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 : 07/15/2019

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: BREA CANYON CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1929
Year Modified: 1938
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 5 feet of fill with an RC pier and RC closed end backfilled strutted abutments, all supported on spread footings.

Span Configuration : (S) 2 @ 13.60 ft (N)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF=1.00 =>32.4 metric tons Calculation Method: LOAD FACTOR
Operating Rating: RF=1.67 =>54.1 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) 11.00 ft ea., 37.00 ft, 3.00 ft ea., 0.33 ft MBGR, 5.00 ft ea. (E)
Total Width: 17.1 m Net Width: 11.3 m No. of Lanes: 2 Speed: 55 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 12.0 inches
Rail Code: 0000

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

A complete routine inspection was performed by Y. Chen and M. Monajemi. The bridge is under 5 feet fill with AC paved roadway on the top. Access to the area under the bridge was from the northeastern corner with the aid of a rope. At the time of inspection, the creek sediments have accumulated to the such a level that except for a small area near the middle pier wall western end, there was largely no water in the northern span, however, the was stagnant water in the southern span up to 3 feet deep. The concrete slab soffit, the pier and abutmental walls, and the bolt-nut bearings were inspected by

INSPECTION COMMENTARY

walking through the northern span and with the aid of binoculars to inspect the elements in the southern span.

HISTORY

Per the original bridge report dated on 04/22/1938, the original east portion of the bridge constructed before 1929 was damaged by flood and replaced with a 2-span rigid frame bridge founded on spread footing. A middle pier wall also founded on spread footing was constructed in the middle of western portion of the one-span bridge (constructed in 1929), and bolt-nut bearings spaced at 2 feet were installed at the top of the wall to transfer the loads from the concrete slab to the middle pier wall foundation.

REVISIONS

Revise the NBI Item 27 for Year Built from 1920 to 1929, Item 106 for year reconstructed from 1929 to 1938.
Also revise the foundation type from unknown to spread footings.

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 was assigned by ABME based on BDS computer output dated 11/21/1979.

RECOMMENDATIONS

The speed limit for the roadway above this structure is 55 MPH which is higher than the threshold 35 MPH, the County of Orange may consider to study the necessity of installing proper safety feature as standard bridge railing at this site.

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4
38			**Slab-RC**	2	156	sq.m	156	0	0	0
(38) There were no significant defects noted. (under 5 feet of fill)										
210			**Pier Wall-RC**	2	20	m	13	4	3	0
	1080		**Delamination/Spall/Patched Area**	2	6		0	3	3	0
	1130		**Cracking (RC and Other)**	2	1		0	1	0	0
(210-1080) There are the following defects at the Bent 2 pier wall: a spall 18 inch H x 12 inch W x 2 inch D with rusted rebars exposed at the west end, a spall 30 inch H x 20 inch W x 2 inch D with rusted rebars exposed at the east end southern face, an unsound concrete area 18 inch H x 6 inch W at 15 feet from east side on the northern face, a spall with unsound concrete area with combined size 10 feet L x 18 inch H x 2 inch D at west end.										
(210-1130) There are 2 vertical cracks on the middle pier wall, up to 0.05 inches wide.										
215			**Abutment-RC**	2	40	m	40	0	0	0
(215) There were no significant defects noted.										
313			**Bearing-Fixed**	2	21	each	21	0	0	0

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4
(313)										

The bolt-nut bearings are located on the top of the middle pier within the bridge portion constructed in 1929, there were no significant defects noted.

WORK RECOMMENDATIONS

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

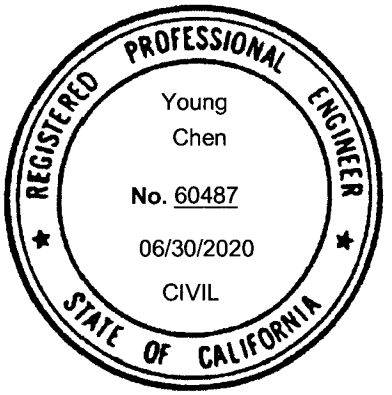
EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

Locate the pier wall spalls with rusted exposed rebars at both ends, remove all rests on the exposed rebars, clean and patch the spalled areas. Update on 09/06/2019 by Y. Chen

Team Leader : Young Chen

Report Author : Young Chen

Inspected By : Y.Chen/MM.Monajemi



9/16/2019

Young Chen (Registered Civil Engineer) (Date)

STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **55C0121**
(5) INVENTORY ROUTE(ON/UNDER)- ON 140000000
(2) HIGHWAY AGENCY DISTRICT 12
(3) COUNTY CODE 059 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- BREA CANYON CHANNEL
(7) FACILITY CARRIED- BREA CANYON BLVD.
(9) LOCATION- 0.4 MI N/O CENTRAL AVENUE
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- NOT ON NET 0
(13) LRS INVENTORY ROUTE & SUBROUTE
(16) LATITUDE 33 DEG 56 MIN 16.26 SEC
(17) LONGITUDE 117 DEG 53 MIN 29.83 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- CONCRETE
TYPE- SLAB CODE 101
(44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
TYPE- OTHER/NA CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 2
(46) NUMBER OF APPROACH SPANS 0
(107) DECK STRUCTURE TYPE- CIP CONCRETE CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE- NONE CODE 0
B) TYPE OF MEMBRANE- NONE CODE 0
C) TYPE OF DECK PROTECTION- NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1929
(106) YEAR RECONSTRUCTED 1938
(42) TYPE OF SERVICE: ON- HIGHWAY 1
UNDER- WATERWAY 5
(28) LANES:ON STRUCTURE 02 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 19000
(30) YEAR OF ADT 2009 (109) TRUCK ADT 2 %
(19) BYPASS, DETOUR LENGTH 2 KM

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

(48) LENGTH OF MAXIMUM SPAN 4.3 M
(49) STRUCTURE LENGTH 9.1 M
(50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 11.3 M
(52) DECK WIDTH OUT TO OUT 17.1 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 11.0 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 32 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 8.5 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

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL- NOT APPLICABLE CODE N
(111) PIER PROTECTION- CODE
(39) NAVIGATION VERTICAL CLEARANCE 0.0 M
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR M
(40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M

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SUFFICIENCY RATING = 93.2

PAINT CONDITION INDEX = N/A

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

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- MINOR ARTERIAL URBAN 16
(100) DEFENSE HIGHWAY- NOT STRAHNET 0
(101) PARALLEL STRUCTURE- NONE EXISTS N
(102) DIRECTION OF TRAFFIC- 2 WAY 2
(103) TEMPORARY STRUCTURE-
(105) FED.LANDS HWY- NOT APPLICABLE 0
(110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0
(20) TOLL- ON FREE ROAD 3
(21) MAINTAIN- COUNTY HIGHWAY AGENCY 02
(22) OWNER- COUNTY HIGHWAY AGENCY 02
(37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION 8
(62) CULVERTS N

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

(31) DESIGN LOAD- UNKNOWN 0
(63) OPERATING RATING METHOD- LOAD FACTOR 1
(64) OPERATING RATING- 54.1
(65) INVENTORY RATING METHOD- LOAD FACTOR 1
(66) INVENTORY RATING- 32.4
(70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5
(41) STRUCTURE OPEN, POSTED OR CLOSED- A
DESCRIPTION- OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 8
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0000
(113) SCOUR CRITICAL BRIDGES U

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK- CODE
(76) LENGTH OF STRUCTURE IMPROVEMENT M
(94) BRIDGE IMPROVEMENT COST
(95) ROADWAY IMPROVEMENT COST
(96) TOTAL PROJECT COST
(97) YEAR OF IMPROVEMENT COST ESTIMATE
(114) FUTURE ADT 42072
(115) YEAR OF FUTURE ADT 2036

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

(90) INSPECTION DATE 07/19 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL- NO MO A)
B) UNDERWATER INSP- NO MO B)
C) OTHER SPECIAL INSP- NO MO C)

