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 : 12/31/2017

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: SANTA ANA RIVER CHANNEL

CONSTRUCTION INFORMATION

Year Built : 1970
Year Modified: 2014
Length (m) : 130.1

Skew (degrees): 8
No. of Joints : 1
No. of Hinges : 1

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 HP 14X89. The widening: Box girder on RC pier walland RC open end diaphragm abutments, all supported upon steel piles from both side. (18 ft from each side).

Span Configuration : (W) 56.00 ft, 4 @ 78.00 ft, 56.00 ft (E)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: MS-18 OR HS-20
Inventory Rating: RF=1.71 =>55.4 metric tons Calculation Method: LOAD FACTOR
Operating Rating: RF=2.84 =>92.0 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, 5.00 ft sw, 92.00 ft, 5.00 ft sw, 1.00 ft br (N).
Total Width: 31.6 m Net Width: 28.0 m No. of Lanes: 6 Speed: 45 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 inches
Rail Code: 1000

DESCRIPTION UNDER STRUCTURE

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

This inspection was performed by walking on the sidewalks, and under all spans. A full visual inspection is performed for the visible substructure elements.
The channel was dry at the time of inspection, however spans 3 , 4 and 5 were muddy.

INSPECTION COMMENTARY

SAFE LOAD CAPACITY

A Structure Rating Summary Sheet, dated 02/03/2014, is on-file for this structure. The current rating is based on a BDS computer output, dated 11/20/1979, while this report does not include a check of that analysis

WATERWAY

A channel cross section was taken during this inspection and is included with this report. This cross section is the first cross section for this channel. No significant scour is noticed in this diaphragm.

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
16			**Top Flange-RC**	2	4108	sq.m	3508	600	0	0
	1120		**Efflorescence/Rust Staining**	2	300		0	300	0	0
	1130		**Cracking (RC and Other)**	2	300		0	300	0	0
	521		**Concrete Coat.(Meth/Paint/Seal)**	2	2470	sq.m	2470	0	0	0

(16-1120)
There are transverse cracks in the soffit in several bays in most spans with white efflorescence.

(16-1130)
The deck at the widening sections has several transverse cracks 5-10 feet long, 0.05 inches wide and 1-2 feet spaced apart.

(16-521)
There were no significant defects noted.
Only the original portion of the bridge was treated with methacrylate.

104			**Box Girder-PS Conc.**	2	260	m	230	30	0	0
	1080		**Delamination/Spall/Patched Area**	2	5		0	5	0	0
	1110		**Cracking (PS Conc.)**	2	25		0	25	0	0

(104-1080)
Span 1: few sound patched areas 12 inches X 12 inches at mid-span.
There are several sound patched areas in several girders.

(104-1110)
Northerly box girder has few vertical cracks with light white efflorescence above pier walls #5 and #6.

110			**Girder/Beam-RC**	2	1040	m	1036	3	1	0
	1080		**Delamination/Spall/Patched Area**	2	3		0	2	1	0
	1130		**Cracking (RC and Other)**	2	1		0	1	0	0

(110-1080)
At span 2: girder #1 (original RC) has a spall 2.50 feet X 10 inches X 2 inches at mid-span. (see the attached photo no. 2)

Few sound patched areas at girders 6, 7 and 8 at span 6.

(110-1130)
There are shear cracks in most girders, up to 0.04 inches wide near the supports.

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
182			**EQ Restrainer Cable-Other**	2	6	ea.	6	0	0	0
(182)										
There were no significant defects noted.										
At Hinge 3.										
210			**Pier Wall-RC**	2	160	m	155	5	0	0
	1130		**Cracking (RC and Other)**	2	5		0	5	0	0
(210-1130)										
Pier walls have few vertical racks, up to 1.0 mm wide.										
215			**Abutment-RC**	2	64	m	64	0	0	0
(215)										
There 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	31	m	26	5	0	0
	2320		**Seal Adhesion (Joints)**	2	5		0	5	0	0
(302-2320)										
The compression joint seal lost adhesion in few locations, the estimated depth of adhesion is more than 50%.										
312			**Bearing-Enclosed**	2	1	each	1	0	0	0
(312)										
There were no significant defects noted.										
331			**Railing-RC**	2	260	m	240	20	0	0
	1130		**Cracking (RC and Other)**	2	20		0	20	0	0
(331-1130)										
The RC rails have several vertical cracks, up to 0.05 inches wide and 10 feet spaced apart.										

WORK RECOMMENDATIONS

RecDate: 12/31/2017
Action : Super-Patch spalls
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

Patch the spall at span 2, girder #1 (original RC) that has a spall 2.50 feet X 10 inches X 2 inches at mid-span. (see the attached photo no. 2)

CHANNEL X-SECTION

Side : Upstream
Measured From : North overhang.

X-Section Date: 12/31/2017

Location	Horiz(m)	Vert(m)	Comments
Abutment 1	0.30	2.80	Face of the west Abutment, top of RSP
	1.00	1.00	
	3.70	3.43	top of wall
	3.75	4.64	bottom of wall, West edge of walk path

CHANNEL X-SECTION

Side : Upstream

X-Section Date: 12/31/2017

Measured From : North overhang.

Location	Horiz(m)	Vert(m)	Comments
	9.95	4.73	East edge of walk path
Pier wall 2	17.50	7.78	West face of PW 2
Pier wall 2	17.70	8.70	West face of PW 2
	30.00	8.71	
Pier wall 3	41.30	8.79	West face of PW 3
Pier wall 3	41.70	8.75	East face of PW 3
	53.00	8.60	
Pier wall 4	65.10	8.65	West face of PW 4
Pier wall 4	65.50	8.60	East face of PW 4
Pier wall 5	88.90	8.51	West face of PW 5
Pier wall 5	89.30	8.41	East face of PW 5
	101.00	8.29	
Pier wall 6	112.70	7.50	West face of PW 6
Pier wall 6	113.10	6.94	East face of PW 6
	117.46	5.04	top of slope
	125.16	7.78	teo of slope
Abutment 7	130.00	2.13	Face of the east Abutment

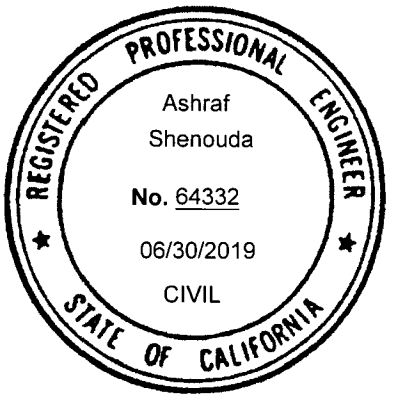
Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

