********** GEOMETRIC DATA ********** | | DECK GEOMETRY 9 |
| (48) | LENGTH OF MAXIMUM SPAN 67.0 M | | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| (49) | STRUCTURE LENGTH 238.0 M | | WATER ADEQUACY 9 |
| (50) | CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M | | APPROACH ROADWAY ALIGNMENT 8 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 33.5 M | | TRAFFIC SAFETY FEATURES 0110 |
| (52) | DECK WIDTH OUT TO OUT 38.3 M | (113) | SCOUR CRITICAL BRIDGES 8 |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 33.5 M | | ****** PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- CLOSED NON-MOUNTABLE 3 | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 0 DEG (35) STRUCTURE FLARED YES | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| (10) | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| (47) | INVENTORY ROUTE TOTAL HORIZ CLEAR 16.8 M | (95) | ROADWAY IMPROVEMENT COST |
| (53) | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST |
| | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | | FUTURE ADT 60565 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | (115) | YEAR OF FUTURE ADT 2035 |
| | *********** NAVIGATION DATA ********* | | ************************************** |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (90) | INSPECTION DATE 01/15 (91) FREQUENCY 24 MO |
| (111) | PIER PROTECTION- CODE | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| (39) | NAVIGATION VERTICAL CLEARANCE 0.0 M | | FRACTURE CRIT DETAIL- NO MO A) |
| (116) | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | UNDERWATER INSP- NO MO B) |
| (40) | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | OTHER SPECIAL INSP- NO MO C) |
| | | | |

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: 55C0670

Bridge Name: Hicks Canyon Haul Road OC **Year Built:** 1995

Facility Carried: Hicks Canyon Haul RD

The Hicks Canyon Haul Road Bridge over crossing at Hicks Canyon Road is a two span precast prestressed concrete girder bridge with a continuous composite cast-in-place deck. The Bridge is supported by a two-column bent and opened end diaphragm abutment. The substructure is supported on driven class 70C piles.

Caltrans BIR recommendations:

None

Field Inspection Observations

- Note there was no access due to gated roads to the bridge deck and limited access to the substructure.
- No work recommendations at this time.

Maintenance Needs Assessment

BPMP Assessment

N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

No recommendations.

Proposed BPMP Construction Costs

• N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1: Bridge Soffit



Photo 2: Bridge Elevation



Photo 3: Bridge Abut



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Inspection Report

Bridge Number : 55C0670

Facility Carried: HICKS CNYN HAUL RD

: 4.6 MI. SE/O CHAPMAN AVE

City

Inspection Date : 08/13/2015

Inspection Type

Routine FC Underwater Special Other

Х

STRUCTURE NAME: HICKS CANYON HAUL ROAD OC

CONSTRUCTION INFORMATION

Year Built : 1995 Year Widened: N/A Length (m) : 36.5

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

Structure Description: Simply supported two span PC/PS concrete channel girders (3 each)

with a continuous composite CIP concrete deck, and with an RC two column bent, and with RC open end diaphragm abutments, all supported

upon driven Class 70C piles.

Span Configuration : (S) 13.0 m, 22.3 m (N) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN

Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT Operating Rating: RF=1.67 =>54.1 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT

: PGGGG Permit Rating

Posting Load : Type 3: Legal Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.2 m br, 0.7 m sw, 7.3 m, 0.7 m sw, 0.2 m br (E)

Total Width: 9.1 m Net Width: 7.3 m No. of Lanes:

Speed: mph Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 Inches

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail | Modifications |
|-----------|------------|-------------|------|---------------|
| Type 26 | Right/Left | 150 | | |

DESCRIPTION UNDER STRUCTURE

| | Func | Lanes | Horiz Clr | Vert Clr |
|----------------------|-------|-------|-----------|----------|
| Facility Name | Class | | (m) | (m) |
| Santiago Canyon Road | 14 | 2 | 18.30 | 4.80 |

Channel Description: Under span #1 natural with riprap under the structure.