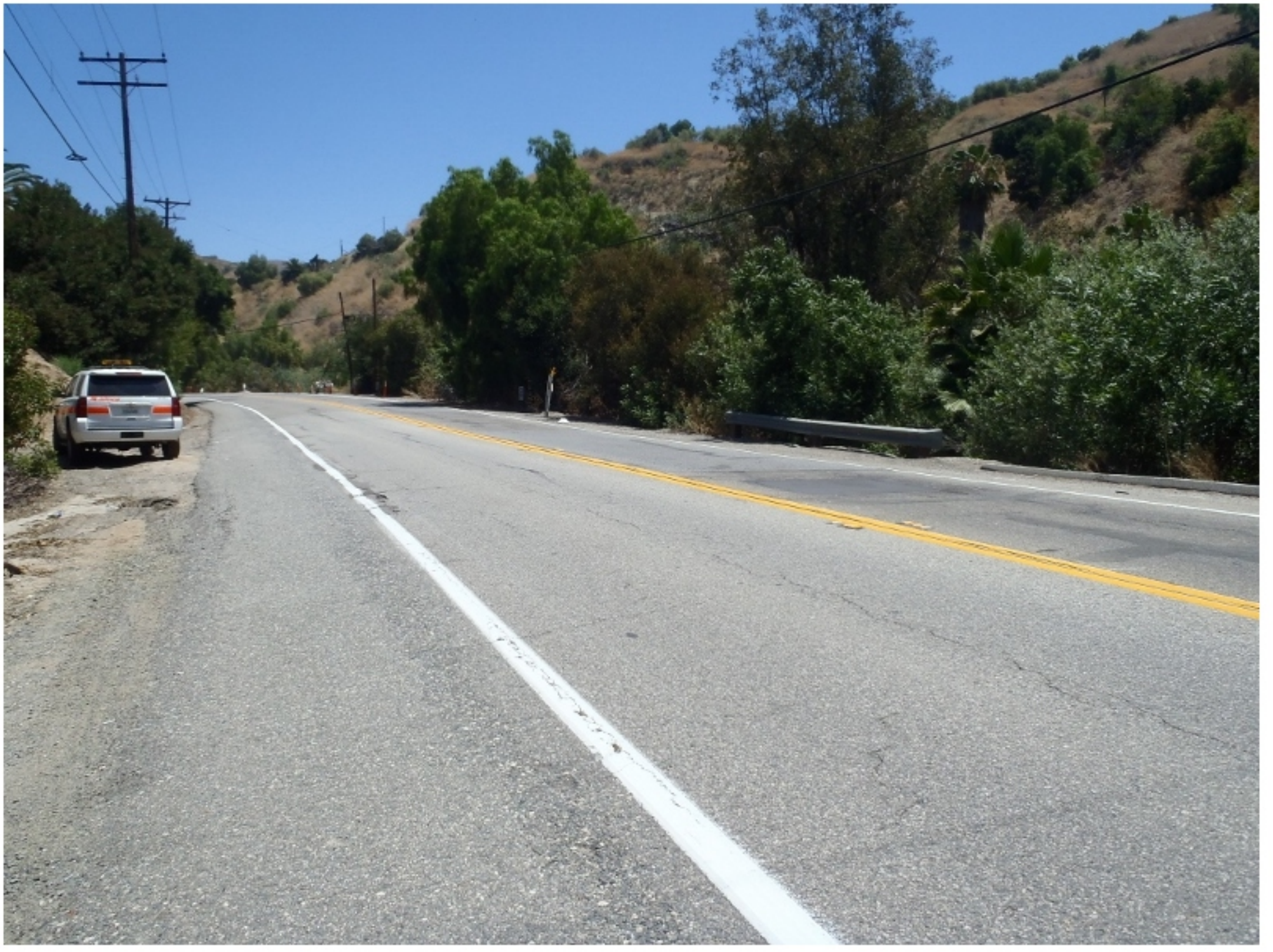

Photo No. 1
ROADWAY VIEW LOOKING NORTHEAST

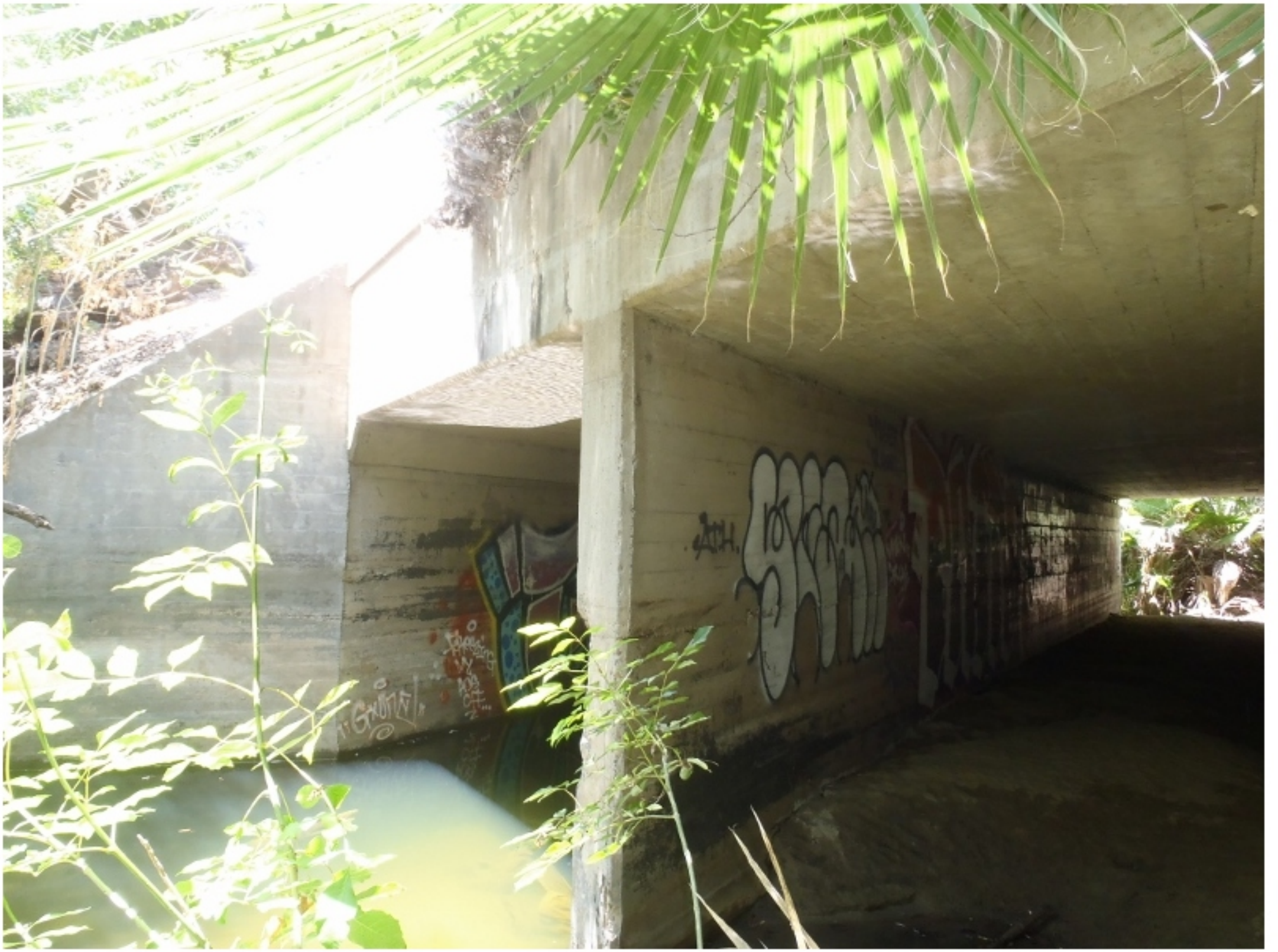

