

BRIDGE INSPECTION REPORT

1808311
Structure File NumberBRIDGE NUMBER **CUY 00090 2043 L**YEAR BUILT **1952**DIST **12** Bridge Type **322** TYPE SERVICE **1 5** **CEI OUTLET CHANNEL**

DECK 1. FLOOR	out/out 78.3 Deck Area 14,413 sqft 1 REINF CONCRT (PRESTRSD, PRECAST) Left N NONE / Right N NONE	1	2 INTEGRAL CONCRETE (MONOLITHIC) 2. WEARING SURFACE	Thk 2 Wear Date 8/2/2005	1
3. CURBS, SIDEWALKS AND WALKWAYS			4. MEDIAN	Lanes on 4	
5. RAILING	1 REINFORCED CONCRETE PARAPET	1	6. DRAINAGE	3 SCUPPERS & DWNSPTS	1
7. EXPANSION JOINTS	N NONE		8. SUMMARY		7
SUPERSTRUCTURE 9. ALIGNMENT	Max Spans 60	1	10. BEAMS/GIRDERS/SLAB	3 ROLLED STEEL	2
11. DIAPHRAGMS or CROSSFRAMES		1	12. JOISTS/STRINGERS		
13. FLOOR BEAMS			14. FLOOR BEAM CONNECTIONS		
15. VERTICALS			16. DIAGONALS		
17. END POSTS			18. TOP CHORD		
19. LOWER CHORD			20. LOWER LATERAL BRACING		
21. TOP LATERAL BRACING			22. SWAY BRACING		
23. PORTALS			24. BEARING DEVICES	3 SLIDING (BRONZE)	2
25. ARCH			26. ARCH COLUMNS or HANGERS		
27. SPANDREL WALLS			28. PROTECTIVE COATING SYSTEM	Paint Date 1/1/1993 5 PAINT SYSTEM OZE	7
29. PINS/HANGERS/HINGES			30. FATIGUE PRONE CONNECTIONS		
31. LIVE LOAD RESPONSE		S	32. SUMMARY		6
SUBSTRUCTURE 33. ABUTMENTS	6 STUB-CAPPED PILE (SINGLE ROW PILES)	1	34. ABUTMENT SEATS	6 STUB-CAPPED PILE (SINGLE ROW PILES) Abutment: ON PILING	1
35. PIERS		2	36. PIER SEATS	B TOWER Piers: ON PILING	1
37. BACKWALLS			38. WINGWALLS		1
39. FENDERS and DOLPHINS	Piers = 02 NN NN Spans = 3		40. SCOUR		2 1
41. SLOPE PROTECTION	N NONE-NATURAL PROTECTION(GRA)		42. SUMMARY	Dive Date 12/30/1899	6
CULVERTS 43. GENERAL	N NONE/NOT APPLICABLE		44. ALIGNMENT		
45. SHAPE			46. SEAMS		
47. HEADWALLS or ENDWALLS	Culvert Length 0		48. SCOUR	Culvert Fill Depth 0	
49.			50. SUMMARY		
CHANNEL 51. ALIGNMENT	8 SLIGHT CHANCE OVERTOPPING	1	52. PROTECTION	5 RIP RAP (DUMPED ROCK OR ROCK)	1
53. WATERWAY ADEQUACY		1	54. SUMMARY		7
APPROACHES 55. PAVEMENT	2 BITUMINOUS	1	56. APPROACH SLABS		1
57. GUARDRAIL	1 STEEL BEAM	1	58. RELIEF JOINTS		
59. EMBANKMENT		1	60. SUMMARY	Percent Legal = 150	8
GENERAL 61. NAVIGATION LIGHTS			62. WARNING SIGNS	Maint Resp 1 OHIO TRAN DEPT	
63. SIGN SUPPORTS	Signs on = N MVC on = 9999.9 Under C = 0		64. UTILITIES		
65. VERTICAL CLEARANCE	Under NC = 0	N	66. GENERAL APPRAISAL & OPERATIONAL STATUS		6 A
67. INSPECTED BY			68. REVIEWED BY		

SIGNED

PE Number

ACP
INITIALS

SIGNED

72336 MWB
PE Number INITIALS

DATE 10/29/2009

1 1 1 1 1 N N N
SURVEY

DATE 2/23/2010

DECK

FLOOR: SPALL IN BAY #5 BETWEEN 1ST & 2ND XFRAMES WEST OF PIER #1; SEE ATTACHED PHOTOS 1 & 2 DATED 10/05/05. PLYWOOD CAST INTO FLOOR ALONG LEFT FACE OF TOP FLANGE OF LEFT BEAM ABOVE FINISH CHANNEL PROTECTION; SEE ATTACHED PHOTOS 3 & 4 DATED 11/07/05. A FEW CRACKS. FLOOR <1% DETERIORATED. WEARING SURFACE: A FEW CRACKS. <1% DETERIORATED. DRAINAGE: PARTIALLY PLUGGED SCUPPERS.

