DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0400
Facility Carried: EDINGER AVE
Location : 1.7 MI W/O BOLSA CHICA R
City :
Inspection Date : 04/08/2015
Inspection Type
Routine FC Underwater Special Other
X

Bridge Inspection Report

STRUCTURE NAME: BOLSA CHICA CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1968
Year Widened: 1988
Length (m) : 92.4
Skew (degrees): 50
No. of Joints : 0
No. of Hinges : 0

Structure Description: Simply supported 15-span timber stringers (17 each) and a corrugated steel plate deck (Armco 12 gage) with 10-timber pile bents and 10-timber pile at west abutment and 11-tibmer pile at east abutment with timber sheathing walls.

Span Configuration : (W) 15 @ 6.1 m (E) c/c

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF=0.00 =>0.0 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT
Operating Rating: RF=0.00 =>0.0 metric tons Calculation Method: FIELD EVAL/ENG JUDGMENT
Permit Rating : XXXXX
Posting Load : Type 3: 0 U.S. Tons Type 3S2: 0 U.S. Tons Type 3-3: 0 U.S. Tons

DESCRIPTION ON STRUCTURE

Deck X-Section: (N) 0.4 m br, 7.5 m, 1.3 m sw, 0.3 m br (S).
Total Width: 9.0 m Net Width: 7.5 m No. of Lanes: 2 Speed: 45 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 6.0 Inches
Rail Code: 0000

Rail Type	Location	Length (ft)	Rail Modifications
MBBR	Right/Left	3056	

DESCRIPTION UNDER STRUCTURE

Channel Description: Earth trapezoidal tidal channel with a rock slope at the westerly bank.

INSPECTION COMMENTARY

SCOPE AND ACCESS

This report is a supplemental to the underwater inspection report dated, February 25, 2015. A detailed cleaning in problem area using Level III methods with special cleaning and measuring tools was performed at Bent 3 thru Bent 5 on February 25, 2015. All columns at Bent 6 thru Bent 12 were covered with plastic wrapping down to the mudline and below during that time, and cannot be accurately inspected. The plastic covering had since been removed following the previous underwater inspection. This supplemental report is to document condition of newly unwrapped timber columns from Bent 3 thru Bent 12.

Due to the bridge closure, the dive boat was launched at the Huntington Harbor Yacth Club located at the corner of the Pacific Coast Highway and Warner Avenue.

NUMBERING CONVENTION

This report and all underwater inspection reports from 2002 follow the standard SM&I numbering convention. Looking ahead on route from Abutment 1 towards Abutment 16. Abutment 1 is on the west side of the channel and Abutment 16 is on the east side of the

INSPECTION COMMENTARY

channel. This convention is opposite to numbering established by the original structure plans. Due to the conflicting numbering convention, along with an addition of a structure span in 1992, care should be taken during the process of mapping and establishing pile deterioration and channel degradation history.

SUBSTRUCTURE

All columns from Bent 6 thru Bent 12 had the protective polyethylene wrapping removed for inspection. The contract called for all wrapping from approximately three feet above the mudline down be completely removed. Most of the removal work conformed to this requirement.

At the time of this inspection there was moderate to heavy encrusting marine covering 100% of the remaining protective wrapping over the timber piles. Marine growth consisted mainly of mussels and barnacles with some soft growth intermittently mixed in. In general, the growth was approximately 50 mm thick below the splashed zone.

Underwater visibility during this inspection was between 0.3 m and 1.0 m. Variations in visibility changed due to tidal flow and pile cleaning.

At the time of the inspection, timber columns previously under the protective polyethelene were under generally good condition. Most columns still have injected epoxy layer intact. A timber columns have weathering pattern on the surface area without measurable section loss. The most severe deterioration resulted in the timber column diameter being 30 mm less than the original dimeter.

Bent 6

Summary: Element 206, 9 ea, CS 1 (Good); Defects 1140, 1 ea, CS2 (Fair)

The water depth was 2.5 m at Column 1 and 3.25 m at Column 10. Column 9 outer surface shown deterioration and section loss. The remaining diameter was 9 inches compared to 10 inches original diameter. The remaining columns were either encased in injected epoxy or shown light surface abrasion without any section loss.

Bent 7

Summary: Element 206, 10 ea, CS1 (Good)

The water depth was 2.5 m at Column 1 and 3.0 m at Column 10. Column 2 thru 7 still have protective wrapping in place from just above the mudline down. The diver was able to excavate down 18 inches to get pass the bottom of the wrapping to inspect the timber surface at Column 3. No deterioration was noted at the timber pile surface below the excavation. The remaining columns were either encased in injected epoxy or shown light surface abrasion without any section loss.

Bent 8

Summary: Element 206, 10 ea, CS1 (Good)

The water depth was 2.25 m at Column 1 and 3.0 m at Column 10. All wrapping was removed from every columns at this bent. Trenches of 12 inches deep were dug around each column. All timber columns were either encased in injected epoxy or shown light surface abrasion without any section loss.

