

BRIDGE INSPECTION REPORT

1808311
Structure File Number

BRIDGE NUMBER CUY 00090 2046 L

YEAR BUILT 1952

DIST 12 Bridge Type 322 TYPE SERVICE 1 5 CEI OUTLET CHANNEL

DECK	out/out 78.3 Deck Area 14,413 sqft		2 INTEGRAL CONCRETE (MONOLITHIC)	
1. FLOOR	1 REINF CONCRT (PRESTRSD, PRECAST)	1	2. WEARING SURFACE	1
	Left N NONE / Right N NONE			
3. CURBS, SIDEWALKS AND WALKWAYS			4. MEDIAN	
			Lanes on 4	
5. RAILING	1 REINFORCED CONCRETE PARAPET	1	6. DRAINAGE	2
			3 SCUPPERS & DWNSPTS	
7. EXPANSION JOINTS	N NONE		8. SUMMARY	7
SUPERSTRUCTURE				
9. ALIGNMENT	Max Spans 60	1	10. BEAMS/GIRDERS/SLAB	2
			3 ROLLED STEEL	
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	1
			3 SLIDING (BRONZE)	
25. ARCH			26. ARCH COLUMNS or HANGERS	
27. SPANDREL WALLS			28. PROTECTIVE COATING SYSTEM	7
			Paint Date 1/1/1993	
29. PINS/HANGERS/HINGES			5 PAINT SYSTEM OZE	
			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	1
			6 STUB-CAPPED PILE (SINGLE ROW PILES)	
35. PIERS		2	36. PIER SEATS	1
			B TOWER	
37. BACKWALLS			Piers: ON PILING	
39. FENDERS and DOLPHINS	Piers = 02 NN NN Spans = 3		40. SCOUR	1
				3
41. SLOPE PROTECTION	N NONE-NATURAL PROTECTION(GRA)		42. SUMMARY	6
			Dive Date 12/30/1899	
CULVERTS				
43. GENERAL	N NONE/NOT APPLICABLE		44. ALIGNMENT	
45. SHAPE			46. SEAMS	
47. HEADWALLS or ENDWALLS	Culvert Length 0		48. SCOUR	
49.			50. SUMMARY	
CHANNEL				
51. ALIGNMENT		1	52. PROTECTION	1
	8 SLIGHT CHANCE OVERTOPPING		5 RIP RAP (DUMPED ROCK OR ROCK)	
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	8
			Percent Legal = 150	
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	SIGNED	60048 MJM
		INITIALS		PE Number INITIALS
DATE 9/25/2007			DATE 3/15/2008	
		1 1 1 1 1 N N N		
		SURVEY		

DECK

FLOOR: SPALL IN BAY #5 BETWEEN 1ST AND 2ND CROSSFRAMES WEST OF PIER #1; SEE ATTACHED PHOTOS P1 AND P2 DATED 10/05/05. PLYWOOD CAST INTO FLOOR ALONG LEFT FACE OF TOP FLANGE OF LEFT BEAM ABOVE FINISH CHANNEL PROTECTION; SEE ATTACHED PHOTOS P3 AND P4 DATED 11/07/05. FLOOR <1% DETERIORATED. WEARING SURFACE: WS <1% DETERIORATED.

DRAINAGE: PARTIALLY PLUGGED SCUPPERS. DIRT AND DEBRIS IN RIGHT BERM.

SUPERSTRUCTURE

BEAMS: PACK RUST BETWEEN SOME COVER PLATES AND 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 P6 DATED 10/05/05. NO COPE HOLES AT INTERSECTING WELDS WHERE BEAMS ARE JOINED ABOVE PIERS.

PAINT: 2% RUST. PAINT IS 1-5% DETERIORATED.

SUBSTRUCTURE

ABUTMENTS: CRACKS. MINOR DELAMINATIONS.

PIERS: FAILED PATCHES AND SPALLS ON COLUMNS; SEE ATTACHED PHOTOS P7 AND P8 DATED 9/25/07. MARINE SOLUTIONS, INC. INSPECTED PIERS BELOW WATERLINE ON 9/25/07. CAP SPALL ABOVE P2C5R; SEE ATTACHED PHOTO P9 DATED 10/05/05.

SCOUR: CONCRETE ENCASEMENTS OF 3 COLUMNS OF PIER #1 ARE UNDERMINED. MARINE SOLUTIONS, INC. INSPECTED BELOW WATERLINE ON 9/25/07.

GENERAL

UNDERWATER INSPECTION BY MARINE SOLUTIONS, INC. ON 9/25/07.

