

DEPARTMENT OF TRANSPORTATION

DIVISION OF MAINTENANCE
STRUCTURE MAINTENANCE & INVESTIGATIONS
100 South Main Street, 3rd Floor
LOS ANGELES, CA 90012
PHONE (213) 897-2004
FAX (213) 897-2033



*Making Conservation
a California Way of Life.*

April 16, 2019

Mr. Shane Silsby
Director of Public Works
County of Orange
P O Box 4048
Santa Ana, CA 92702-4048

Dear Mr. Silsby:

In accordance with Title 23 of the Code of Federal Regulations (Federal Highway Act) and the National Bridge Inspection Standards (NBIS), Caltrans Structure Maintenance and Investigations performed an inspection of 1 bridge under your jurisdiction. The type of inspection is indicated on the bridge report transmittal sheet. The bridges have been rated to indicate their deficiencies, structural adequacy, safe load carrying capacity and overall general condition.

Enclosed are copies of the Bridge Inspection Reports for the structures noted on the attached transmittal sheet. These reports contain descriptions of physical changes to the structures since the last inspection, recommendations for work to be done, and additional information not recorded in the previous Bridge Reports.

Your attention is directed to the requirements of Title 23, Part 650 of the Code of Federal Regulations, where newly completed structures or any modification of existing structures shall be entered in the inventory within 90 days. Please notify this office of any newly constructed bridge or culvert within your jurisdiction, more than 20 feet measured along the center of the roadway and carrying public vehicular traffic or over a public roadway, in order that it may be entered in the inventory of bridge structures in compliance with Federal requirements.

Should you have any questions regarding the enclosed Bridge Inspection Report, please contact Bing Wu @ (213) 897-0874.

Sincerely,

A handwritten signature in cursive script, appearing to read "Gadeen Wenzle".

for

CHING CHAO
Office Chief
Structure Maintenance & Investigations - (Investigations-South)

Enclosures

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Bridge Report Transmittal Sheet**Batch** **49028****County of Orange**

Bridge #	Bridge Name	Location	Inspection		Outstanding	
			Date	Type	Work	Cost
55C0511	SANTIAGO CREEK	1.74 MI. E/O ROUTE 55 FWY	12/21/2018	Routine	N	\$

1 Bridge(s) in this Transmittal

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WEB SITES:

The National Bridge Inspection Standards (NBIS) Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, Element Level Inspection, Structure Maintenance and Investigations Manuals, Local Assistance Program Guidelines and other related information are posted on Division of Maintenance, Structure Maintenance and Investigations; Division of Local Assistance, Local Highway Bridge Program (HBP) and FHWA websites.

The websites can be accessed at:

1. "Caltrans Structure Maintenance and Investigations" <http://www.dot.ca.gov/hq/structur/strmaint/>
2. "Caltrans Division of Local Assistance"
<http://www.dot.ca.gov/hq/LocalPrograms/hbrr99/hbrr99a.htm>
3. "FHWA" <http://www.fhwa.dot.gov/BRIDGE/mtguide.pdf>

Inspection Type Definitions**Routine Inspection:**

Routine Inspections consist of both the initial Inventory Inspection (the first inspection of the bridge that places it in the bridge inventory or when there has been a change in the configuration of the structure) and subsequent regularly scheduled inspections. The initial inspection provides all the Structural Inventory & Appraisal (SI&A) data required by federal and state regulations, determines the baseline structural conditions, lists any existing problems, and establishes the load capacity of the structure. Subsequent inspections consist of observations, measurements needed to determine the physical and functional condition of the bridge, to identify any changes from the previously recorded conditions, and verification of its load capacity. These inspections are generally conducted from the deck, ground and/or water level, and from permanent work platforms and walkways, if present. Inspection of underwater portions of the substructure is limited to observations during low-flow periods and/or probing for signs of undermining. Special equipment should be utilized in circumstances where its use provides the only practical access to areas of the structure.

