

## BRIDGE INSPECTION REPORT

1808745  
Structure File Number

BRIDGE NUMBER CUY 00090 2043 R

YEAR BUILT 1938

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

<b>DECK</b> out/out 77.4 Deck Area 14,241 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		1
			0 OTHER-NATURAL(OFF THE BRIDGE ENDS)		
7. EXPANSION JOINTS			8. SUMMARY		8
N NONE					
<b>SUPERSTRUCTURE</b>			3 ROLLED STEEL		
9. ALIGNMENT	Max Spans 60	1	10. BEAMS/GIRDERS/SLAB		2
11. DIAPHRAGMS or CROSSFRAMES		2	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		
			5 PAINT SYSTEM OZE		
29. PINS/HANGERS/HINGES			30. FATIGUE PRONE CONNECTIONS		
31. LIVE LOAD RESPONSE		S	32. SUMMARY		6
<b>SUBSTRUCTURE</b>			6 STUB-CAPPED PILE (SINGLE ROW PILES)		
33. ABUTMENTS	6 STUB-CAPPED PILE (SINGLE ROW PILES)	2	34. ABUTMENT SEATS		1
			Abutment: ON PILING		
35. PIERS		2	36. PIER SEATS		1
			B TOWER		
			Piers: ON PILING		
37. BACKWALLS			38. WINGWALLS		1
39. FENDERS and DOLPHINS			40. SCOUR		1
Piers = 02 NN NN			2		
Spans = 3					
41. SLOPE PROTECTION			42. SUMMARY		6
N NONE-NATURAL PROTECTION(GRA			Dive Date 12/30/1899		
<b>CULVERTS</b>					
43. GENERAL	N NONE/NOT APPLICABLE		44. ALIGNMENT		
45. SHAPE			46. SEAMS		
47. HEADWALLS or ENDWALLS			48. SCOUR		
Culvert Length 0			Culvert Fill Depth 0		
49.			50. SUMMARY		
<b>CHANNEL</b>					
51. ALIGNMENT		1	52. PROTECTION		2
8 SLIGHT CHANCE OVERTOPPING			5 RIP RAP (DUMPED ROCK OR ROCK)		
53. WATERWAY ADEQUACY		1	54. SUMMARY		6
<b>APPROACHES</b>					
55. PAVEMENT	2 BITUMINOUS	1	56. APPROACH SLABS		1
57. GUARDRAIL		1	58. RELIEF JOINTS		
1 STEEL BEAM					
59. EMBANKMENT		1	60. SUMMARY		7
			Percent Legal = 150		
<b>GENERAL</b>					
61. NAVIGATION LIGHTS			62. WARNING SIGNS		
			Maint Resp 1 OHIO TRAN DEPT		
63. SIGN SUPPORTS			64. UTILITIES		
Signs on = N					
MVC on = 9999.9					
Under C = 0					
65. VERTICAL CLEARANCE		N	66. GENERAL APPRAISAL & OPERATIONAL STATUS		6
Under NC = 0					A
67. INSPECTED BY			68. REVIEWED BY		
ACP			72336		MWB
SIGNED		PE Number	SIGNED		PE Number INITIALS
DATE 10/29/2009		INITIALS	DATE 3/2/2010		
			1 1 1 1 1 N N N		
			SURVEY		

## DECK

FLOOR: A FEW CRACKS. <1% DETERIORATED.

WEARING SURFACE: A FEW CRACKS. <1% DETERIORATED.

## SUPERSTRUCTURE

BEAMS: RUSTING & RUSTED SECTION LOSS. NO SPLICE PLATES ON THE BOTTOMS OF THE LOWER FLANGES AT THE FIELD SPLICES IN SPAN #2; SEE ATTACHED PHOTO 1 DATED 10/05/05.

XFRAMES: RUSTED THRU HOLES IN A FEW CROSSFRAMES; SEE ATTACHED PHOTOS 2 & 3 DATED 10/05/05 (1ST XFRAME WEST OF PIER #1 IN BAY #5R). BENT CHANNEL OF FIRST XFRAME EAST OF PIER #2 IN BAY #3; SEE ATTACHED PHOTO 4 DATED 9/25/07.

PCS: 2% RUST. 1-5% DETERIORATED.

## SUBSTRUCTURE

ABUTMENTS: CRACKS. A FEW DELAMINATIONS AND SPALLS; SEE ATTACHED PHOTOS P5 AND P6 DATED 11/07/05 (START ABUTMENT BELOW BEAM #8).