8/27/18

Ashraf Shenouda (Registered Civil Engineer) (Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

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

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **55C0017**
(5) INVENTORY ROUTE(ON/UNDER)- ON 140000000
(2) HIGHWAY AGENCY DISTRICT 12
(3) COUNTY CODE 059 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- SANTA ANA RIVER CHANNEL
(7) FACILITY CARRIED- LINCOLN AVENUE
(9) LOCATION- 0.7 MI E/O ROUTE 57 FWY.
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- PART OF NET 1
(13) LRS INVENTORY ROUTE & SUBROUTE 000000000000
(16) LATITUDE 33 DEG 50 MIN 07.59 SEC
(17) LONGITUDE 117 DEG 51 MIN 50.13 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- CONCRETE
TYPE- TEE BEAM CODE 104
(44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
TYPE- OTHER/NA CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 6
(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 1970
(106) YEAR RECONSTRUCTED 2014
(42) TYPE OF SERVICE: ON- HIGHWAY 1
UNDER- WATERWAY 5
(28) LANES:ON STRUCTURE 06 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 28000
(30) YEAR OF ADT 2009 (109) TRUCK ADT 4 %
(19) BYPASS, DETOUR LENGTH 5 KM

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

(48) LENGTH OF MAXIMUM SPAN 23.8 M
(49) STRUCTURE LENGTH 130.1 M
(50) CURB OR SIDEWALK: LEFT 1.5 M RIGHT 1.5 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 28.0 M
(52) DECK WIDTH OUT TO OUT 31.6 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 28.0 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 8 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 28.0 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 = 91.4
STATUS
HEALTH INDEX 96.7
PAINT CONDITION INDEX = N/A

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

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- ROUTE ON NHS 1
(26) FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14
(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- MS-18 OR HS-20 5
(63) OPERATING RATING METHOD- LOAD FACTOR 1
(64) OPERATING RATING- 92.0
(65) INVENTORY RATING METHOD- LOAD FACTOR 1
(66) INVENTORY RATING- 55.4
(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 9
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 9
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 1000
(113) SCOUR CRITICAL BRIDGES 8

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

(75) TYPE OF WORK- CODE
(76) LENGTH OF STRUCTURE IMPROVEMENT M
(94) BRIDGE IMPROVEMENT COST
(95) ROADWAY IMPROVEMENT COST
(96) TOTAL PROJECT COST
(97) YEAR OF IMPROVEMENT COST ESTIMATE
(114) FUTURE ADT 79890
(115) YEAR OF FUTURE ADT 2035

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

(90) INSPECTION DATE 12/17 (91) FREQUENCY 48 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)