SUPERSTRUCTURE

BEAMS: PACK RUST BETWEEN SOME COVER PLATES & BOTTOM FLANGES. RUSTED SECTION LOSS. RUSTING SECTION LOSS OF LEFT BEAM WITH RUSTED THRU HOLES IN COVER PLATES IN SPAN #2. BOTTOM FLANGE COVER PLATE OF BEAM #5 IS BENT IN SPAN #2 NEAR PIER #2; SEE ATTACHED PHOTO 6 DATED 10/05/05. NO COPE HOLES AT INTERSECTING WELDS WHERE BEAMS ARE JOINED ABOVE PIERS. CROSSFRAMES: SEE PHOTO DATED 10/29/09. PCS: 2% RUST. 1-5% DETERIORATED.

SUBSTRUCTURE

ABUTMENTS: CRACKS. MINOR DELAMINATIONS. PIERS: FAILED PATCHES AND SPALLS ON COLUMNS; SEE ATTACHED PHOTOS 7 & 8 DATED 9/25/07. CAP SPALL ABOVE P2C5R; SEE ATTACHED PHOTO 9 DATED 10/05/05. SCOUR: CONCRETE ENCASEMENTS OF 3 COLUMNS OF PIER #1 ARE UNDERMINED. NO CHANGE FROM LAST DIVE INSPECTION ON 9/25/07 THAT IS ATTACHED WITH THIS REPORT.

APPROACHES

PAVEMENT: A FEW CRACKS.

GENERAL

BOATING INSPECTION WITH AH & KB.

CUY-90-2043L CEI outlet channel
SFN 1808311 by acp



Cracked weld.JPG



1808311 10_5_05 P1 floor spall span 1 bay 5.jpg



1808311 10_5_05 P2 closeup of P1.jpg



1808311 11_7_05 P3 plywood cast into floor.jpg



1808311 11_7_05 P4 closeup of P3.jpg



1808311 10_5_05 P6 bent beam 5 cover plate.jpg



1808311 10_5_05 P7 deep spalling of P1C15.jpg



1808311 10_5_05 P8 deep spalling of P1C15.jpg



1808311 10_5_05 P9 cap spall above P2C5R.jpg

1808311

Structural File Number

CUY-00090-2046L

Bridge Number

September 25, 2007

Inspection Date

Underwater Inspection Report for:

Interstate 90 over C.E.I Outlet
Cuyahoga County, Ohio
(Three Span Steel Beam Bridge)



General Elevation View

Personnel on site during inspection:

ODOT

Ms. Andrea Persanyi

Contractor

Mr. Don W. Wilkins (Primary Diver/ Supervisor)
Mr. James A. Ritchie (Backup Diver/ Inspector)
Mr. Chris J. Kupper (Backup Diver/ Inspector)
Mr. Brian B. Butler (Tender)

Prepared for:

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Prepared by:



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1808311

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1. Introduction

Marine Solutions, Inc (MSI) conducted a routine underwater inspection of the CUY-00090-2046L bridge over the C.E.I water outlet plant in the City of Cleveland, Ohio. The inspection was completed on September 25, 2007. Details of the inspection, along with observed conditions and conclusions, are provided within this report. Supplemental drawings, pictures and a location map are provided within the Appendixes.

2. Description of Structure

Bridge CUY-00090-2046L (SFN 1808311) carries Interstate 90 over the C.E.I water outlet located in Cuyahoga County, Ohio. The bridge has an overall length of approximately 184 feet. The structure is a three span steel beam bridge supported by 40 concrete encased steel pier pilings.

3. Inspection Procedure

The inspection was performed on September 25, 2007. A visual/tactile inspection was performed on the portions of the piers located below the water surface. Soundings were performed up to 30 feet out from each face of the pier. Original plans were not available for review.