Fracture Critical, Special Feature & Underwater Inspections:

Fracture Critical, Special Feature, and Underwater Inspections are up close, hands-on inspections of one or more members above or below the water level to identify any deficiencies not readily detectable using Routine Inspection procedures. These inspections generally require special equipment such as under-bridge inspection equipment, manlifts, boats, traffic control, and railroad flagging. Personnel with special skills such as divers or structural steel inspectors trained in non-destructive testing techniques may be required.

Other Inspections:

Other Inspections are conducted on damaged structures, structures that have developed specific problems, or structures suspected of developing problems. The scope of these investigations should be sufficient to determine the need for emergency load restrictions or closure of the structure, monitor a changing condition, and to assess the level of effort necessary to effect a repair.



DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0511
Facility Carried: VILLA PARK ROAD
Location : 1.74 MI. E/O ROUTE 55 FW
City :
Inspection Date : 12/21/2018

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

STRUCTURE NAME: SANTIAGO CREEK

CONSTRUCTION INFORMATION

Year Built : 1982	Skew (degrees): 0
Year Modified: N/A	No. of Joints : 0
Length (m) : 6.7	No. of Hinges : 0

Structure Description: Single 21.00 feet diameter x 330.00 feet long corrugated steel
multiplate pipe culvert (non-grade top) beneath 40.00 feet of earth
fill.

Span Configuration : (W) 21.00 feet (E)

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: (N) 90.00 feet earth slope, 8.00 feet sw, 74.00 feet, 8.00 feet, 203.00 feet
earth slope (S).

Total Width: .0 m	Net Width: .0 m	No. of Lanes: 4	Speed: 45 mph
Min. Vertical Clearance: Unimpaired		Overlay Thickness: 0.0 inches	

Rail Code: NNNN

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.

The element condition information contained in this report represents the current condition of the bridge based on the most recent routine and special inspections. Some of the notes presented below may be from an inspection that occurred prior to the date noted in this report. Refer to the Scope and Access section of this inspection report for a description of which portions of the bridge were inspected on this date.

INSPECTION COMMENTARY

SCOPE AND ACCESS

A complete routine inspection was performed by walking on and around the bridge to inspect all visible elements of the bridge structure. A Culvert was inspected by walking on shoulder. Soffit and all substructure were inspected by walking underneath the Culvert with rainboots.

There is no need for a special equipment to inspect this structure.

HISTORY

INSPECTION COMMENTARY

As mentioned in the previous bridge inspection reports, the bridge number is changed from 55C0511M to 55C0511 because the structure is accessible from both sides.

CUVERT

This Metal Corrugated Pipe is filled with concrete material at both entrances and AC roadway on top.

The culvert invert was rusted about 25.0 percentage of the circumference throughout the culvert length, most noticeable at the ends, and at the seam connection of the plates (see photos 3 and 4).

There are few area showing cut 2.0 to 8.0 inches long of the steel plates scattered at both ends. (see photos 7 to 9).

The galvanized coating system is failed and rust is noticed about 30% of the steel pipe area especially the bottom part. (see photos 3 and 4).

There is a shallow water at the time of inspection.

SAFE LOAD CAPACITY

This load rating was assigned temporarily until calculations for this structure can be completed. The load rating for this bridge was assigned temporary in accordance with SMI procedures for steel culvert. A Load Rating Summary Sheet was archived on 04/25/2017.

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Element Description	Env	Total Qty	Units	Qty in each St. 1	St. 2	St. 3	State St. 4
240		Culvert-Steel	2	101	m	75	26	0	0
	1000	Corrosion	2	26		0	26	0	0
	1010	Cracking	2	2		2	0	0	0
	516	Steel Coating-Galvanized	2	4042	sq.m	2842	700	300	200
	3440	Effectiveness (Steel PC)	2	1200		0	700	300	200

(240)

There were no significant defects noted.

(240-1000)

The culvert invert was rusted about 25% of the circumference throughout the culvert length, most noticeable at the ends, and at the seam connection of the plates (see photos 3 and 4)

(240-1010)

There are few area showing cut 2.0 to 8.0 inches long of the steel plates scattered at both ends. (see photos 7 to 9).