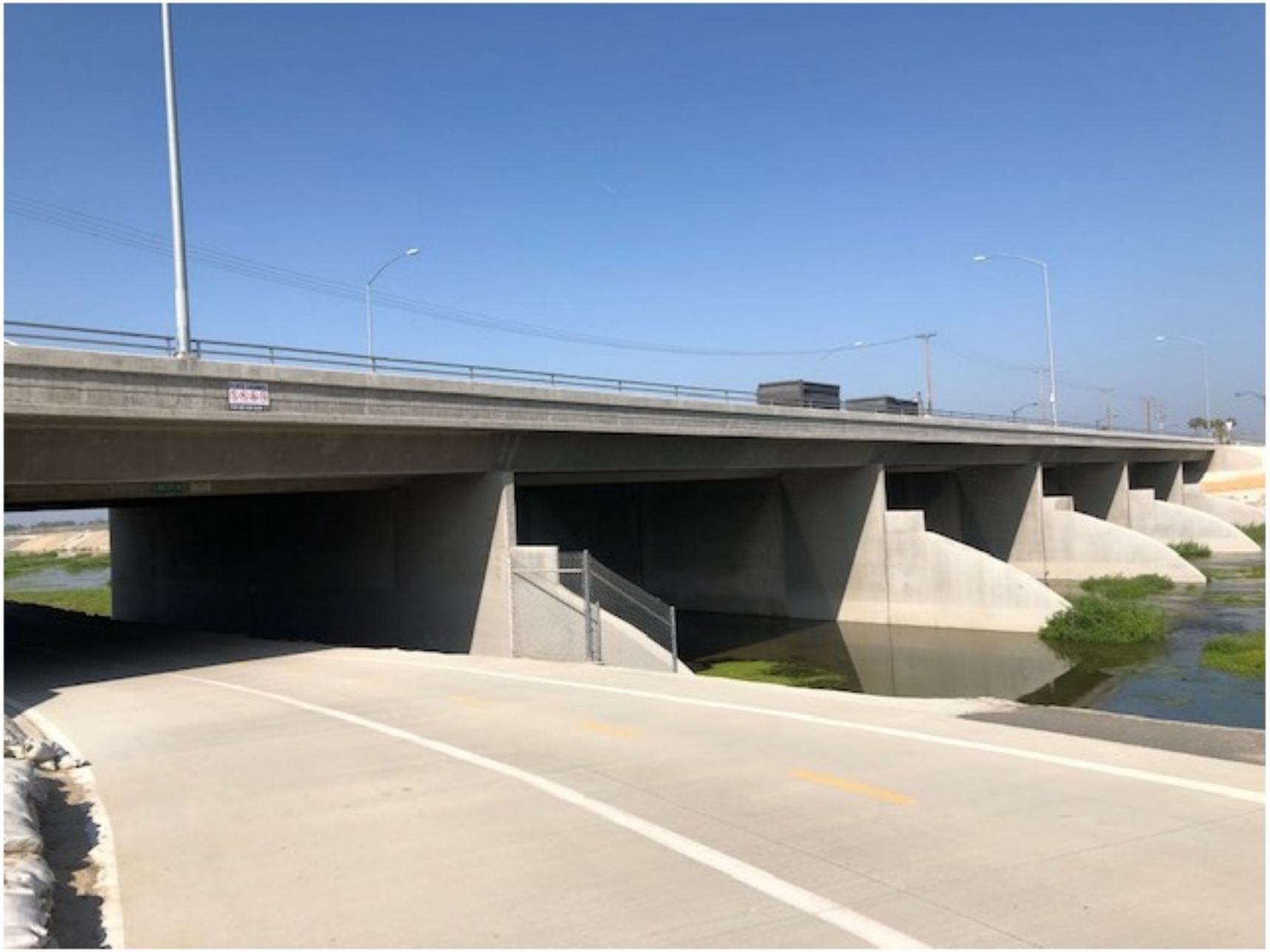

Photo No. 1
Elevation looking southwest

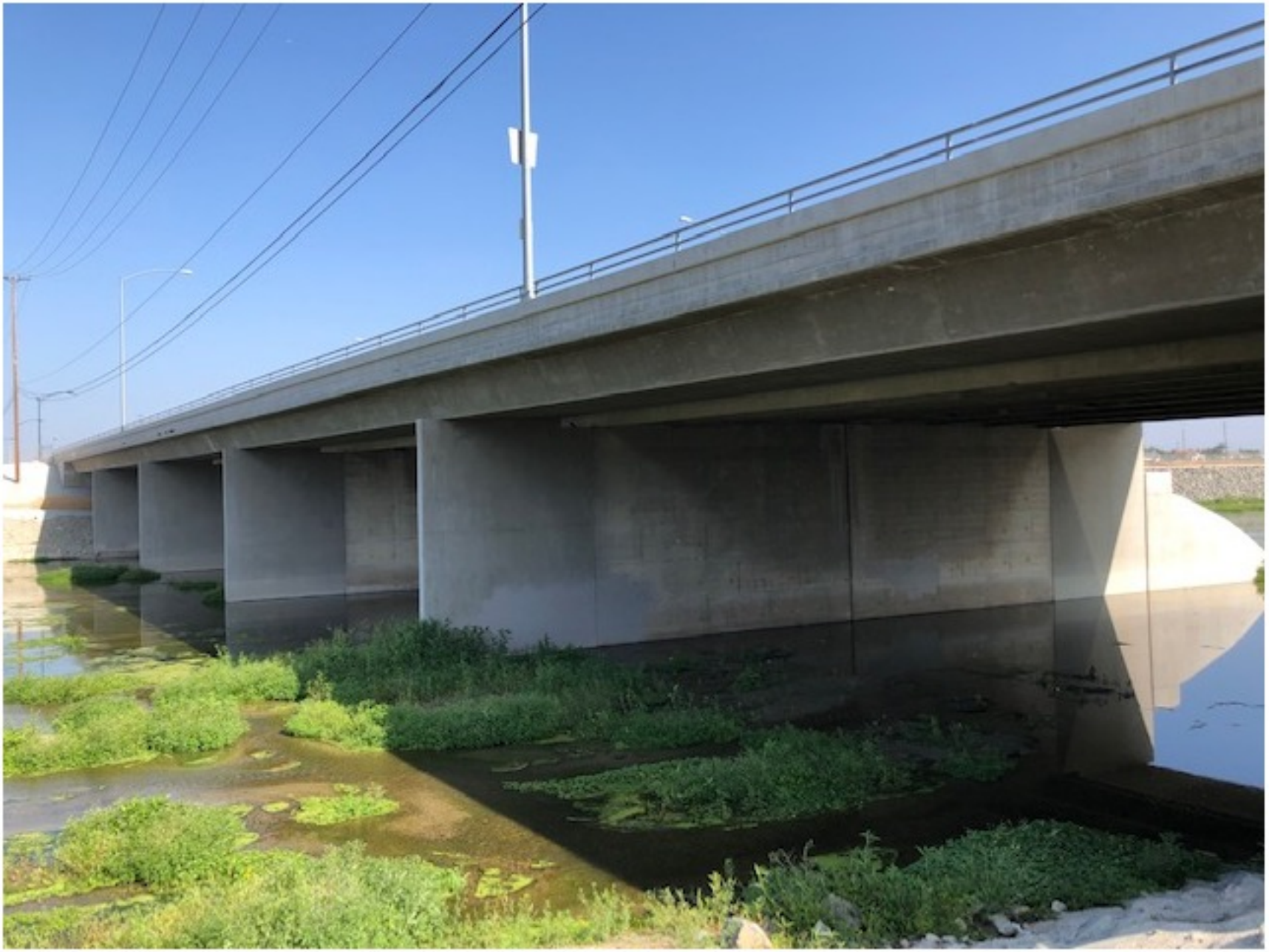

Photo No. 1
Elevation looking northwest