INSPECTED FROM A BOAT ON 09/25/07.



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:

ODOT District 12

5500 Transportation Blvd

Garfield Heights, Ohio 44125

Prepared by:



Marine Solutions, Inc.

250 Gold Rush Drive, Suite 4

Lexington, Kentucky 40503

Phone: (859) 260-1055

awilkins@MSIdiving.com

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Appendix A Photographs

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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).

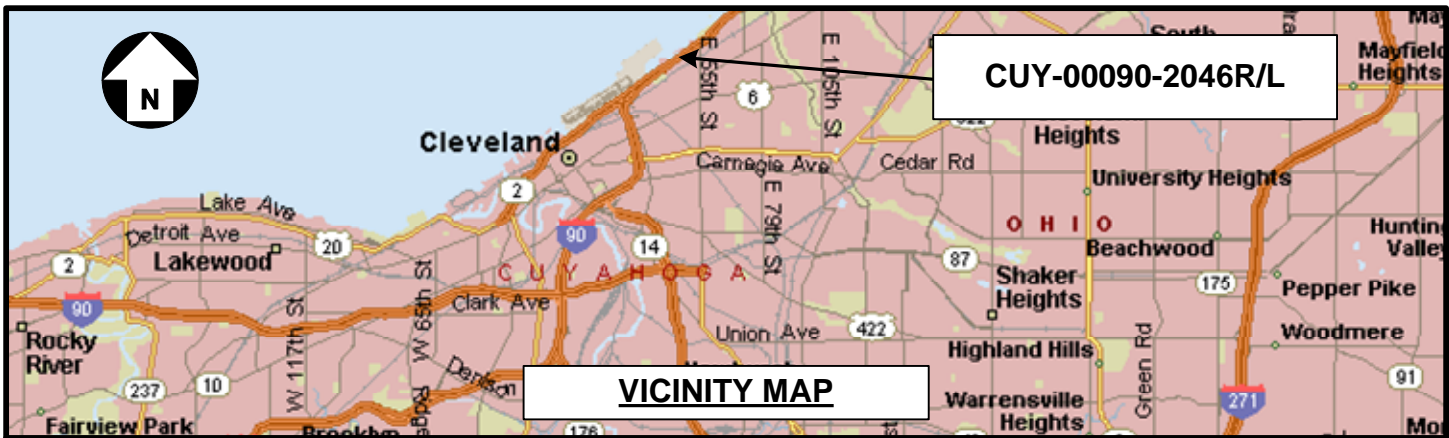



Photo by B. Butler 09/25/07

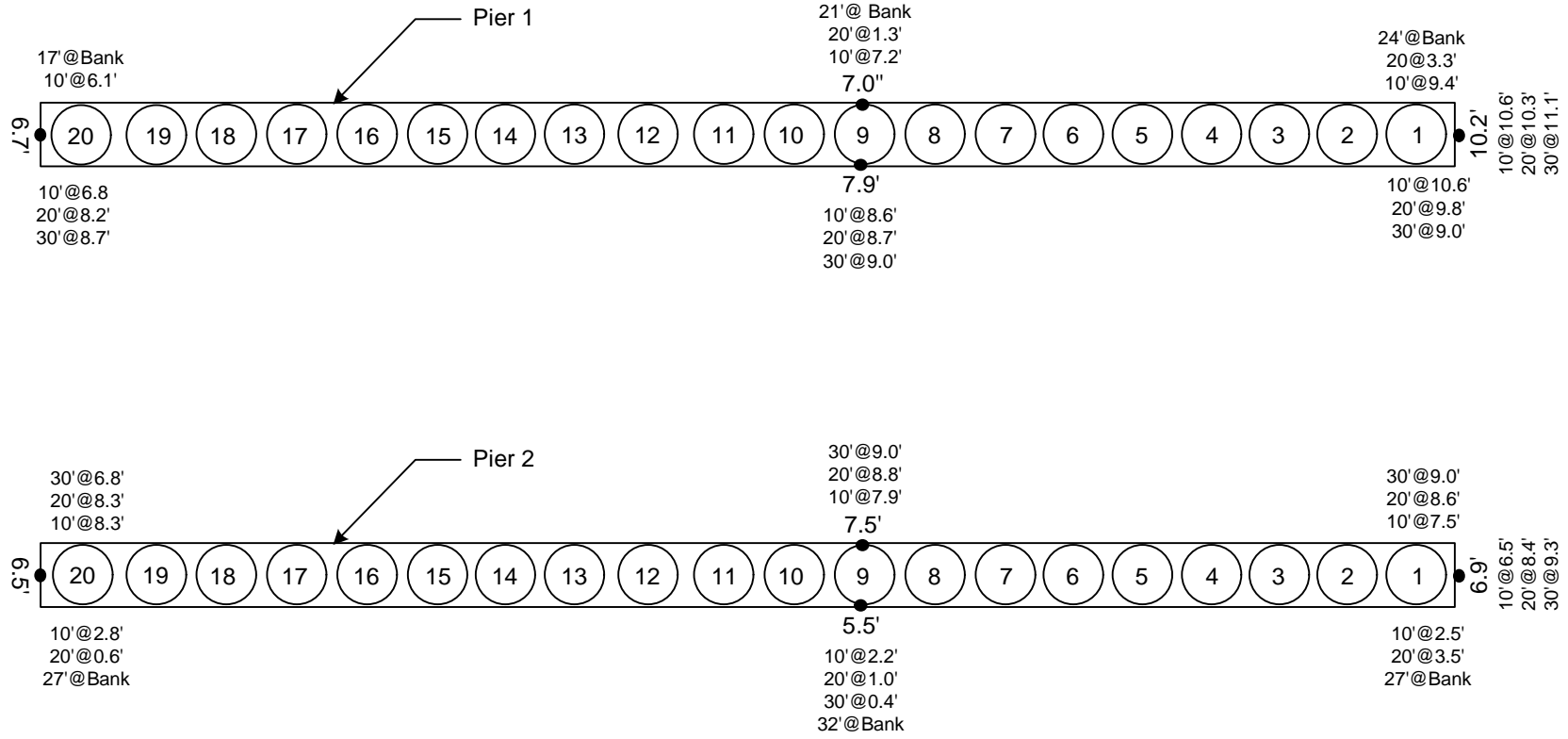
Photo 4. Typical Section Loss.