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

The channel was dry during this inspection, and substructure elements were visually inspected. The top did not inspected

INSPECTION COMMENTARY

DECK AND ROADWAY

The roadway on the structure is closed there is no public access.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet is included with this bridge inspection report. The current rating has been assigned in accordance with SM&I procedures

| ELEME | NT INSPECTION RATINGS AND NOTES | | | | | | | |
|---------------|---|--|-------|-------|--------|--------|---------|----------|
| Elem | Defect Defect Element Description | Env | Total | Units | Qty in | each C | onditio | on State |
| No. | /Prot | | Qty | | St. 1 | St. 2 | St. 3 | St. 4 |
| 15 | Top Flange-PS Conc. | 2 | 333 | sq.m | 333 | 0 | 0 | 0 |
| (15) There | were no significant defects noted. | | | | | | | |
| | 511 Deck Wearing Surface-Concrete | 2 | 266 | sq.m | 266 | 0 | 0 | 0 |
| (16-51 | 11) | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 109 | Girder/Beam-PS Conc. | 2 | 105 | m | 105 | 0 | 0 | 0 |
| (109) | | | | | | | 10000 | |
| There | were no significant defects noted. | | | | | | | |
| 205 | Column-RC | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (205) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 215 | Abutment-RC | 2 | 24 | m | 24 | 0 | 0 | 0 |
| (215) | | | | | | | | |
| There | were no significant defects noted. | | | | | AUX . | | |
| 226 | Pile-PS Conc. | 2 | 1 | ea. | 1 | 0 | 0 | 0 |
| (226) | | | | | | | | |
| | le element is included to indicate the presence d for visual inspection. No indication of pile | 200 Sept. 100 Se | | | | | | |
| | | | | | | 43.000 | | |
| 234 | Pier Cap-RC | 2 | 18 | m | 18 | 0 | 0 | 0 |
| (234) | | - | | | | | | |
| There | were no significant defects noted. | | | | | | | |
| 312 | Bearing-Enclosed | 2 | 2 | each | 2 | 0 | 0 | 0 |
| (312) | | | | | | 8 | | |
| There | were no significant defects noted. | | | | | | | |
| 331 | Railing-RC | 2 | 72 | m | 72 | 0 | 0 | 0 |
| (331) | | | | | | | | |
| There | were no significant defects noted. | | | | | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Mikhael T. Zaarour Report Author :

Inspected By : MT.Zaarour/KD.Henderson

Mikhael T. Zaarour (Registered Civil Engineer)

STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************************************* |
|---|--|---------|--|
| (1) | STATE NAME- CALIFORNIA 069 | | SUFFICIENCY RATING = 97.0 |
| (8) | STRUCTURE NUMBER 55C0670 | | STATUS |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 1!800000 | | HEALTH INDEX 100.0 |
| (2) | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| (3) | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******** CODE |
| (6) | FEATURE INTERSECTED- SANTIAGO CANYON ROAD | (112) | NBIS BRIDGE LENGTH- YES Y |
| (7) | FACILITY CARRIED- HICKS CNYN HAUL RD | | HIGHWAY SYSTEM- NOT ON NHS 0 |
| (9) | LOCATION- 4.6 MI. SE/O CHAPMAN AVE. | (26) | FUNCTIONAL CLASS- LOCAL URBAN 19 |
| (11) | MILEPOINT/KILOMETERPOINT 0 | (100) | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| (12) | BASE HIGHWAY NETWORK- NOT ON NET 0 | (101) | PARALLEL STRUCTURE- NONE EXISTS N |
| (13) | LRS INVENTORY ROUTE & SUBROUTE 00000000000 | (102) | DIRECTION OF TRAFFIC- 2 WAY 2 |
| (16) | LATITUDE 33 DEG 45 MIN 34.8 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 42 MIN 10.15 SEC | (105) | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| | ****** STRUCTURE TYPE AND MATERIAL ****** | | MAINTAIN- COUNTY HIGHWAY AGENCY 02 |
| | STRUCTURE TYPE MAIN:MATERIAL PRESTRESS CONC | | OWNER- COUNTY HIGHWAY AGENCY 02 |
| | TYPE- STRINGER/MULTI-BEAM OR GDR CODE 502 | | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 ************** CONDITION ************************************ |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA TYPE- OTHER/NA CODE 000 | | |
| (45) | | | DECK 8 |
| | NUMBER OF SPANS IN MAIN UNIT 2 | | SUPERSTRUCTURE 8 SUBSTRUCTURE 8 |
| | NUMBER OF APPROACH SPANS 0 | | SUBSTRUCTURE 8 CHANNEL & CHANNEL PROTECTION N |
| | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CULVERTS N |
| | WEARING SURFACE / PROTECTIVE SYSTEM: | B.C.T.S | SANCE AND ARREST |
| | TYPE OF WEARING SURFACE- NONE CODE 0 TYPE OF MEMBRANE- NONE CODE 0 | | ******* LOAD RATING AND POSTING ****** CODE |
| | TYPE OF MEMBRANE- NONE CODE 0 TYPE OF DECK PROTECTION- NONE CODE 0 | | DESIGN LOAD- UNKNOWN 0 |
| | ******** AGE AND SERVICE ********* | | OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0 |
| | | | OPERATING RATING- 54.1 |
| 100000000000000000000000000000000000000 | YEAR BUILT 1995 YEAR RECONSTRUCTED 0000 | | INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0 |
| 200000000000000000000000000000000000000 | TYPE OF SERVICE: ON- HIGHWAY 1 | | INVENTORY RATING- 32.4 |
| (12) | UNDER- HIGHWAY W/WO PEDESTF 1 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 02 UNDER STRUCTURE 02 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- |
| (29) | AVERAGE DAILY TRAFFIC 1 | | DESCRIPTION- OPEN, NO RESTRICTION |
| (30) | YEAR OF ADT 2009 (109) TRUCK ADT 0 % | | ********** APPRAISAL ********** CODE |
| (19) | BYPASS, DETOUR LENGTH 22 KM | (67) | STRUCTURAL EVALUATION 8 |
| | *********** GEOMETRIC DATA ********** | (68) | DECK GEOMETRY 6 |
| (48) | LENGTH OF MAXIMUM SPAN 22.6 M | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL 5 |
| | STRUCTURE LENGTH 36.5 M | (71) | WATER ADEQUACY N |
| (50) | CURB OR SIDEWALK: LEFT 0.7 M RIGHT 0.7 M | | APPROACH ROADWAY ALIGNMENT 8 |
| (51) | BRIDGE ROADWAY WIDTH CURB TO CURB 7.3 M | | TRAFFIC SAFETY FEATURES 1000 |
| (52) | DECK WIDTH OUT TO OUT 9.1 M | (113) | SCOUR CRITICAL BRIDGES N |
| (32) | APPROACH ROADWAY WIDTH (W/SHOULDERS) 7.3 M | | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN- NO MEDIAN 0 | (75) | TYPE OF WORK- CODE |
| (34) | SKEW 0 DEG (35) STRUCTURE FLARED NO | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 7.3 M | (95) | ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST |
| | MIN VERT UNDERCLEAR REF- HIGHWAY 4.87 M MIN LAT UNDERCLEAR RT REF- HIGHWAY 3.6 M | | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR LT 0.0 M | | FUTURE ADT 1 |
| | ************* NAVIGATION DATA ********* | (115) | YEAR OF FUTURE ADT 2035 |
| | | | ************* INSPECTIONS ********** |
| | NAVIGATION CONTROL- NOT APPLICABLE CODE N PIER PROTECTION- CODE | (90) | INSPECTION DATE 08/15 (91) FREQUENCY 48 MO |
| | INVICATION UPPERCAL OF PARAMET | (92) | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| se 959 | , | C) | OTHER SPECIAL INSP- NO MO C) |

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: 55C0690

Bridge Name: Handy Creek **Year Built:** 2012

Facility Carried: Orange Park BLVD

The Handy Creek Bridge at Orange Park Blvd is a single span cast-in-place reinforced concrete slab bridge with diaphragm abutments supported on concrete pile.