Inspection Mode: *Surface Supplied Air diving (SSA)*

Flow Direction / Velocity: *North/ < 1 knot*

Channel Bottom: *Silt, sand, gravel, and cobbles*

Scour Checked By: *N/A*

Equipment Used: *Superlite 37 helmet with hardwire communication to the surface, wet suit, digital camera, survey rod, lights*

Hazards Encountered: *< 2 ft of visibility*

Hydrographic Reference: Pier 1, top of concrete pile cap to the water surface, 7.9 feet

4. Observed Conditions

General

- The bottom material consists of silt, sand, gravel and cobbles.
- Light to moderate scaling is present on the concrete surface of the pier below the water surface.
- Light biological growth is present on the concrete surface of the pier below the water surface.
- Zebra mussel coverage on the concrete surface of the piles below the water surface was 95 to 100 percent.

Pier 1

- Pile 1, area of section loss up to 1 inch tall by 6 inches wide with up to 2 inches of penetration located on the north face.

- Pile 2, area of section loss up to 6 inches tall by 6 inches wide with up to 4 inches of penetration located on the northwest face.
- Pile 4, area of section loss up to 2 inch tall with up to 2.5 inches of penetration located at the bottom of the north face and extending around to the south face.
- Pile 5, area of section loss up to 4 inch tall with up to 3.5 inches of penetration located at the bottom of the north face and extending around to the south face.
- Pile 6, area of section loss above the water surface with exposed rebar. There are also sand bags around the entire pile at the bottom.
- Pile 7, area of section loss up to 4 inch tall with up to 4 inches of penetration located at the bottom of the north face and extending around to the south face.
- Pile 14, area of section loss up to 10 inch tall with up to 6 inches of penetration located at the bottom of the west face and extending around to the east face.
- Pile 15, area of section loss up to 4 inch tall with up to 6 inches of penetration located at the bottom of the west face and extending around to the south face.

Pier 2

- Pile 1, area of section loss up to 4 inch tall with up to 1.5 inches of penetration located at the water surface.
- Pile 19, area of section loss up to 6 inch diameter with up to 1/2 inch of penetration located at the surface on the southeast face.

5. Conclusions

The condition of the bridge during the 2007 inspection was consistent with the 2006 inspection report. Several of the piles have new and or additional areas of section loss. The bridge is in good condition with only minor deficiencies noted.

Appendix A
Photographs



Photo by B. Butler 09/25/07

Photo 1. Elevation view looking upstream (south).



Photo by B. Butler 09/25/07

Photo 2. Pier 1L (southeast).



Photo by B. Butler 09/25/07

Photo 3. Pier 2L (southwest).