(240-516)

The galvanized coating system is failed and rust is noticed about 30% of the steel pipe area especially the bottom part. (see photos 3 and 4).

(240-516-3440)

The galvanized coating system is failed and rust is noticed about 30% of the steel pipe area especially the bottom part. (see photos 3 and 4).

WORK RECOMMENDATIONS - NONE

Team Leader : Edwin Mah
Report Author : Nelson N. Vo
Inspected By : NN.Vo/E.Mah



4/9/2019

Edwin Mah (Registered Civil Engineer) (Date)



STRUCTURE INVENTORY AND APPRAISAL REPORT

***** IDENTIFICATION *****

(1) STATE NAME- CALIFORNIA 069
 (8) STRUCTURE NUMBER 55C0511
 (5) INVENTORY ROUTE (ON/UNDER) - ON 140000000
 (2) HIGHWAY AGENCY DISTRICT 12
 (3) COUNTY CODE 059 (4) PLACE CODE 00000
 (6) FEATURE INTERSECTED- SANTIAGO CREEK
 (7) FACILITY CARRIED- VILLA PARK ROAD
 (9) LOCATION- 1.74 MI. E/O ROUTE 55 FWY
 (11) MILEPOINT/KILOMETERPOINT 0
 (12) BASE HIGHWAY NETWORK- PART OF NET 1
 (13) LRS INVENTORY ROUTE & SUBROUTE 000000000000
 (16) LATITUDE 33 DEG 48 MIN 35.29 SEC
 (17) LONGITUDE 117 DEG 48 MIN 19.38 SEC
 (98) BORDER BRIDGE STATE CODE % SHARE %
 (99) BORDER BRIDGE STRUCTURE NUMBER

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

(43) STRUCTURE TYPE MAIN:MATERIAL- STEEL
 TYPE- CULVERT CODE 319
 (44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
 TYPE- OTHER/NA CODE 000
 (45) NUMBER OF SPANS IN MAIN UNIT 1
 (46) NUMBER OF APPROACH SPANS 0
 (107) DECK STRUCTURE TYPE- NOT APPLICABLE CODE N
 (108) WEARING SURFACE / PROTECTIVE SYSTEM:
 A) TYPE OF WEARING SURFACE- NOT APPLICABLE CODE N
 B) TYPE OF MEMBRANE- NOT APPLICABLE CODE N
 C) TYPE OF DECK PROTECTION- NOT APPLICABLE CODE N

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

(27) YEAR BUILT 1982
 (106) YEAR RECONSTRUCTED 0000
 (42) TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN 5
 UNDER- WATERWAY 5
 (28) LANES:ON STRUCTURE 04 UNDER STRUCTURE 00
 (29) AVERAGE DAILY TRAFFIC 26000
 (30) YEAR OF ADT 2018 (109) TRUCK ADT 1 %
 (19) BYPASS, DETOUR LENGTH 6 KM

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

(48) LENGTH OF MAXIMUM SPAN 6.4 M
 (49) STRUCTURE LENGTH 6.7 M
 (50) CURB OR SIDEWALK: LEFT 0.0 M RIGHT 0.0 M
 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 0.0 M
 (52) DECK WIDTH OUT TO OUT 0.0 M
 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 25.0 M
 (33) BRIDGE MEDIAN- NO MEDIAN 0
 (34) SKEW 0 DEG (35) STRUCTURE FLARED NO
 (10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
 (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 25.0 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

SUFFICIENCY RATING = 76.1
 STATUS
 HEALTH INDEX 91.5
 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 N
 (59) SUPERSTRUCTURE N
 (60) SUBSTRUCTURE N
 (61) CHANNEL & CHANNEL PROTECTION 8
 (62) CULVERTS 6

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

(31) DESIGN LOAD- UNKNOWN 0
 (63) OPERATING RATING METHOD- FIELD EVAL/ENG JUD 0
 (64) OPERATING RATING- 54.1
 (65) INVENTORY RATING METHOD- FIELD EVAL/ENG JUL 0
 (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 6
 (68) DECK GEOMETRY N
 (69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
 (71) WATER ADEQUACY 8
 (72) APPROACH ROADWAY ALIGNMENT 8
 (36) TRAFFIC SAFETY FEATURES NNNN
 (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 54299
 (115) YEAR OF FUTURE ADT 2036

***** INSPECTIONS *****

(90) INSPECTION DATE 12/18 (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

Rust was noticed at the bottom surface of the corrugated pipe throughout.