Caltrans BIR recommendations:

None

Field Inspection Observations

- There was about a 1 foot deep stagnate water in the creek.
- Overall, bridge appears to be in good condition.
- Scour counter measures appear to be in good condition.

Maintenance Needs Assessment

BPMP Assessment

• N/A – No eligible maintenance activities

<u>General Maintenance - Non-BPMP</u>

No recommendations.

Proposed BPMP Construction Costs

N/A

Construction Items Not Funded by BPMP

N/A

APPENDIX A

Photos and BIR



Photo 1:



Photo 2:



Photo 2:



Photo 4:



DEPARTMENT OF TRANSPORTATION

Structure Maintenance & Investigations

Bridge Number : 55C0690

Facility Carried: ORANGE PARK BLVD

: 0.25 SOUTH SANTIAGO RD Location

City

Inspection Date: 09/10/2015

Inspection Type

Bridge Inspection Report

Routine FC Underwater Special Other X

STRUCTURE NAME: HANDY CREEK

CONSTRUCTION INFORMATION

Year Built : 2012 Year Widened: N/A Length (m): 12

Skew (degrees): No. of Joints :

No. of Hinges :

Structure Description: Single span RC slab bridge on two RC abutmenets , all on piles.

Span Configuration : (S) 12.0 m (N) c/c.

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: HL 93 Inventory Rating: RF= 1.00 Operating Rating: RF= 1.30

Calculation Method: ASSIGNED (LRFD) Calculation Method: ASSIGNED (LRFD)

Permit Rating : PPPPP

Posting Load : Type 3: <u>Legal</u> Type 3S2: Legal

Type 3-3:Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.5 br , 3.05 m sw, 0.5 br, 13.2 m, 0.5 m br (S).

Total Width: 17.8 m Net Width: 13.2 m No. of Lanes: 2

Speed: 40 mph

Min. Vertical Clearance: Unimpaired

Overlay Thickness: 0.0 Inches

Rail Code: 1000

| Rail Type | Location | Length (ft) | Rail Modifications |
|-----------|------------|-------------|--------------------|
| ST-30 | Right/Left | 80 | |
| ST-30 | Other | 40 | SIde walk rails |

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal. Riprap slope at north side and Retaining wall at south side.

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

The water depth at the time of this inspection measured approximately 3 inches mostly at the south side. All substructure elements were visually inspected, pedestrian access is from the north side side.

SAFE LOAD CAPACITY

A Load Rating Summary Sheet dated 09/30/2013 is on file for this structure. The current rating has been assigned in accordance with SM&I procedures.

Printed on: Wednesday 10/21/2015 06:56 AM 55C0690/AAAA/33157

| ELEMENT INSPECTION RATINGS AND NOTES | | | | | | | | | |
|--|---|-----|--------------|-------|-----|--------|------------------|------------------|--|
| Elem No. | Defect Defect Element Description /Prot | Env | Total Qty | Units | - | | onditio St. 3 | n State St. 4 | |
| 38 | Slab-RC | 2 | 213 | sq.m | 201 | 12 | 0 | 0 | |
| | 1120 Efflorescence/Rust Staining | 2 | 1 | | 1 | 0 | 0 | 0 | |
| | 1130 Cracking (RC and Other) | 2 | 12 | | 0 | 12 | 0 | 0 | |
| (38-1120) The soffit at the north side exhibits a longitudinal cracks 10 feet long with light white efflorescence at 30 ft from the east end almost closed to the center line of the bridge. | | | | | | | | | |
| (38-1130) The concrete deck exhibits a longitudinal crack 0.04 inch wide at the center of the bridge at the north end, and few scattered cracks < 0.02 inch wide. | | | | | | | | | |
| 215 | Abutment-RC | 2 | 20 | m | 20 | 0 | 0 | 0 | |
| (215) There | were no significant defects noted. | | | | | | | | |
| 227 | Pile-RC | 2 | 1 | ea. | 1 | 0 | 0 | 0 | |
| (227) The pile element is included to indicate the presence of piles on this structure. The piles were not exposed for visual inspection. No indication of pile distress was noted in any substructure element. | | | | | | | | | |
| 256 | Slope Protection | 2 | 1 | ea. | 1 | 0 | 0 | 0 | |
| (256) There | were no significant defects noted. | | | | | | | | |
| 330 | Railing-Metal | 2 | 36 | m | 36 | 0 | 0 | 0 | |
| (330) There | were no significant defects noted. | | | | | 30.575 | | | |