Photo No. 1
SIDE VIEW LOOKING WEST

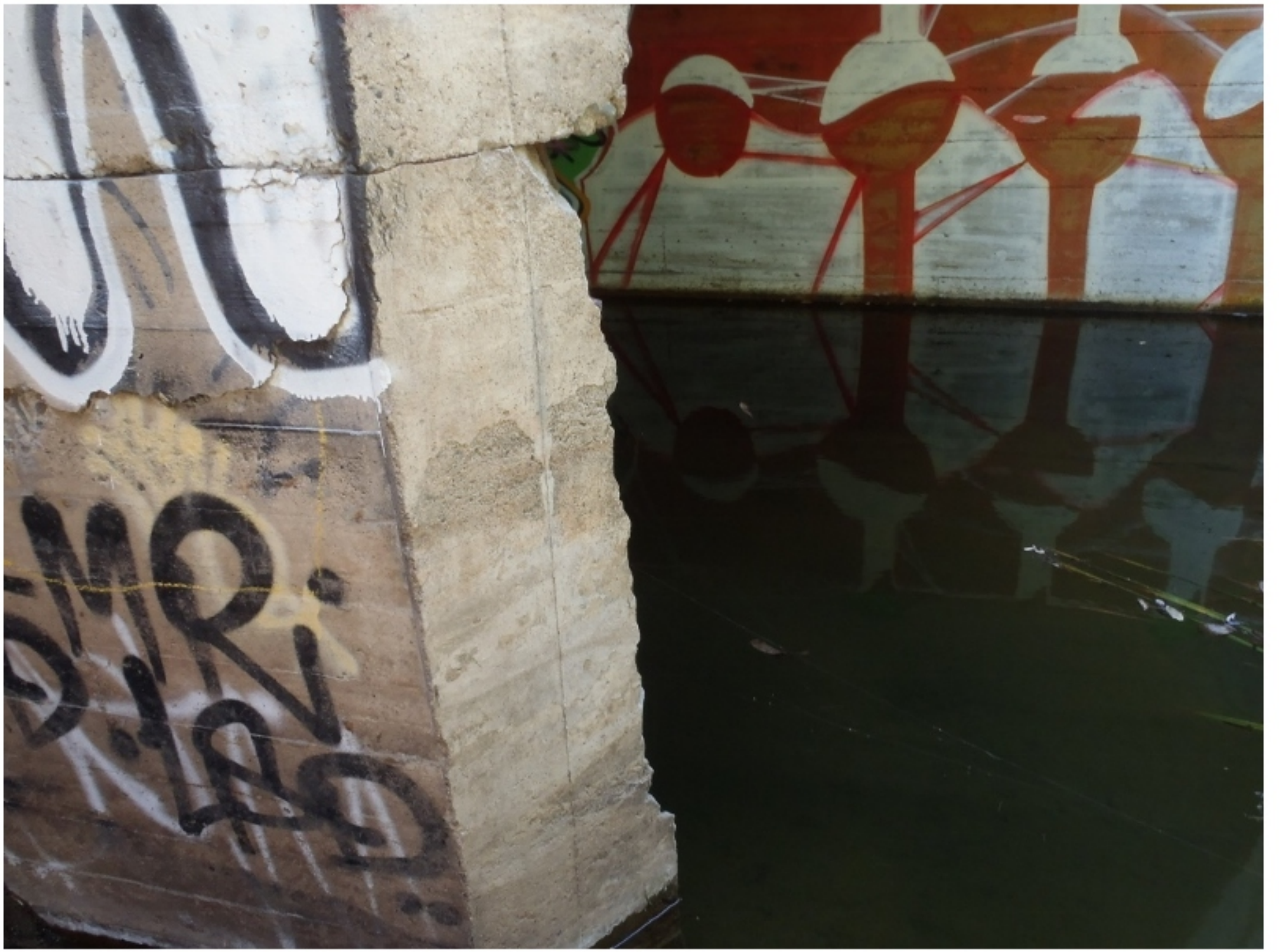

Photo No. 1