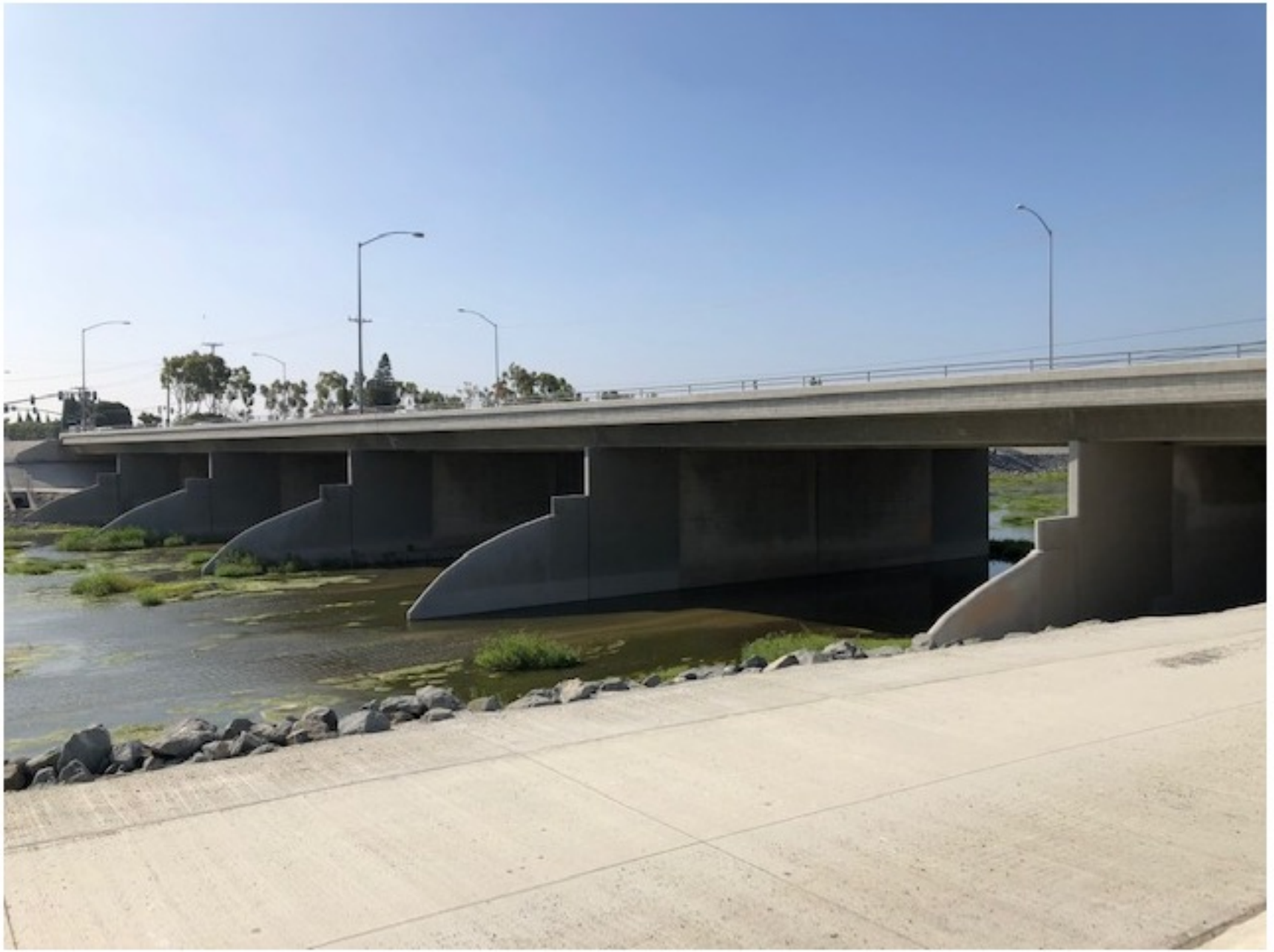

Photo No. 1
Elevation looking northwest

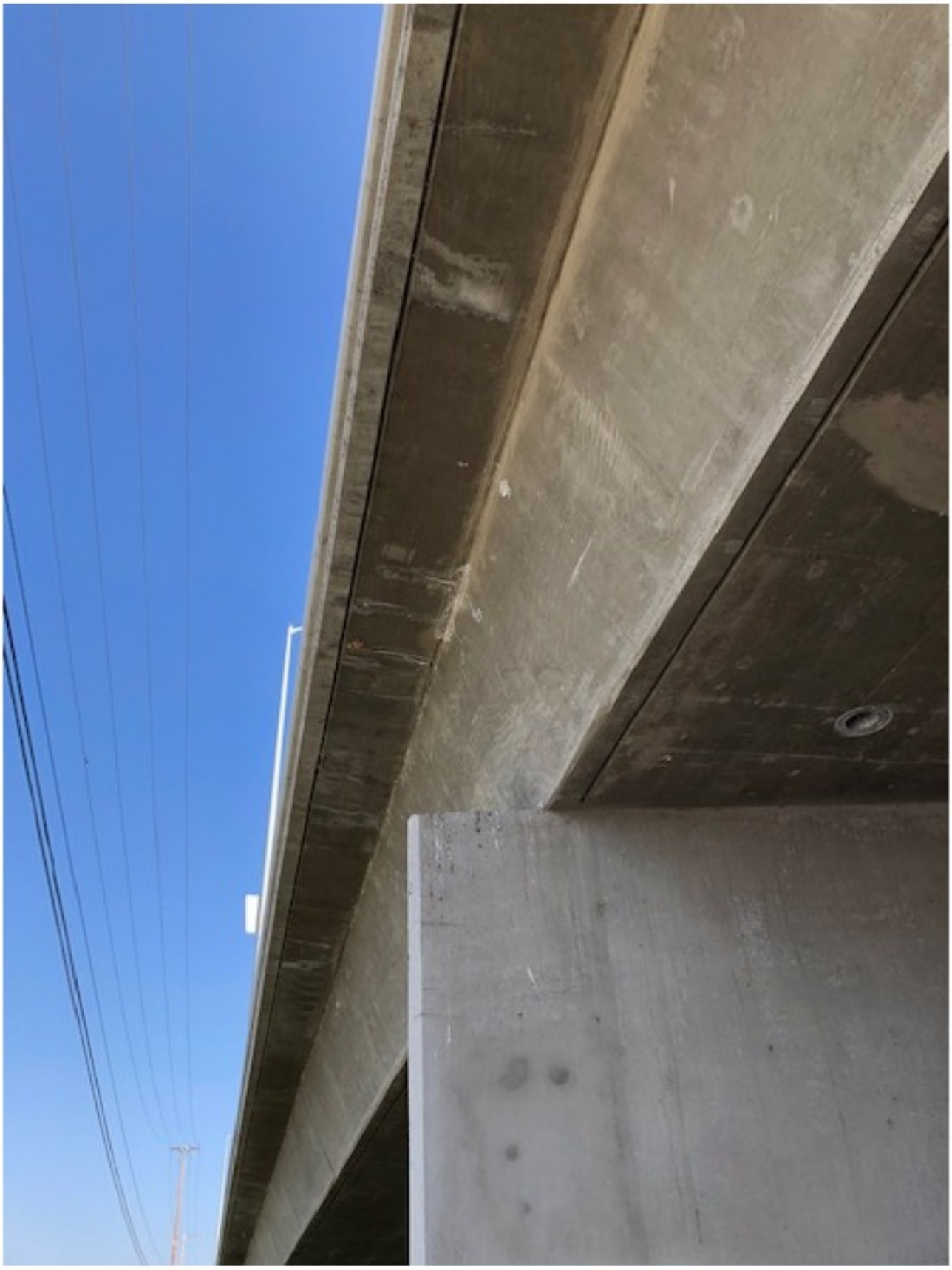

Photo No. 1