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

PROJECT:
ODOT District 12
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INSPECTION DATE: **October 25, 2007**

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I90 over C.E.I Outlet
City of Cleveland**

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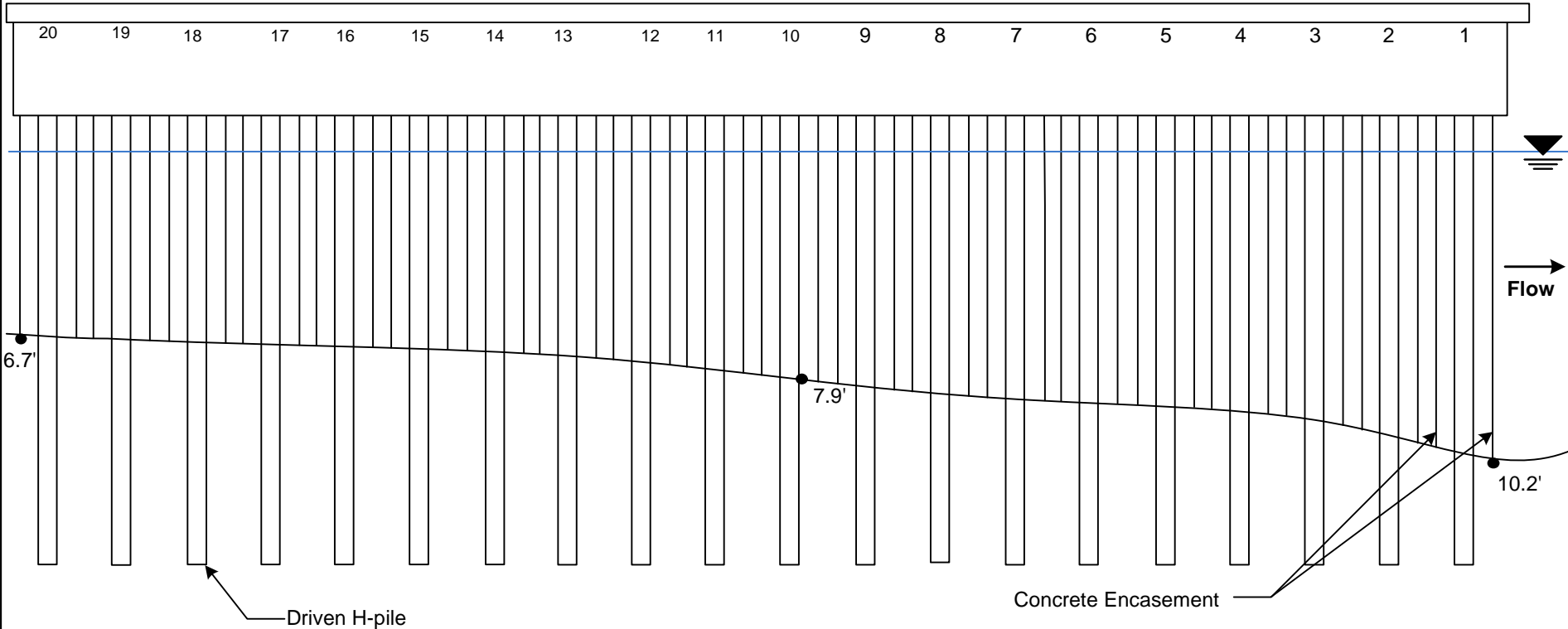
DRAWN BY: **DW** CKD. BY: **ANW**