PIERS: FAILED PATCHES AND SPALLS ON COLUMNS.

SCOUR: NO CHANGE FROM LAST DIVE INSPECTION ON 9/25/07 THAT IS ATTACHED WITH THIS REPORT.

## CHANNEL

PROTECTION: 28" OF START ABUT FOOTER EXPOSED & 6" OF FINISH ABUT FOOTER EXPOSED TO AIR.

## APPROACHES

GUARDRAIL: MINOR COLLISION DAMAGE TO FINISH-RIGHT.

## GENERAL

INSPECTION BY BOAT WITH AP, KB & AH.





1808745 10\_5\_05 P1 no lower splice plates.jpg



1808745 10\_5\_05 P2 rusted thru holes in xframe.jpg



1808745 10\_5\_05 P3 closeup of P2.jpg



1808745 10\_5\_05 P4 bent crossframe channel.jpg





1808745 11\_7\_05 P5 start abut delamination & spall.jpg



1808745 11\_7\_05 P6 closeup of P5.jpg



1808745

Structural File Number

CUY-00090-2046R

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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### Appendix

Appendix A Photographs

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## **1. Introduction**

Marine Solutions, Inc (MSI) conducted a routine underwater inspection of the CUY-00090-2046R 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-00090-2046R (SFN 1808745) 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 30 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**

- No section loss of the piles was observed.

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*Inspection Date*

**Pier 2**

- Pile 14, area of section loss up to 4.5 inch tall with up to 6 inches of penetration located on the bottom on the north, west and south faces.

**5. Conclusions**

The condition of the bridge during the 2007 inspection was consistent with the 2006 inspection report. 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 1R (north).



Photo by B. Butler 09/25/07

Photo 3. Pier 2R (southwest).



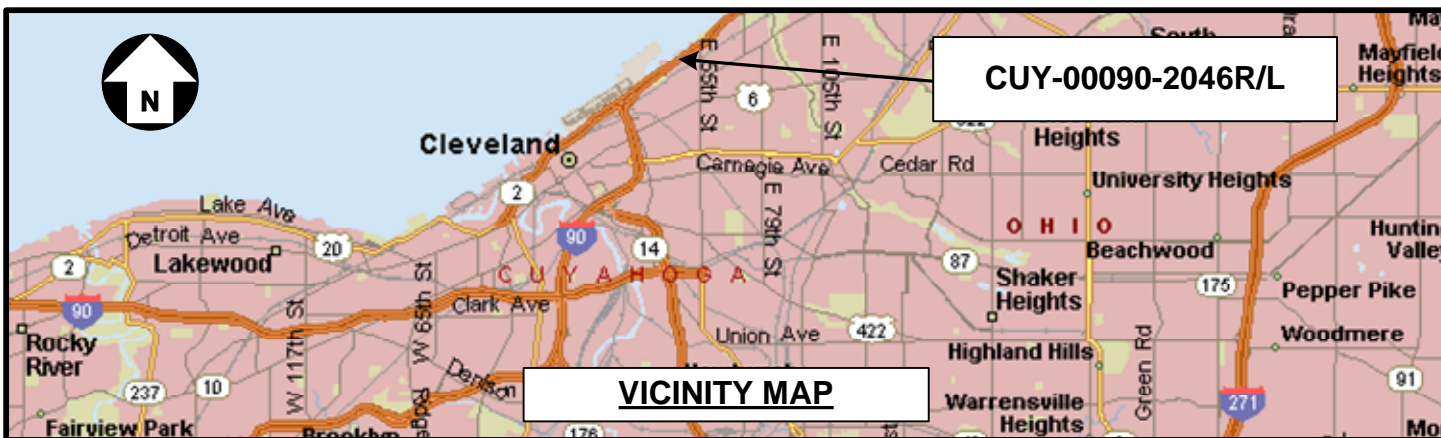
Photo by B. Butler 09/25/07

Photo 4. Typical Section Loss.