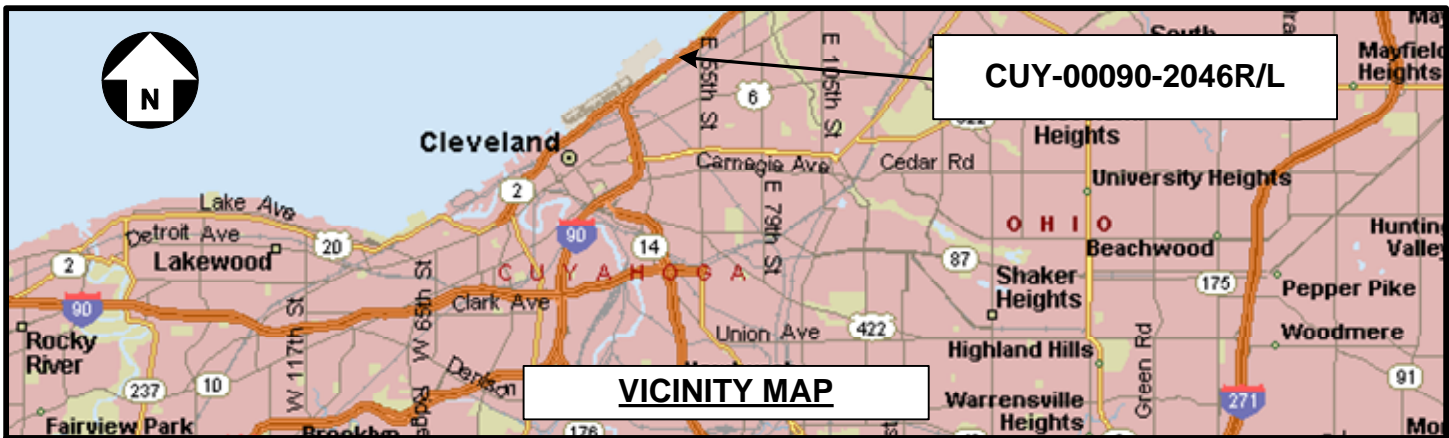



Photo by B. Butler 09/25/07

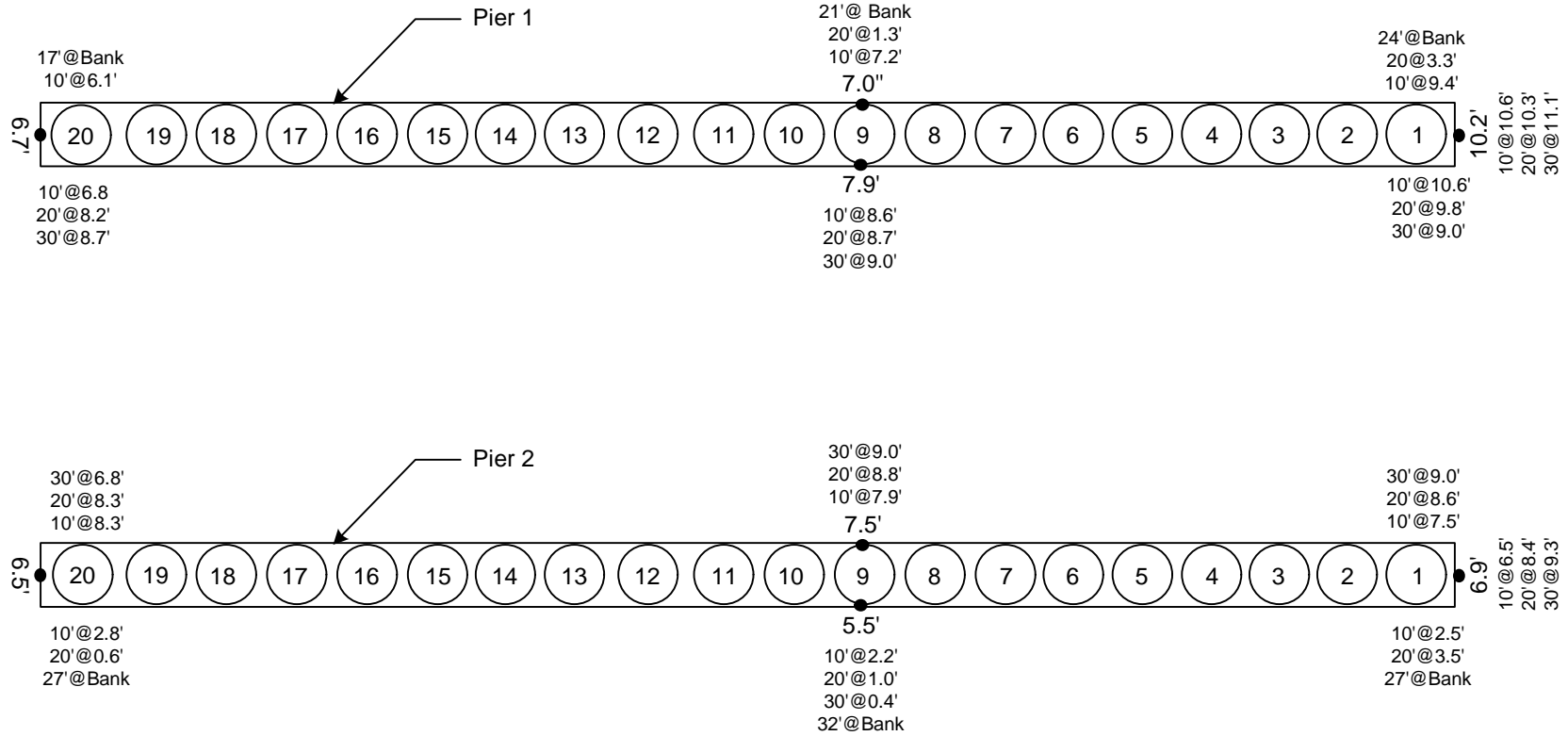
Photo 4. Typical Section Loss.