A SPALL ON THE MIDDLE PIER WALL AT WESTERN SIDE

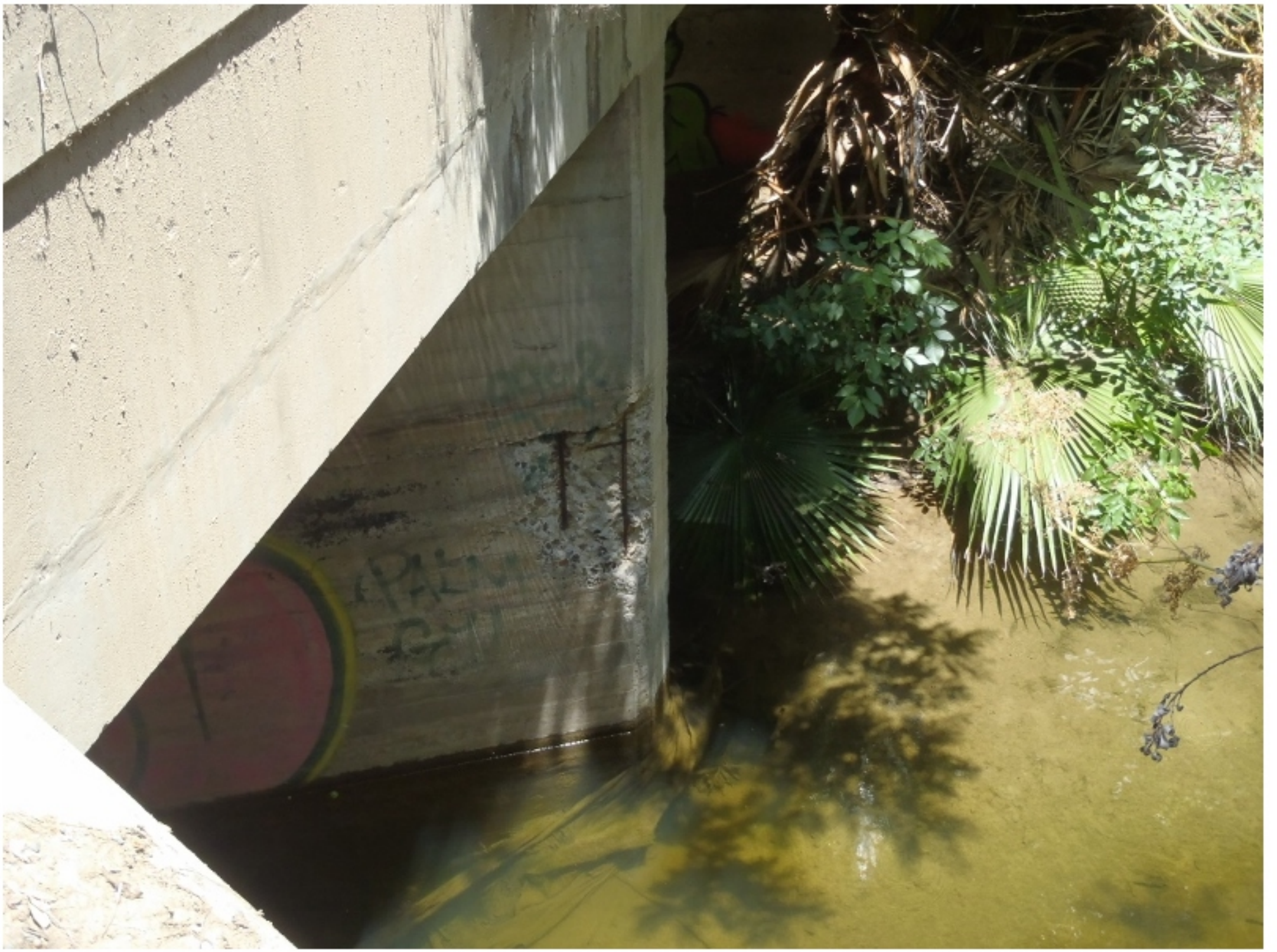

Photo No. 1
A SPALL ON THE MIDDLE PIER