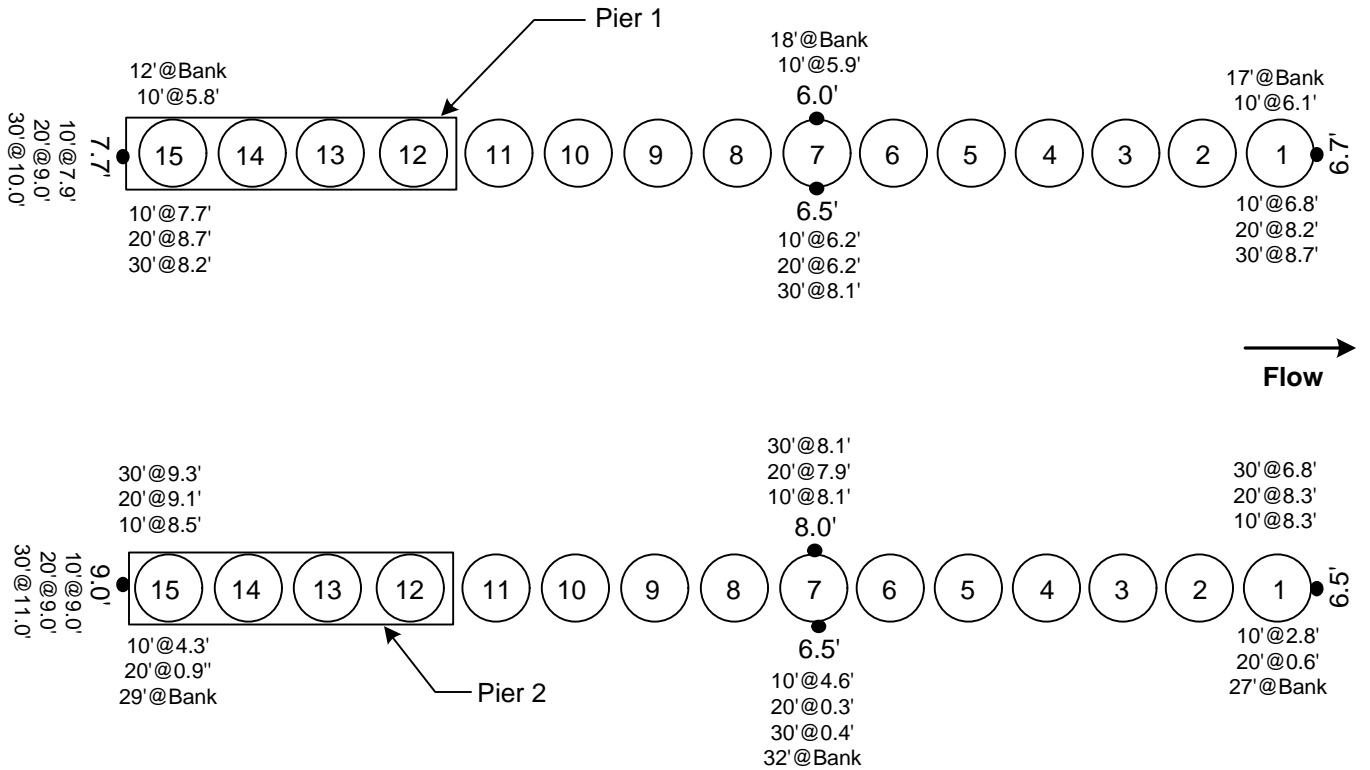


Appendix B

Figures



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



**Legend:**

● Depth below water  
92.0'

**Notes:**

Pier cap not shown for  
clarity.