Appendix B

Figures



 <p>MSI MARINE SOLUTIONS, INC. ENGINEERING & COMMERCIAL DIVING SERVICES</p>	GRAPHIC SCALE: Not To Scale		PROJECT: ODOT District 12 2007 Underwater Bridge Inspections		
	INSPECTION DATE: September 25, 2007		SHEET: CUY-00090-2046R/L Cuyahoga County Ohio		PAGE NO.: B-1
	DRAWN BY: DW	CKD. BY: ANW	Location Map		
	MSI JOB NO.: MSI2007008				
	FILE NAME: CUY-00090-2046R/L Location Map				



GRAPHIC SCALE:
Not to Scale

INSPECTION DATE: **October 25, 2007**

DRAWN BY: **DW** CKD. BY: **ANW**

FMSM JOB NO.: **MSI2007008**

FILE NAME: **CUY-00090-2046L - Plan**

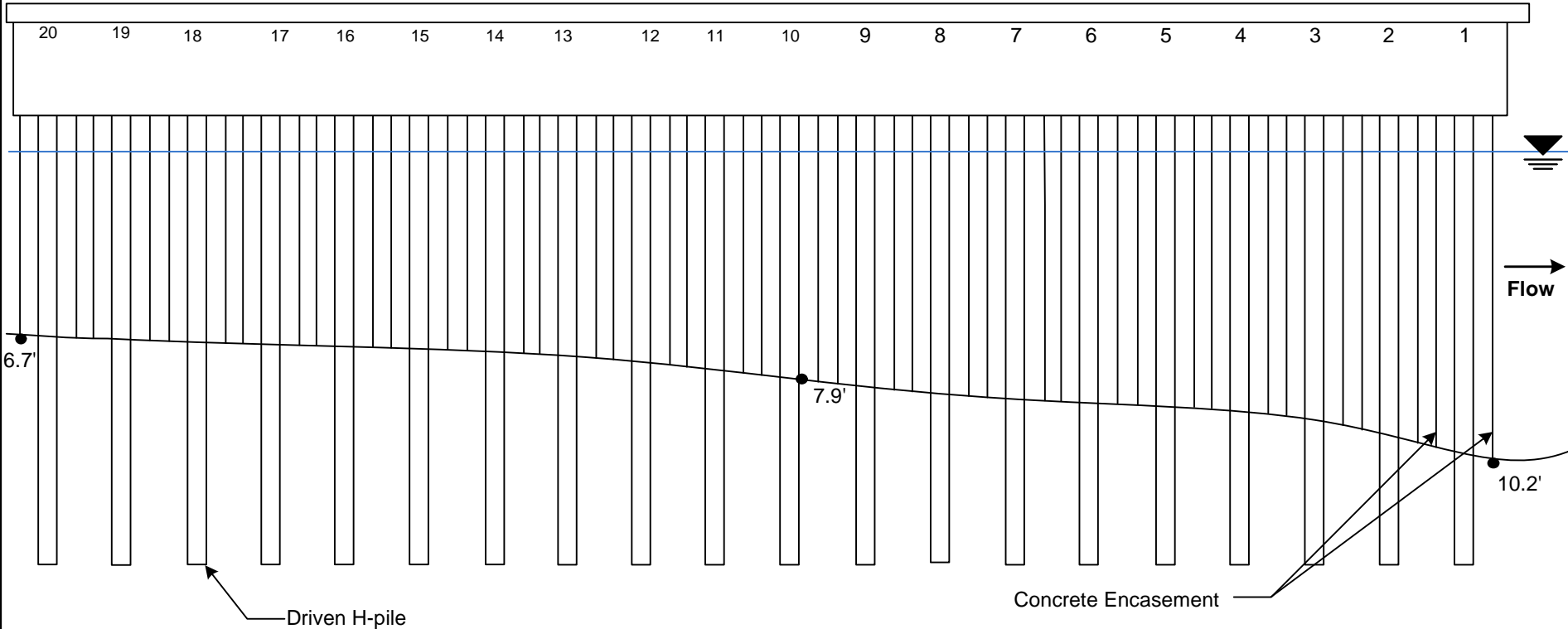
PROJECT: **ODOT District 12
2007 Underwater Bridge Inspections**