Photo No. 1

Rust was noticed at the bottom surface of the corrugated pipe throughout. (N end).

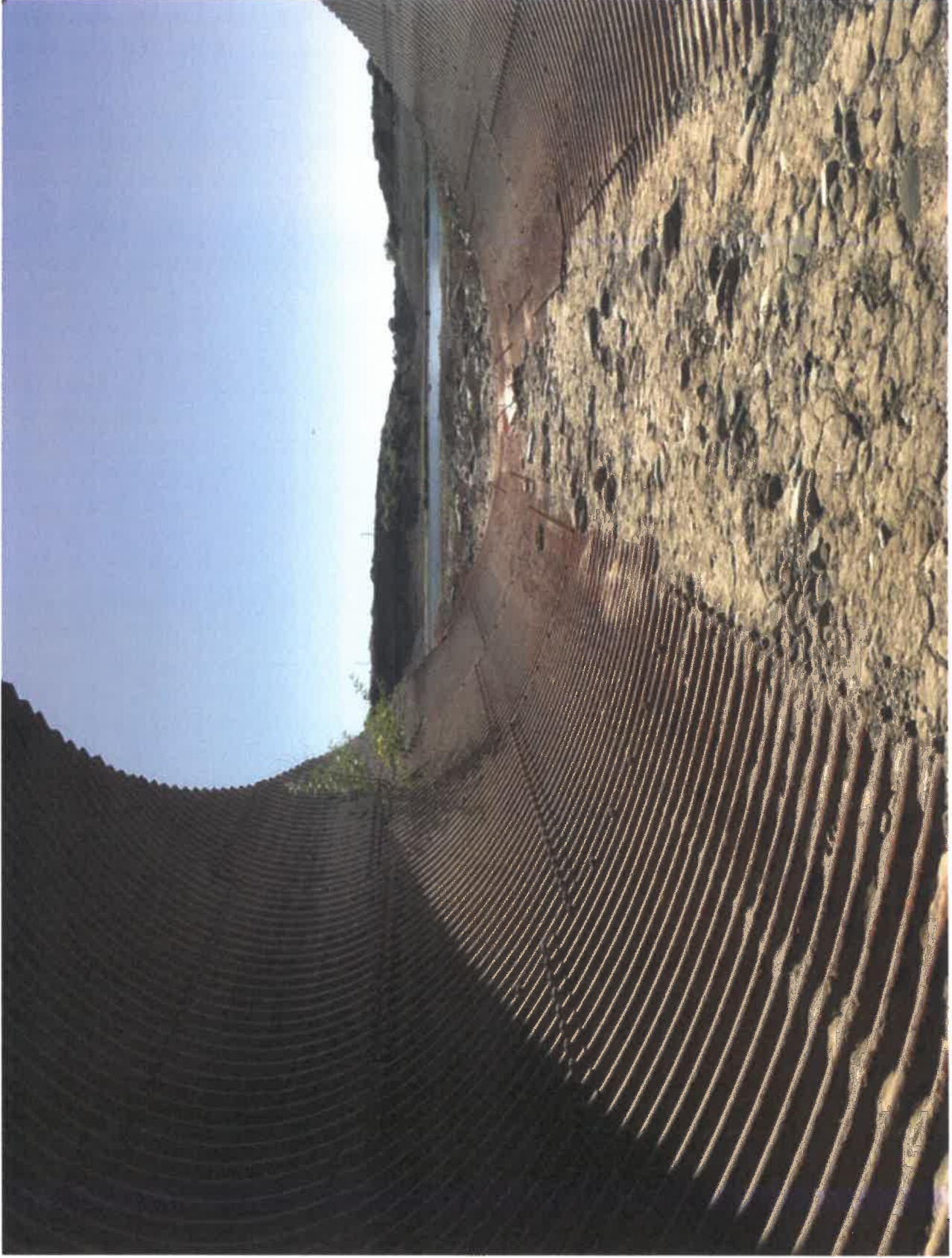


Photo No. 1
Rust was formed throughout at the bottom surface.