Deck overhang with transverse cracks with efflorescence

Photo No. 1
PC beam girders

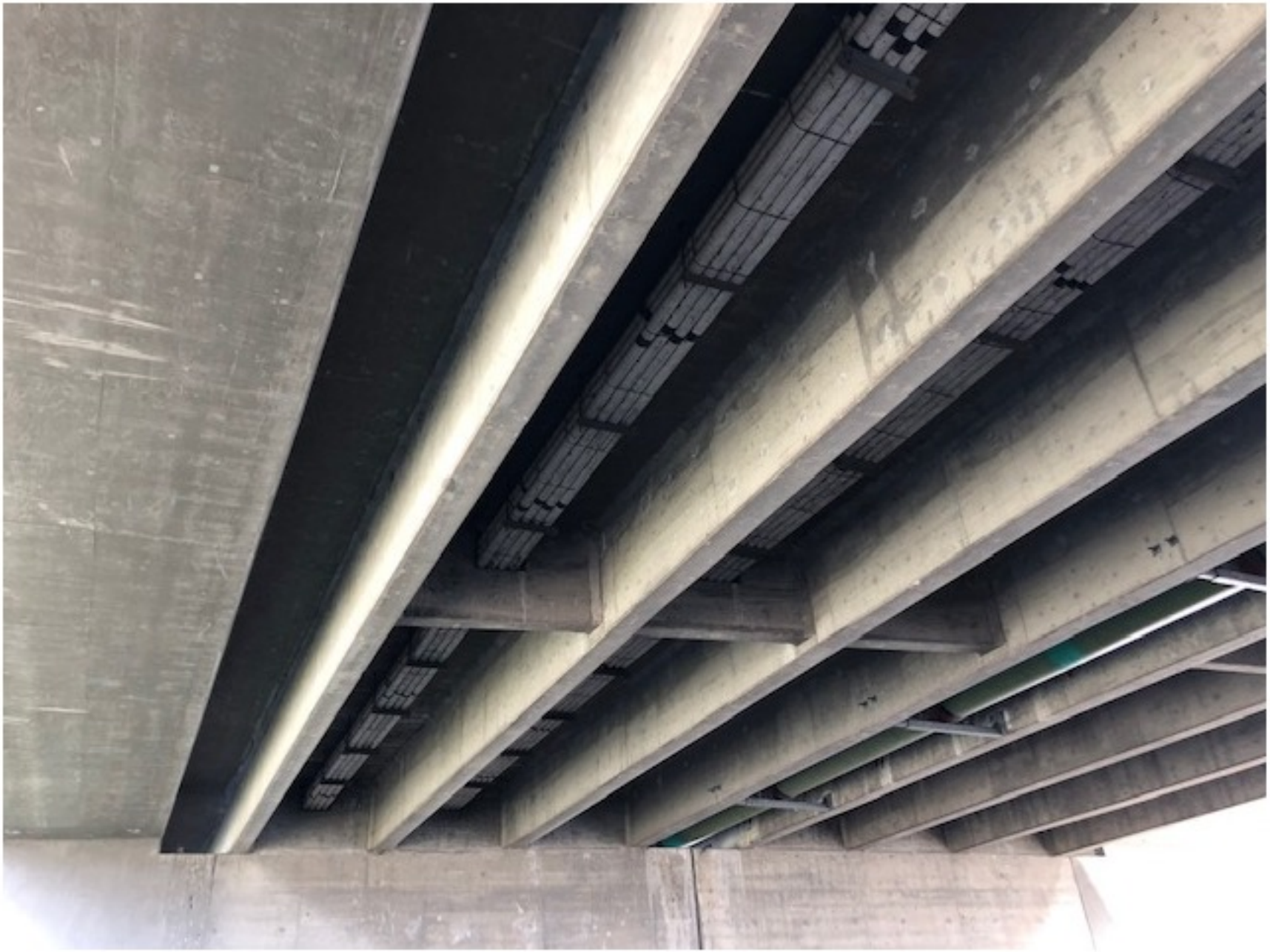

Photo No. 1
Box, Beam girders (RC Box Girder).