WORK RECOMMENDATIONS - NONE

Team Leader : Mikhael T. Zaarour

Report Author : Mikhael T. Zaarour

Inspected By : MT.Zaarour/DH. Kim

Mikhael T. Zaarour (Registered Civil Engineer) (Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

| | ************************************** | | ************************************** |
|-------------|---|---------------|--|
| (1) | STATE NAME- CALIFORNIA 069 | | STATUS |
| (8) | STRUCTURE NUMBER 55C0690 | | |
| (5) | INVENTORY ROUTE (ON/UNDER) - ON 15000000 | | HEALTH INDEX 98.5 |
| | HIGHWAY AGENCY DISTRICT 12 | | PAINT CONDITION INDEX = N/A |
| 10.000.00 | COUNTY CODE 059 (4) PLACE CODE 00000 | | ******* CLASSIFICATION ******* CODE |
| | FEATURE INTERSECTED- HANDY CREEK | (1110) | NBIS BRIDGE LENGTH- YES Y |
| | FACILITY CARRIED- ORANGE PARK BLVD | | HIGHWAY SYSTEM- NOT ON NHS |
| | | | FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16 |
| | LOCATION- 0.25 SOUTH SANTIAGO RD MILEPOINT/KILOMETERPOINT 0 | | DEFENSE HIGHWAY- NOT STRAHNET 0 |
| | | (101) | DADALLEL CONTUCTION |
| | BASE HIGHWAY NETWORK- NOT ON NET 0 | | |
| 2.000000000 | LRS INVENTORY ROUTE & SUBROUTE | | |
| | LATITUDE 33 DEG 48 MIN 37.06 SEC | (103) | TEMPORARY STRUCTURE- |
| (17) | LONGITUDE 117 DEG 46 MIN 56.08 SEC | | FED.LANDS HWY- NOT APPLICABLE 0 |
| (98) | BORDER BRIDGE STATE CODE % SHARE % | | DESIGNATED NATIONAL NETWORK - NOT ON NET 0 |
| (99) | BORDER BRIDGE STRUCTURE NUMBER | | TOLL- ON FREE ROAD 3 |
| 96 | ++++++ CODICOTIDE OVER AND MADERIAL +++++++ | | MAINTAIN- CITY OR MUNICIPAL HIGHWAY AGENCY 04 |
| | ******* STRUCTURE TYPE AND MATERIAL ******* | | OWNER- CITY OR MUNICIPAL HIGHWAY AGENCY 04 |
| (43) | STRUCTURE TYPE MAIN: MATERIAL- CONCRETE | (37) | HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5 |
| (44) | TYPE- SLAB CODE 101 | | ********* CODE |
| (44) | STRUCTURE TYPE APPR:MATERIAL- OTHER/NA | | 2000 1 20 |
| (45) | TYPE- OTHER/NA CODE 000 | C110070000 | DECK 7 |
| (45) | NUMBER OF SPANS IN MAIN UNIT 1 | | SUPERSTRUCTURE 7 |
| (46) | NUMBER OF APPROACH SPANS 0 | 0.600,000,000 | SUBSTRUCTURE 8 |
| (107) | DECK STRUCTURE TYPE- CIP CONCRETE CODE 1 | | CHANNEL & CHANNEL PROTECTION 8 |
| (108) | WEARING SURFACE / PROTECTIVE SYSTEM: | (62) | CULVERTS |
| A) | TYPE OF WEARING SURFACE- NONE CODE 0 | | ****** LOAD RATING AND POSTING ****** CODE |
| B) | TYPE OF MEMBRANE- NONE CODE 0 | (31) | DESIGN LOAD- HL 93 |
| C) | TYPE OF DECK PROTECTION- NONE CODE 0 | 1000-000-00 | OPERATING RATING METHOD- ASSIGNED (LRFD) F |