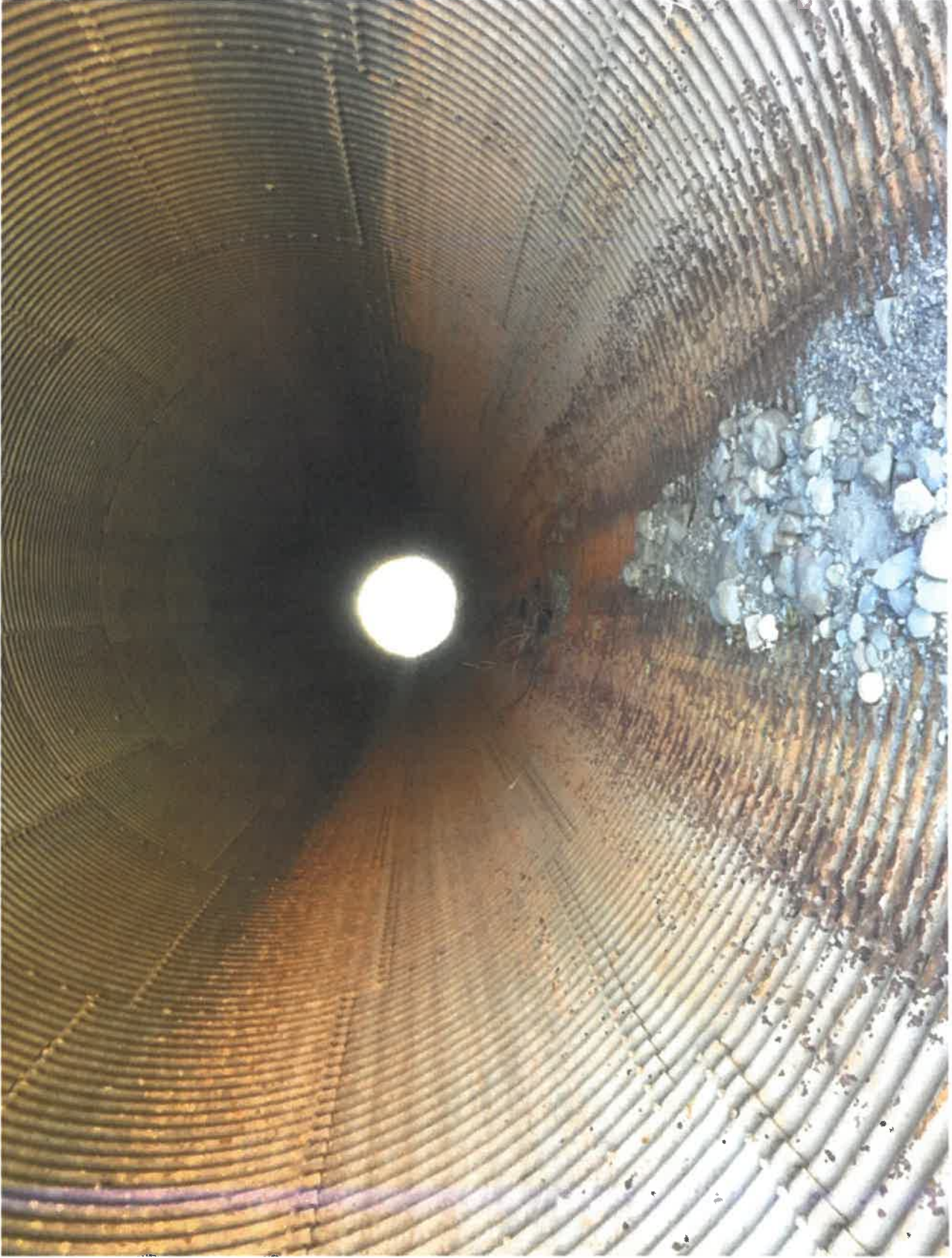


Photo No. 3
Rust is noticed at the bottom of the steel pipe throughout the entire length.