WALL AT EASTERN SIDE WITH REBARS EXPOSED

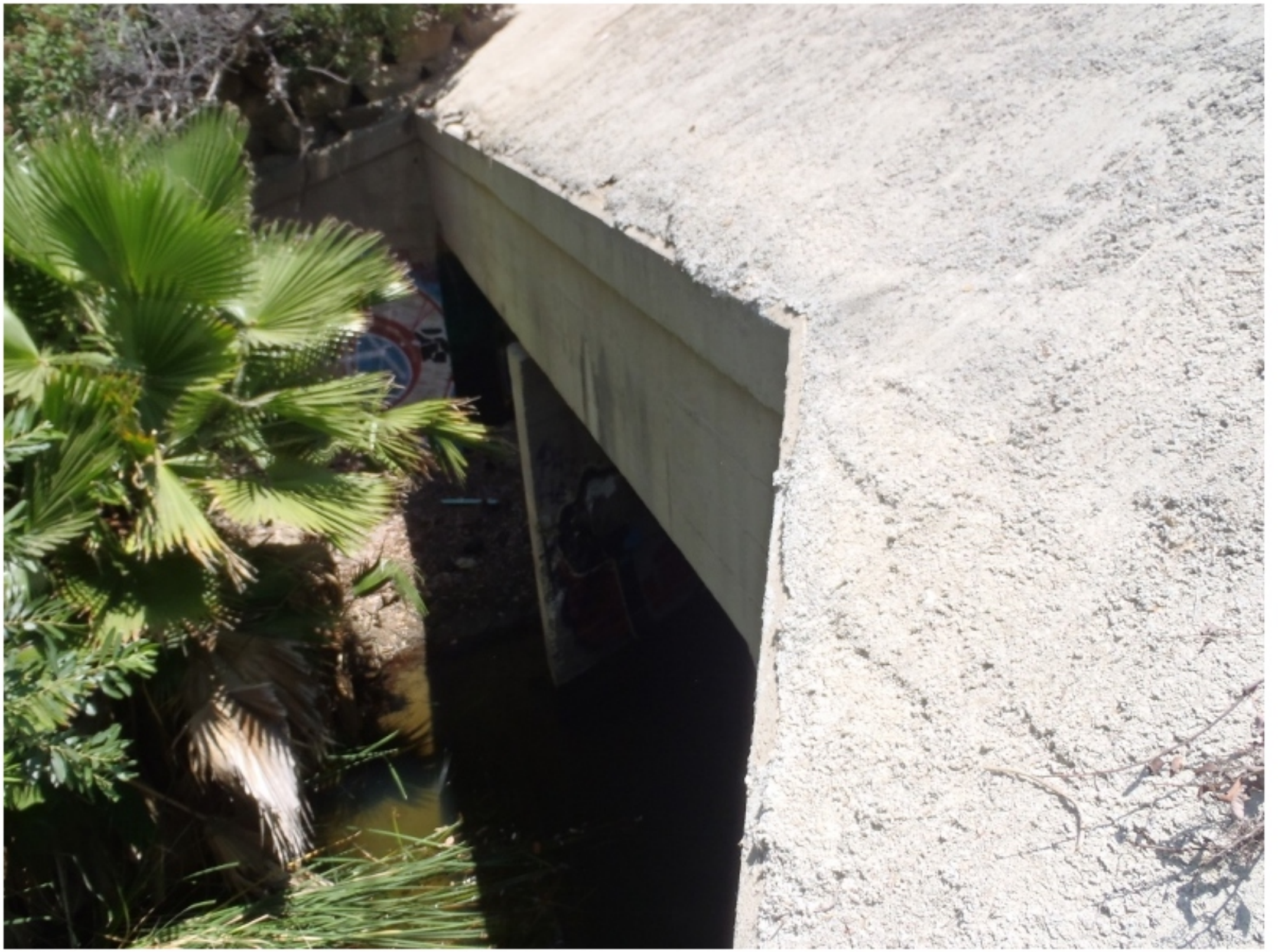

Photo No. 1
A SPALL ON THE MIDDLE