GRAPHIC SCALE:  
**Not to Scale**

PROJECT:  
ODOT District 12  
2007 Underwater Bridge Inspections

INSPECTION DATE: **October 25, 2007**

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

PAGE NO.:  
**B-2**

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

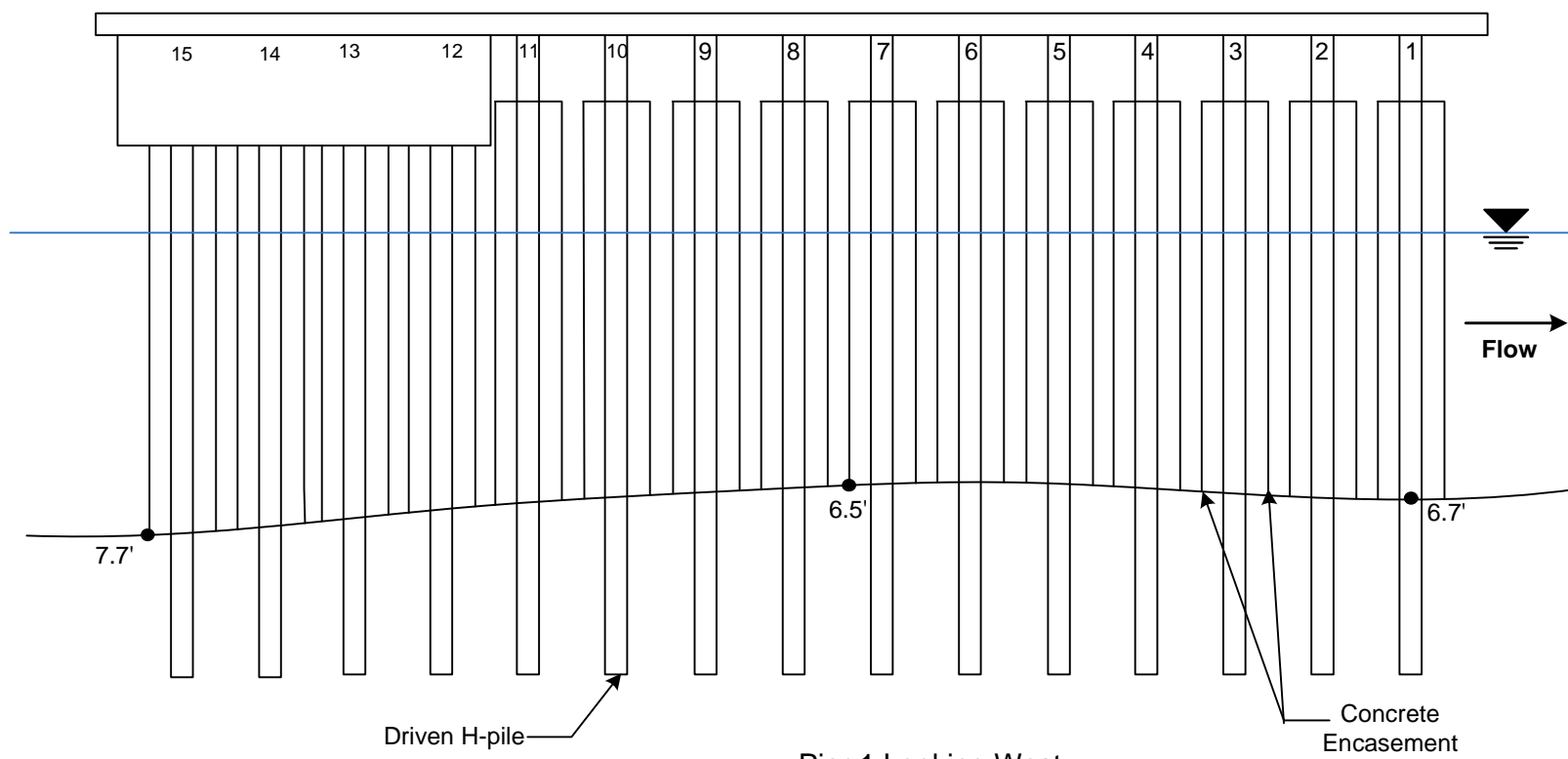
FMSM JOB NO.: **MSI2007008**

FIG. NO.:  
**2**

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

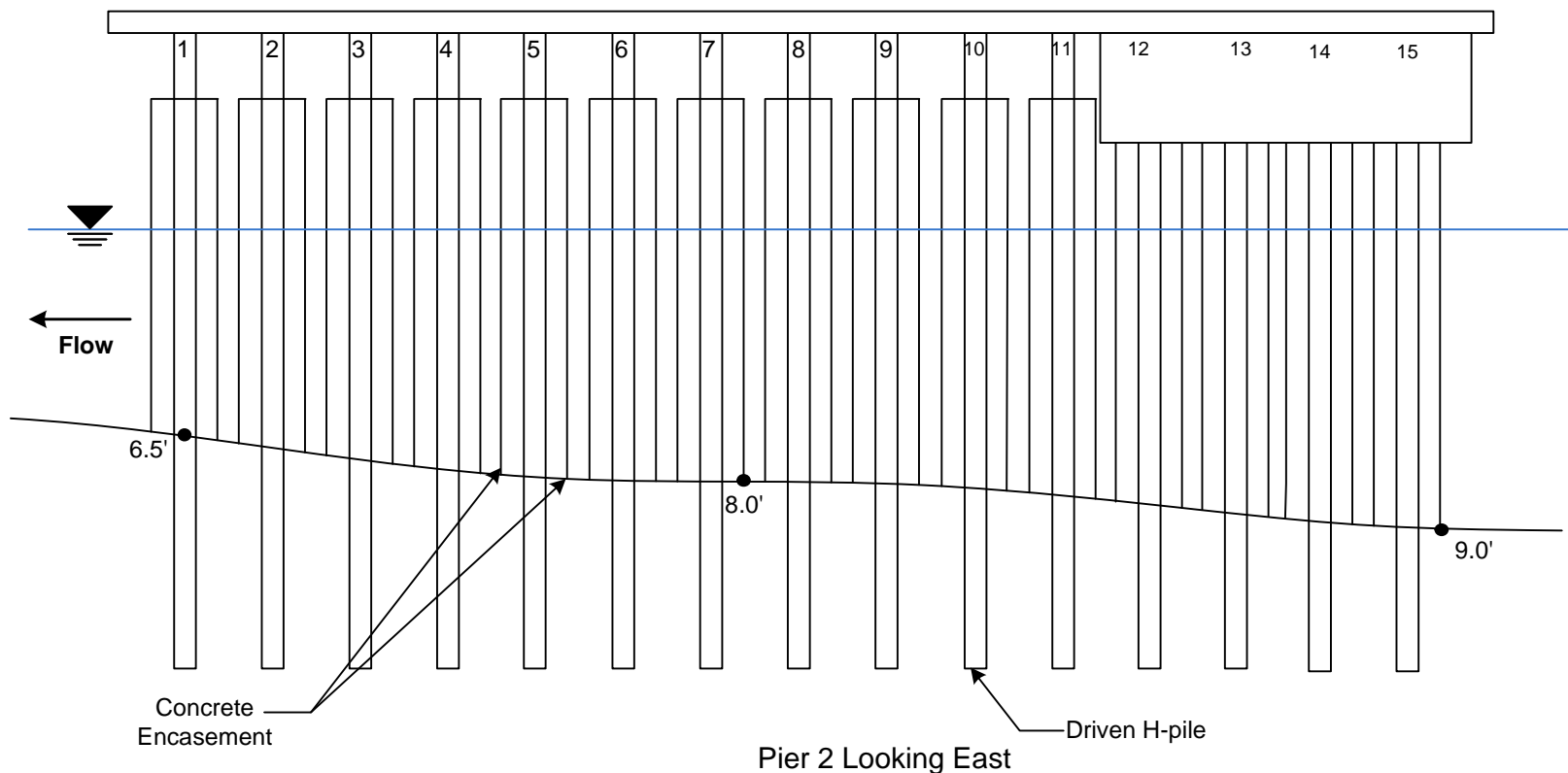
**Substructure Plan View**





Pier 1 Looking West

<p><b>MSI</b> MARINE SOLUTIONS, INC. ENGINEERING &amp; COMMERCIAL DIVING SERVICES</p>	GRAPHIC SCALE: <b>Not to Scale</b>		PROJECT: ODOT District 12 2007 Underwater Bridge Inspections	