| | ******* AGE AND SERVICE ******** | | OPERATING RATING METHOD ASSIGNED (ERFS) P |
| (27) | YEAR BUILT 2012 | | INVENTORY RATING METHOD- ASSIGNED (LRFD) F |
| | YEAR RECONSTRUCTED | | |
| | TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5 | | INVENTORY RATING- RF= 1.00 |
| (12) | UNDER- WATERWAY 5 | | BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5 |
| (28) | LANES:ON STRUCTURE 02 UNDER STRUCTURE 00 | (41) | STRUCTURE OPEN, POSTED OR CLOSED- A |
| (29) | AVERAGE DAILY TRAFFIC 1100 | | DESCRIPTION- OPEN, NO RESTRICTION |
| (30) | YEAR OF ADT 2012 (109) TRUCK ADT 2 % | | ******** APPRAISAL ********* CODE |
| (19) | BYPASS, DETOUR LENGTH 2 KM | (67) | STRUCTURAL EVALUATION 7 |
| (22) | ************ GEOMETRIC DATA ********** | | DECK GEOMETRY 7 |
| | | (69) | UNDERCLEARANCES, VERTICAL & HORIZONTAL N |
| | LENGTH OF MAXIMUM SPAN 11.7 M | (71) | WATER ADEQUACY 9 |
| | STRUCTURE LENGTH 12.0 M | | APPROACH ROADWAY ALIGNMENT 8 |
| | CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M | (36) | TRAFFIC SAFETY FEATURES 1000 |
| | BRIDGE ROADWAY WIDTH CURB TO CURB 13.2 M | | SCOUR CRITICAL BRIDGES 8 |
| | DECK WIDTH OUT TO OUT 17.8 M | , | The second secon |
| | APPROACH ROADWAY WIDTH (W/SHOULDERS) 13.2 M | | ******* PROPOSED IMPROVEMENTS ******* |
| | BRIDGE MEDIAN 0 | | TYPE OF WORK- CODE |
| (34) | SKEW 27 DEG (35) STRUCTURE FLARED NO | (76) | LENGTH OF STRUCTURE IMPROVEMENT M |
| 2 | INVENTORY ROUTE MIN VERT CLEAR 99.99 M | (94) | BRIDGE IMPROVEMENT COST |
| | INVENTORY ROUTE TOTAL HORIZ CLEAR 13.2 M | (95) | ROADWAY IMPROVEMENT COST |
| | MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M | (96) | TOTAL PROJECT COST |
| 0 | MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M | (97) | YEAR OF IMPROVEMENT COST ESTIMATE |
| | MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M | (114) | FUTURE ADT 2000 |
| (56) | MIN LAT UNDERCLEAR LT 0.0 M | (115) | YEAR OF FUTURE ADT 2032 |
| 33 | *********** NAVIGATION DATA ********* | | |
| (38) | NAVIGATION CONTROL- NOT APPLICABLE CODE N | (00) | ************************************** |
| | PIER PROTECTION- CODE | | INSPECTION DATE 09/15 (91) FREQUENCY 48 MO |
| | NAVIGATION VERTICAL CLEARANCE 0.0 M | | CRITICAL FEATURE INSPECTION: (93) CFI DATE |
| | VERT-LIFT BRIDGE NAV MIN VERT CLEAR M | | FRACTURE CRIT DETAIL- NO MO A) |
| | NAVIGATION HORIZONTAL CLEARANCE 0.0 M | | UNDERWATER INSP- NO MO B) |
| | | C) | OTHER SPECIAL INSP- NO MO C) |