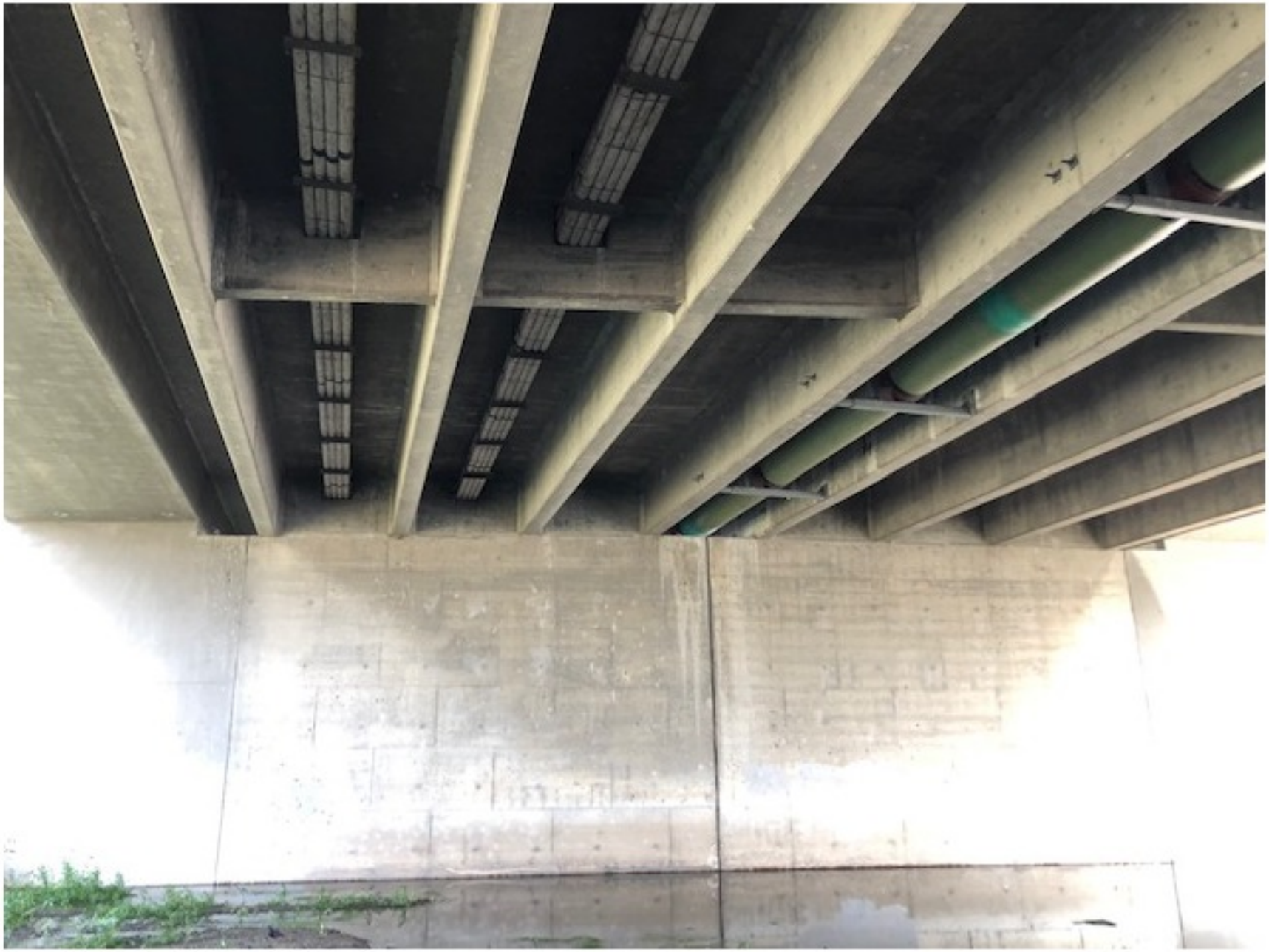

Photo No. 1
Pier wall

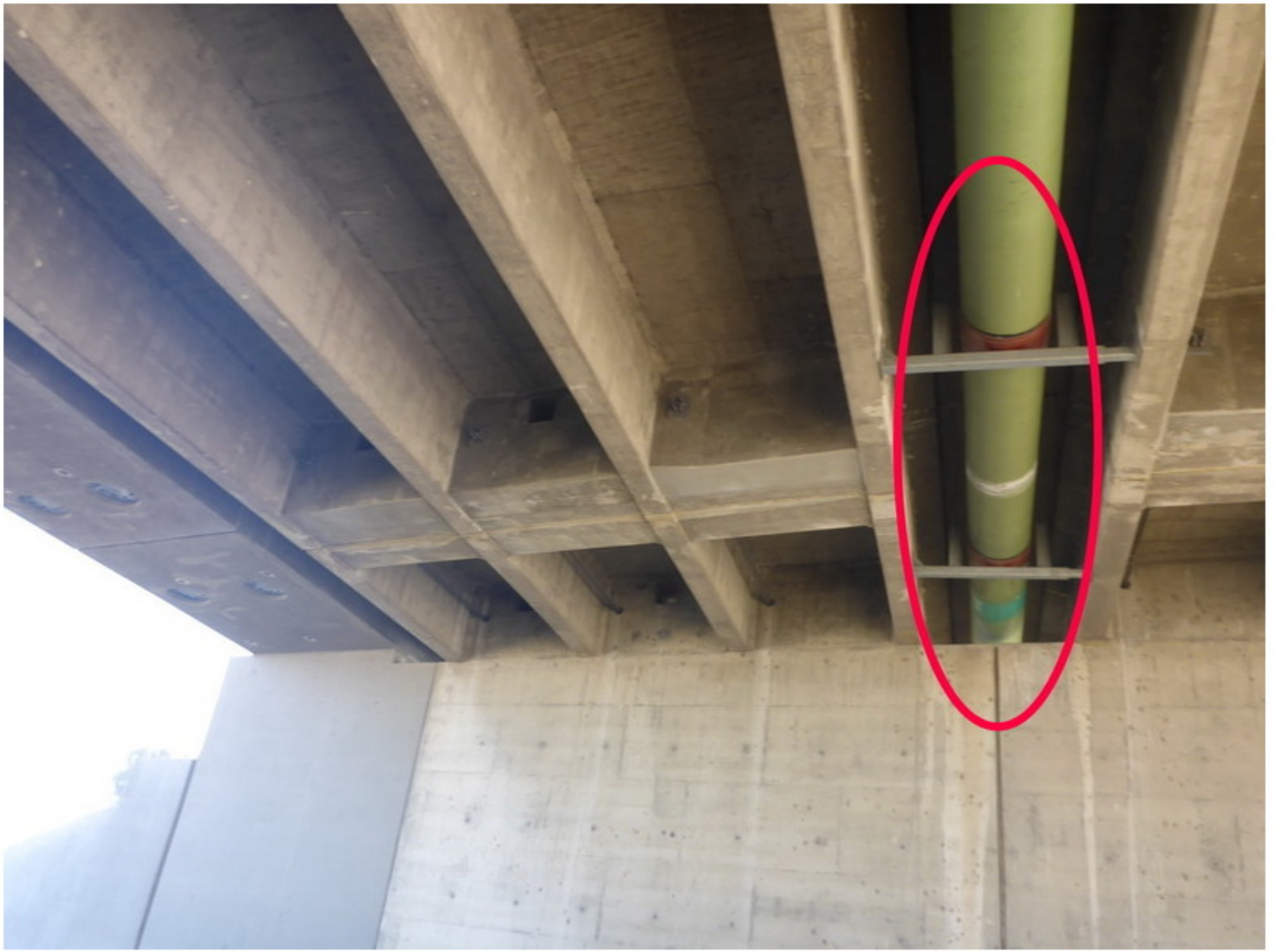

Photo No. 1
Steel pipe at the bridge centerline, hanged from he soffit.