	INSPECTION DATE: <b>October 25, 2007</b>		SHEET: <b>CUY-00090-2046R</b> <b>I90 over C.E.I Outlet</b> <b>City of Cleveland</b>	PAGE NO.: <b>B-3</b>
	DRAWN BY: <b>DW</b>	CKD. BY: <b>ANW</b>		
	FMSM JOB NO.: <b>MSI2007008</b>		Pier 1 Looking West	FIG. NO.: <b>3</b>
FILE NAME: <b>CUY-00090-2046R - Pier 1</b>				



 <b>MSI</b> MARINE SOLUTIONS, INC. ENGINEERING & COMMERCIAL DIVING SERVICES	GRAPHIC SCALE: <b>Not to Scale</b>		PROJECT: ODOT District 12 2007 Underwater Bridge Inspections		
	INSPECTION DATE: <b>October 25, 2007</b>		SHEET: <b>CUY-00090-2046R</b> <b>I90 over C.E.I Outlet</b> <b>City of Cleveland</b>		PAGE NO.: <b>B-4</b>
	DRAWN BY: <b>DW</b>	CKD. BY: <b>ANW</b>			FIG. NO.: <b>4</b>
	FMSM JOB NO.: <b>MSI2007008</b>		<b>Pier 2 Looking East</b>		
FILE NAME: <b>CUY-00090-2046R - Pier 2</b>					