PIER WALL AT WESTERN SIDE WITH REBARS EXPOSED

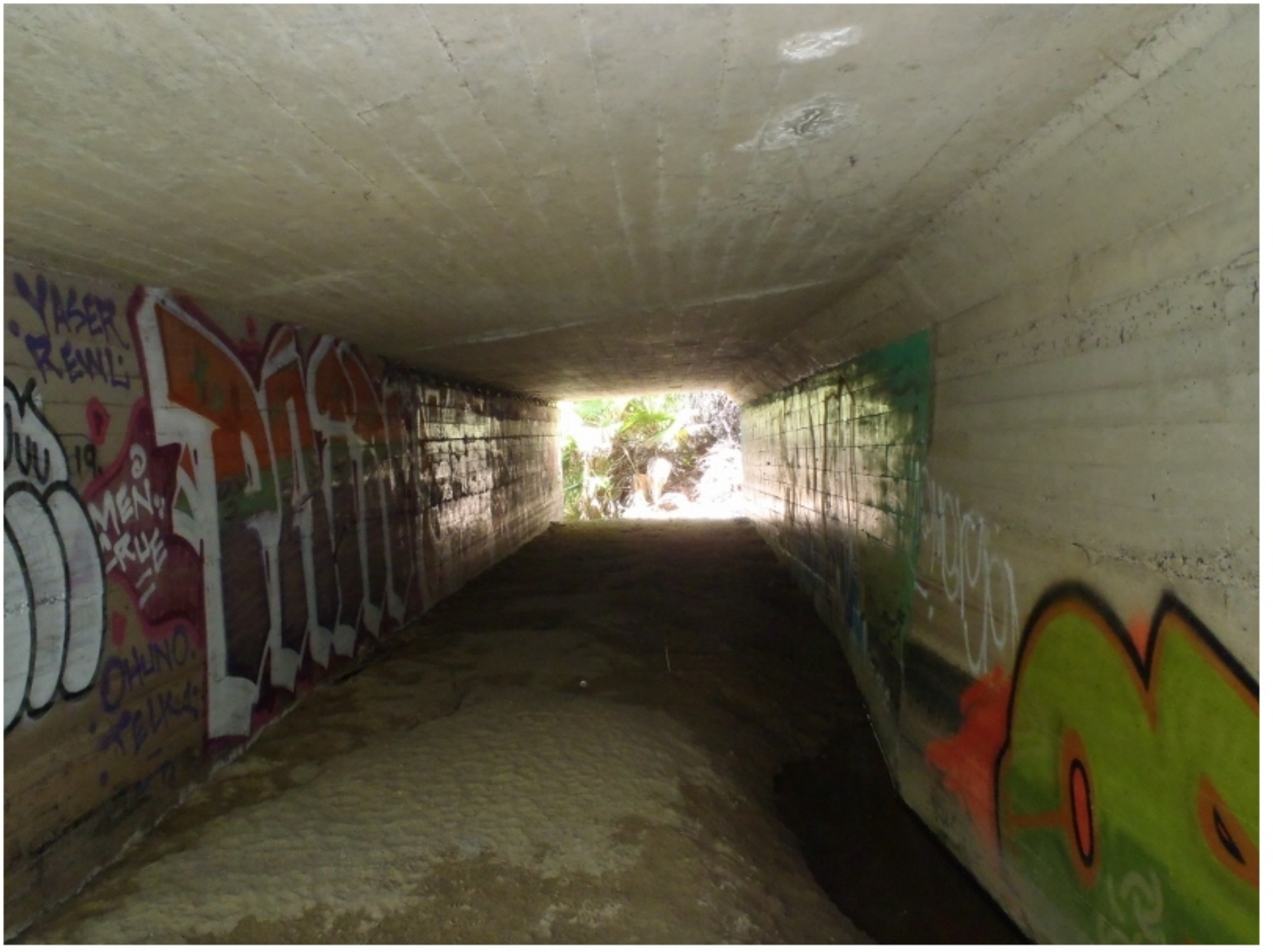

Photo No. 1