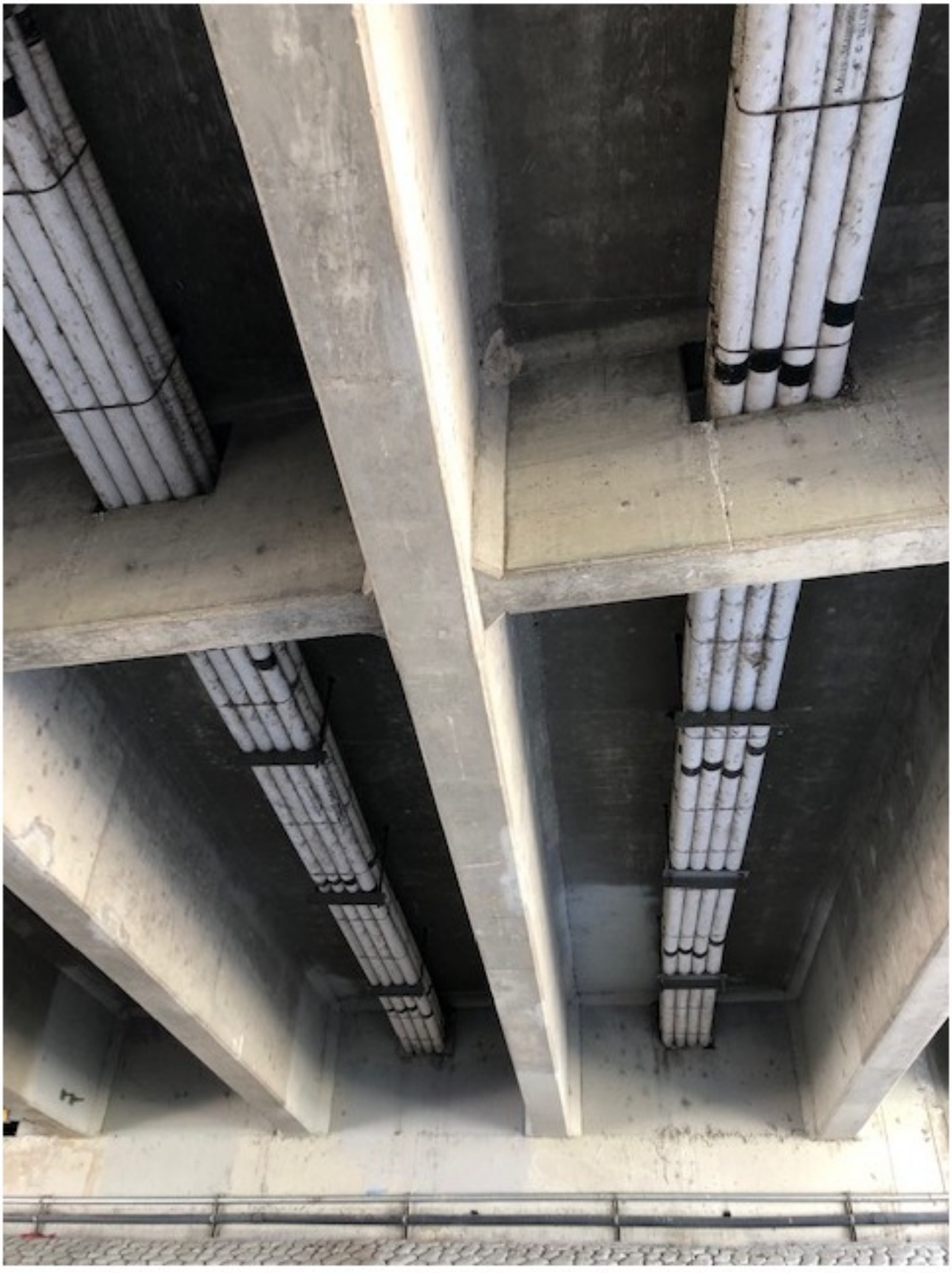

Photo No. 1
Encroachment inside bays, northerly side.