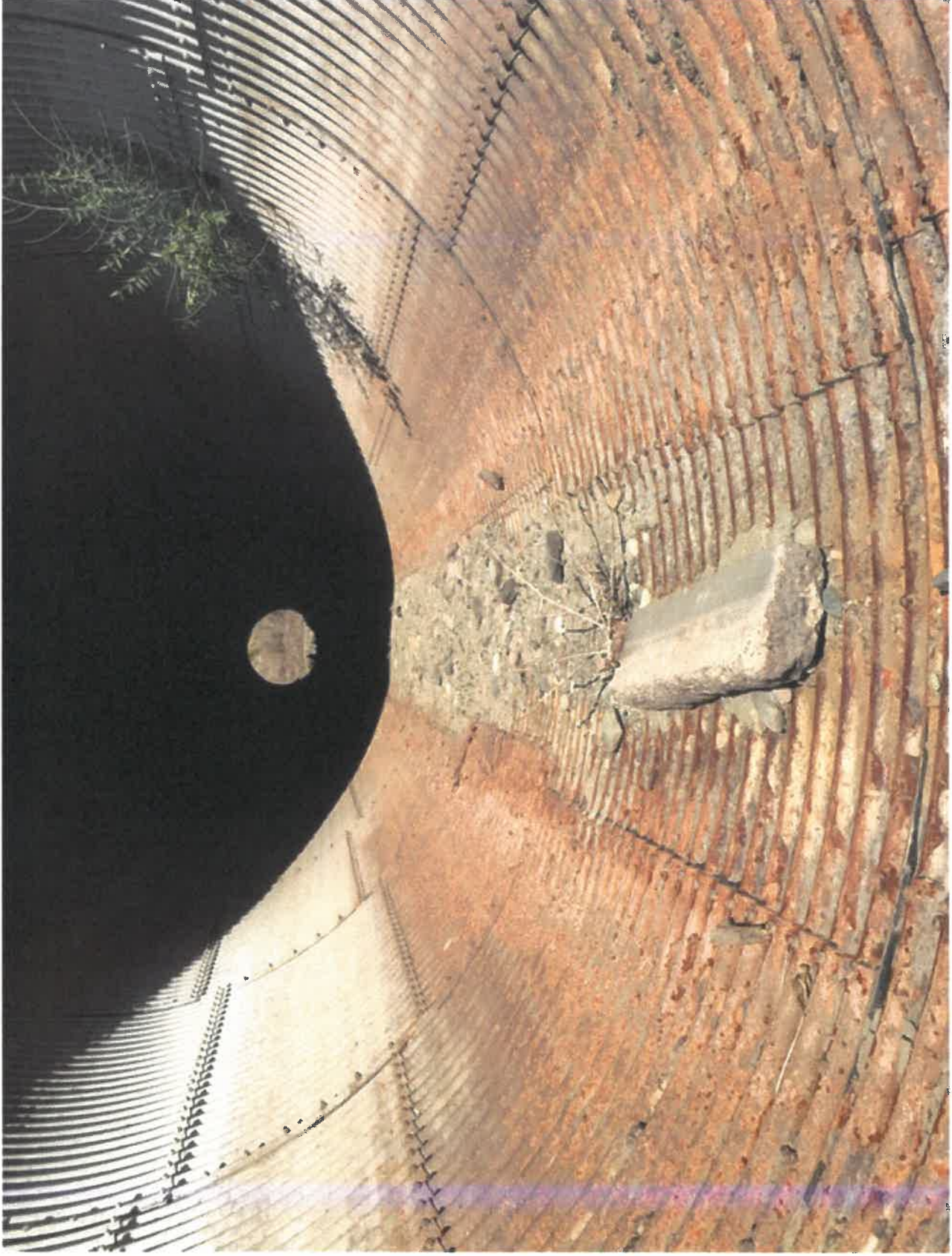


Photo No. 4
Rust is more noticed at the south end.