UNDER VIEW LOOKING WEST IN NORTHERN SPAN

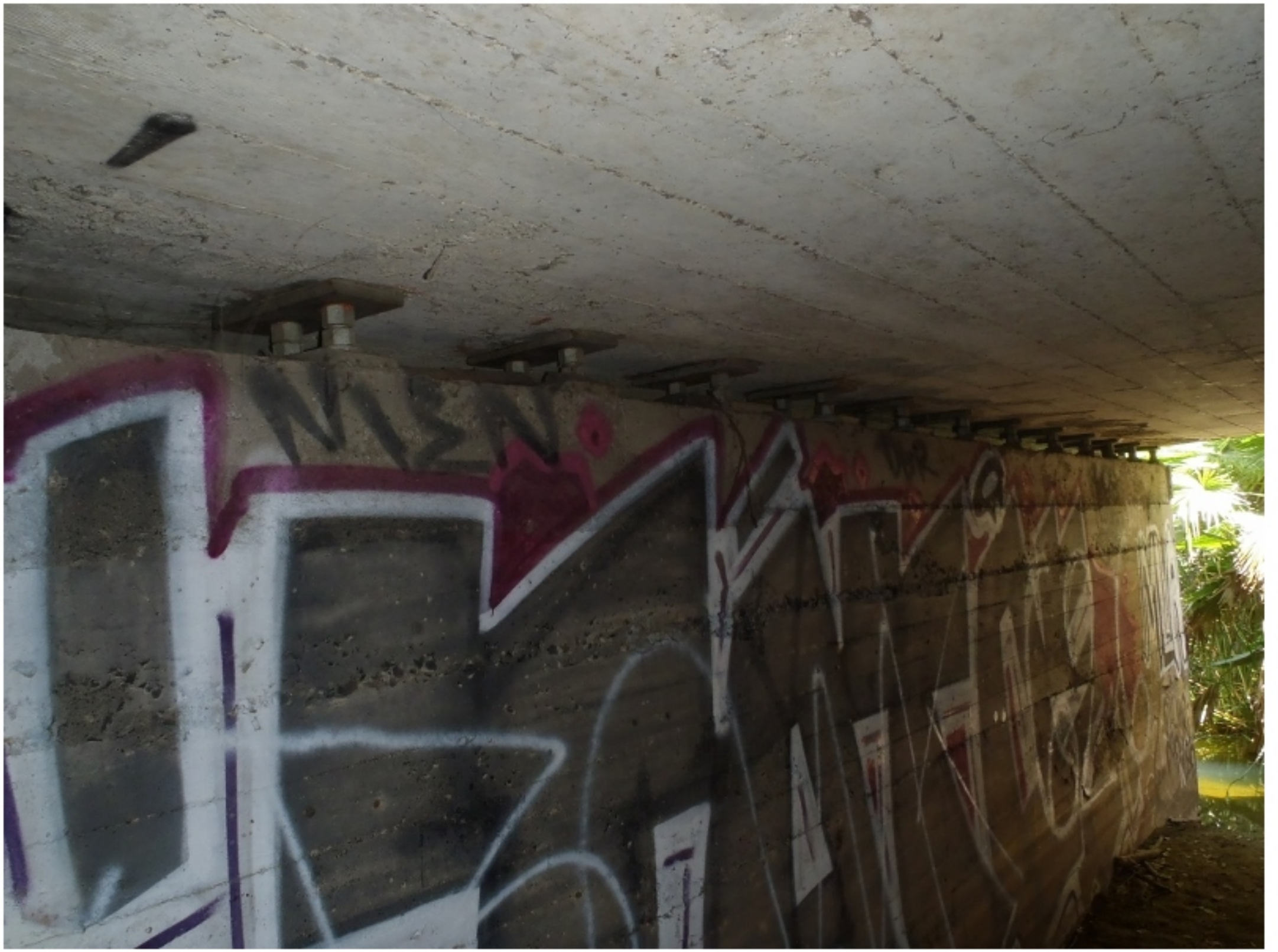

Photo No. 1
UNDER VIEW TOWARD THE MIDDLE PIER WALL