SHEET: **CUY-00090-2046L
I90 over C.E.I Outlet
City of Cleveland**

Substructure Plan View

PAGE NO.:
B-2

FIG. NO.:
2



Pier 1 Looking West



GRAPHIC SCALE:
Not to Scale

PROJECT: ODOT District 12
2007 Underwater Bridge Inspections

INSPECTION DATE: October 25, 2007

SHEET: CUY-00090-2046L
I90 over C.E.I Outlet
City of Cleveland

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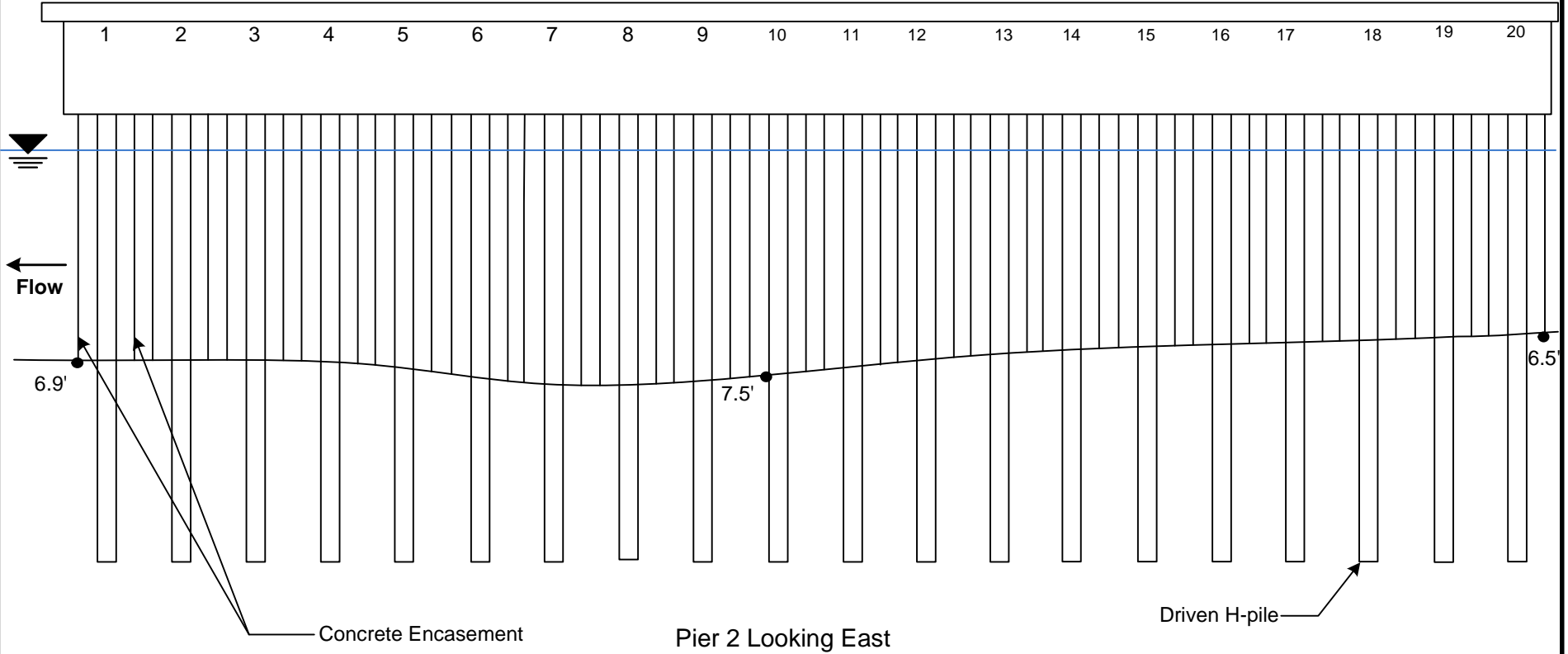
DRAWN BY: DW CKD. BY: ANW

FMSM JOB NO.: MSI2007008

FIG. NO.:
3

FILE NAME: CUY-00090-2046L - Pier 1

Pier 1 Looking West



GRAPHIC SCALE:
Not to Scale

INSPECTION DATE: **October 25, 2007**

DRAWN BY: **DW** CKD. BY: **ANW**

FMSM JOB NO.: **MSI2007008**

FILE NAME: **CUY-00090-2046L - Pier 2**

PROJECT: **ODOT District 12
2007 Underwater Bridge Inspections**

SHEET: **CUY-00090-2046L
I90 over C.E.I Outlet
City of Cleveland**

Pier 2 Looking East

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FIG. NO.:
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