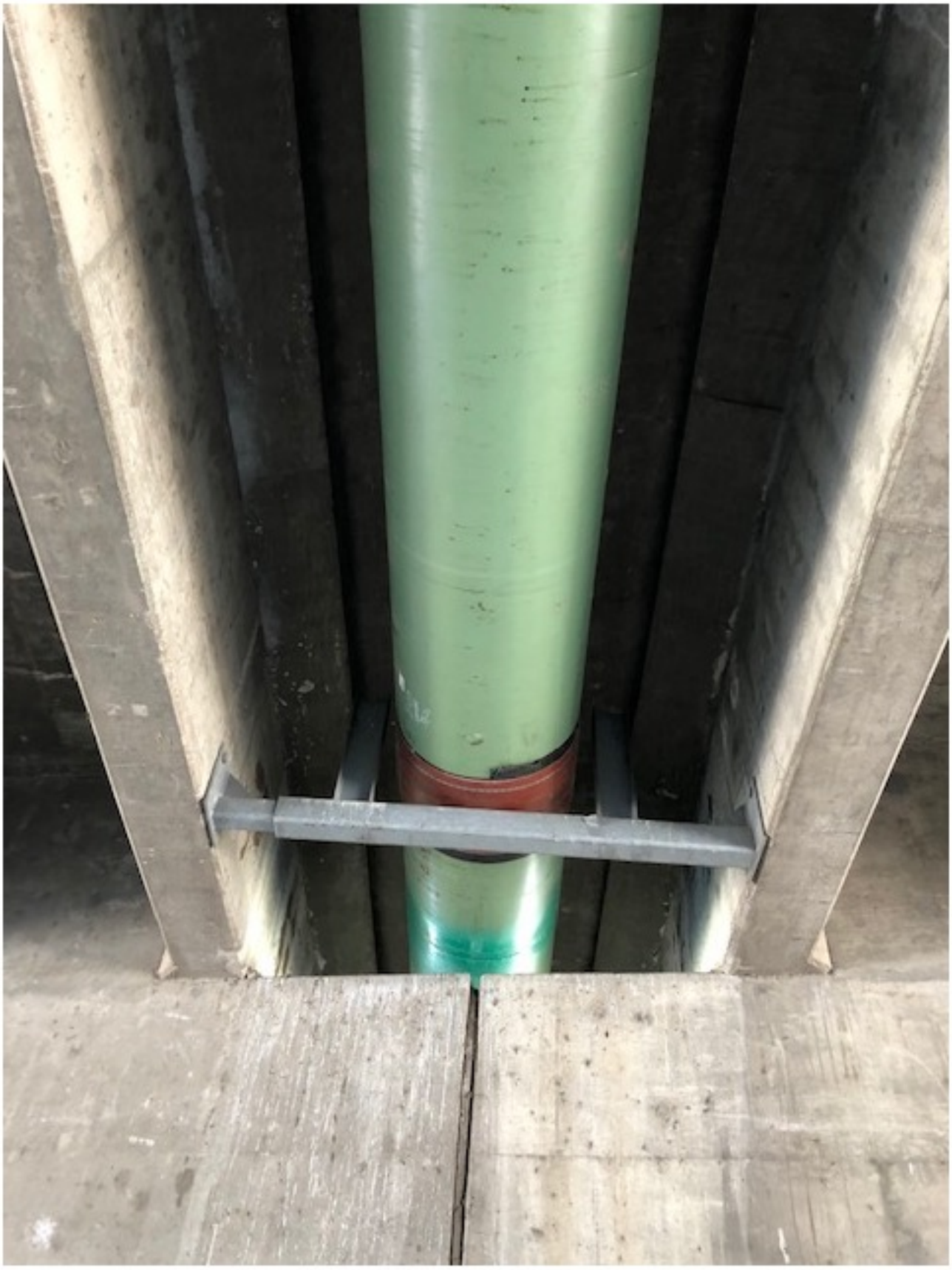

Photo No. 1
Encroachment in the middle of bridge

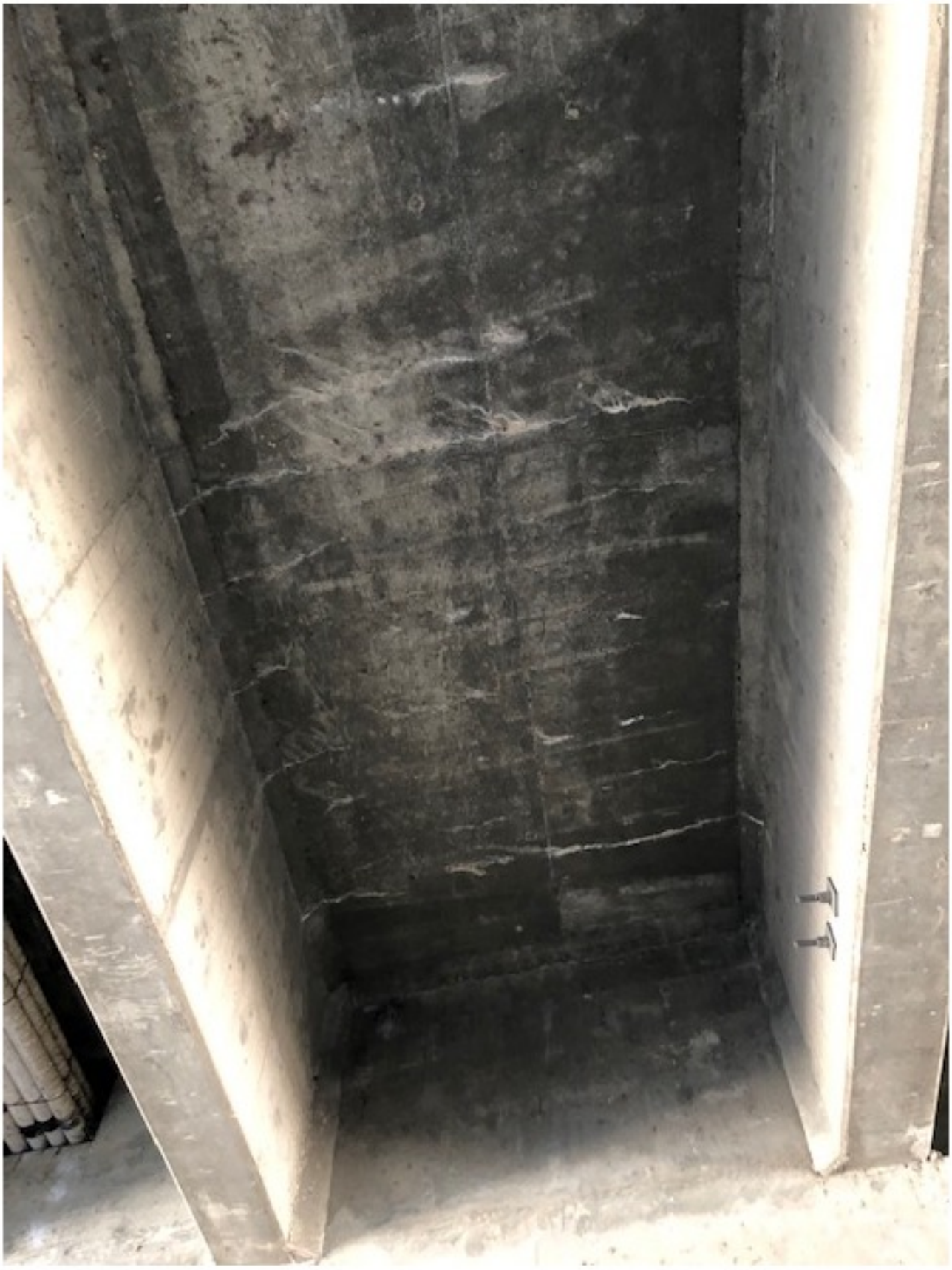

Photo No. 1
Transverse cracks with efflorescence

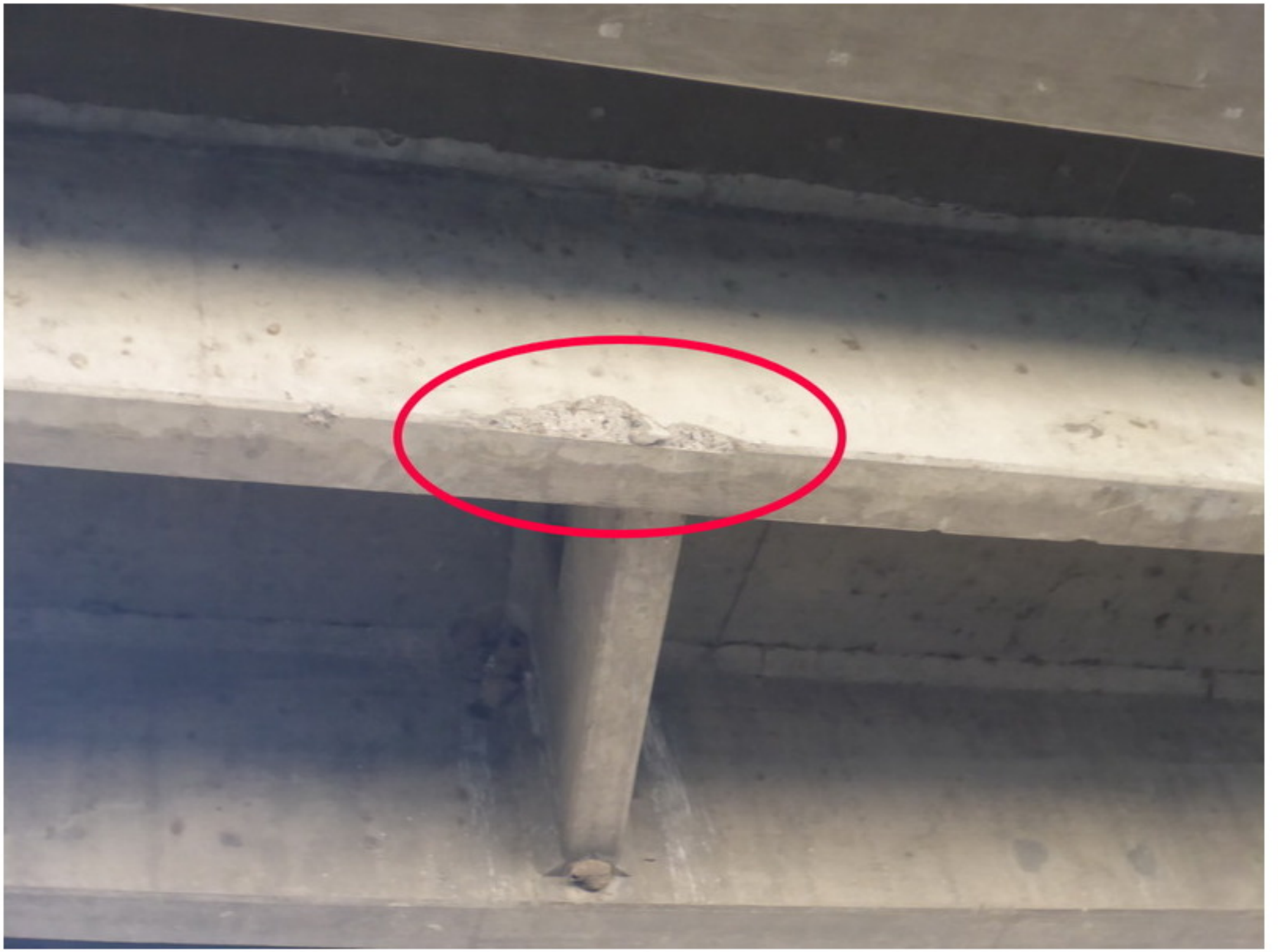

Photo No. 2
Spall 2.5 ft X 10 in. X 2 in. at span 2, id-span of girder 1.