INSPECTION COMMENTARY

Bent 9

Summary: Element 206, 10 ea, CS1 (Good)

The water depth was 1.5 m at Column 1 and 3.0 m at Column 10. The wrapping was completely removed from 1.0 m above the mudline downward at Column 1 thru 5, Column 9, and Column 10. All timber surface at these columns were either encased in injected epoxy or shown light surface abrasion without any section loss. Trenches of 12 inches deep were dug around each column. The wrapping was not removed from the mudline down at Column 6 thru 8. The diver excavated below the wrapping for inspection and found no deterioration or other defects.

Bent 10

Summary: Element 206, 9 ea, CS1 (Good); Defects 1140, 1 ea, CS2 (Fair)

The water depth was 1.25 m at Column 1 and 1.5 m at Column 10. All wrapping was removed from every columns at this bent. Trenches of 12 inches deep were dug around each column. All timber columns were either encased in injected epoxy or shown light surface abrasion without any section loss. Column 10 exhibited a spherical shape section loss of 150 mm just below the bottom of the remaining protective wrapping. This section loss is not expected to cause a significant reduction in column capacity.

Bent 11

Summary: Element 206, 10 ea, CS1 (Good)

The water depth was 0.5 m at Column 1 and 1.0 m at Column 10. All wrapping was removed from every columns at this bent. Trenches of 12 inches deep were dug around each column. All timber columns were either encased in injected epoxy or shown light surface abrasion without any section loss.

Bent 12

Summary: Element 206, 10 ea, CS1 (Good)

Bent 12 is in the tidal zone, and was in the dry during the time of inspection. All wrapping was removed from every columns at this bent. Trenches of 18 inches deep were dug around each column. All timber column surfaces exhibited original creosote treatment finish and no deterioration was noted.

WATERWAY

The bank upstream and downstream is armored with small rip rap. However, 50 feet upstream of the bridge on the Abutment 1 bank, the RSP has slipped into the channel and the earth bank behind has eroded.

SCOUR

The 3/31/2008 scour investigation determined this structure to be stable for the assessed or calculated scour conditions and the NBI Item 113 coding, Scour Critical Bridges, was 5. The underwater investigation performed on this date did not find any conditions which contradict that determination. However, since any minor scour may result in exposing unwrapped piles to attack by marine borers, any future repair work shall take scouring potential into consideration.

INSPECTION COMMENTARY

SAFE LOAD CAPACITY

The bridge was closed to all traffic due to significant deteriorations at Bent 3, Bent 4, and Bent 5, as detailed in the previous underwater inspection report.

EXISTING POSTING

7 Ton Per Vehicle
11 Ton Per Semi-trailer Combination
14 Ton Per Full Truck and Full Trailer

RECOMMENDATION

The timber columns from Bent 6 to Bent 12 were in overall good condition. The County of Orange was planning to open the bridge while keeping existing posting in place following completion of the retrofit works at Bent 3 thru 5. Bent 6 thru 12 should be able to handle the posting loads without any adverse effect on the structure.

UNDERWATER INVESTIGATION

Next Inspection	: 08-APR-2020	Water Type	: 2 - Salt
Inspection Freq.	: 60 months	Max. Water Velocity	: 0.3 mps
Dive Type	: B - Routine UW	Max. Water Depth	: 3 m
Dive Mode	: D - Surface supplied	Max. Visibility	: .3 m
Contractor	: N/A	Water Surface Elev.	: m
Contract No.	: N/A		
Supervisor	: Richard Hunt	Diver	: Dale Floyd
Tender	: Mitch Miller	Backup Diver	: Dave Kendall

SUBSTRUCTURE INVESTIGATED

Location	Depth(m)	Vel(mps)	Channel	Substructure Description
Bent 6	3.3	0.3	Silty Mud	Timber bent with 10 timber piles
Bent 7	3.0	0.3	Silty Mud	Timber bent with 10 timber piles
Bent 8	3.0	0.3	Silty Mud	Timber bent with 10 timber piles
Bent 9	3.0	0.3	Silty Mud	Timber bent with 10 timber piles
Bent 10	3.0	0.3	Silty Mud	Timber bent with 10 timber piles
Bent 11	1.5	0.3	Silty Mud	Timber bent with 10 timber piles
Bent 12	0.6	0.3	Silty Mud	Timber bent with 10 timber piles

WORK RECOMMENDATIONS

RecDate: 02/10/2011
Action : Sub-Replace
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

Replace all damaged and deteriorated piles as being indicated by AECOM report dated 1/13/2011 to restore the safe load capacity. As a consequence of these revisions, the calculated Sufficiency Rating is 31.6 and since the bridge is also "Structurally Deficient", it may qualify to be in the list for replacement within the Highway Bridge Rehabilitation and Replacement Program.

Team Leader : David L. Kendall

Report Author : David L. Kendall

Inspected By : DL.Kendall/M.Miller

Hatsadin D. Floyd 6/2/2015

Hatsadin D. Floyd (Registered Civil Engineer) (Date)