FMSM JOB NO.: **MSI2007008**

FIG. NO.:
2

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

Substructure Plan View



Pier 1 Looking West



GRAPHIC SCALE:
Not to Scale

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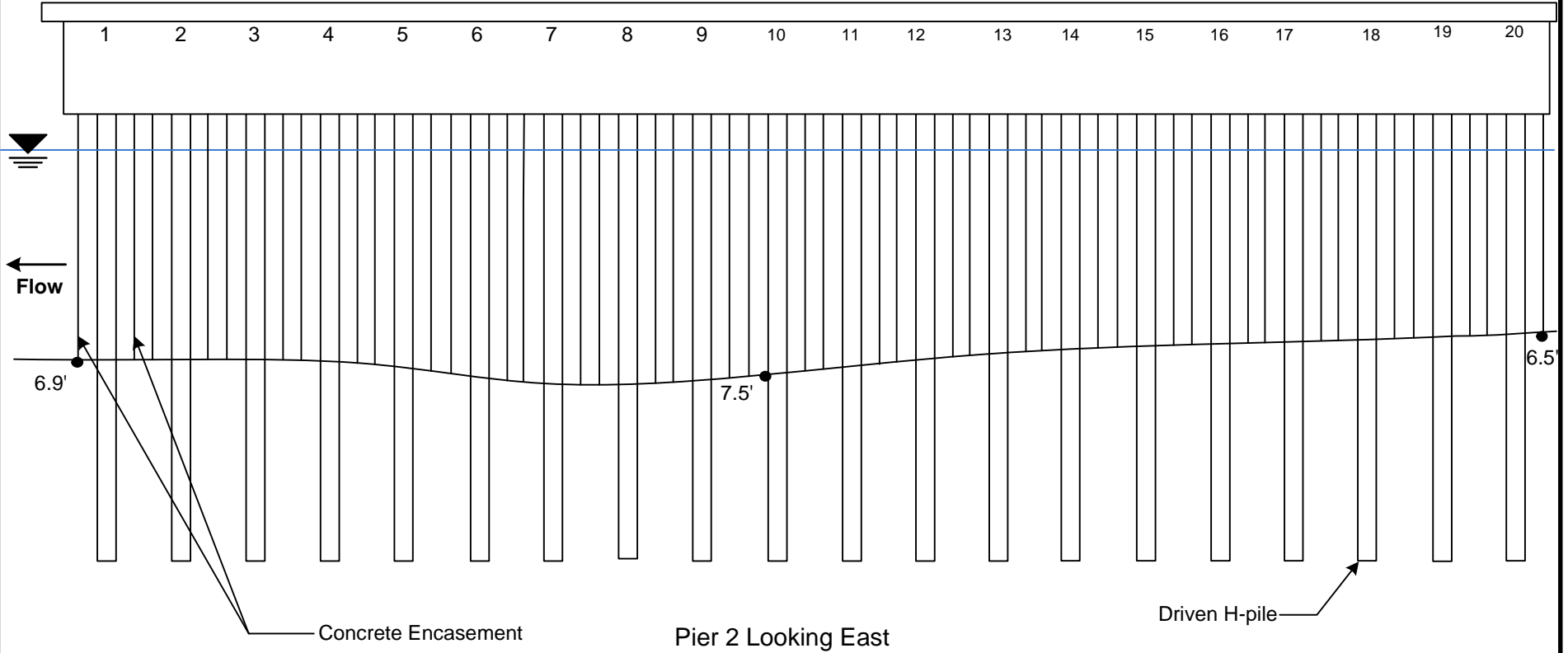
DRAWN BY: **DW** CKD. BY: **ANW**

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	PAGE NO.: B-4
Pier 2 Looking East	FIG. NO.: 4