







UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. SFN7900511
US-36 RAMP OVER BIG STILLWATER CREEK
TUSCARAWAS COUNTY, OH
DISTRICT 11



Prepared for:

Prepared by:

COLLINS ENGINEERS INC.

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EXECUTIVE SUMMARY

Project: ODOT D11 Underwater Bridge Inspections - 2022.

Purpose of Project: To perform a detailed visual and tactile underwater investigation of bridges for the Ohio Department of Transportation, District 11.

Inspection Team: Team Leader – Joshua Johnson, P.E. – Collins Engineers, Inc.
Team Member – Matthew Rogers, P.E. – Collins Engineers, Inc.
Team Member – Kurt Lingo, E.I.T. – Collins Engineers, Inc.

Inspection Date(s): May 3, 2022

Water Visibility:	1.5 ft	***Water Velocity:***	1 ft/s
Water Temperature:	60 °F	***Weather:***	Cloudy/Rain – 72 °F
Waterline Elevation:	82.8 ft	***Type of Boat:***	10 ft Kayak
Coordinates:	40.4024°N, 81.3490°W		
Access Location:	Upstream side embankment at Abutment 2		
Dive Mode:	Surface Supplied Air		
Waterline Reference:	17.2 ft below the top of deck at the upstream nose of Pier 2.		
Maximum Depth at SSU:	3.8 ft – Midpoint of West Face of Pier 3		
Shoreline Conditions:	The east and west shorelines consisted of heavily vegetated 2 ft vertical cut banks with trees up to 3 ft in diameter.		

Summary of Findings:

- **Pier 2:**
  - The submerged portions of the pier exhibited light scaling up to 1/16 in. deep from the channel bottom to 2 in. above the waterline.
  - Heavy timber debris accumulation consisting of a tree with diameter up to 2 ft and approximately 50 ft long was observed resting on the upstream nose and all along the east face apron of the pier.
  - The footing on the east face of the pier was exposed from the upstream nose to the downstream nose. At the upstream nose, the footing was exposed for up to 1.8 ft vertical before getting covered by timber debris
  - The footing was exposed 1.3 ft vertical at the midpoint of the east face of the pier.
  - A scour depression was observed on the west face of the pier.
- **Pier 3:**
  - The submerged portions of the pier exhibited light scaling up to 1/16 in. deep from the channel bottom to 2 in. above the waterline.

Summary of Recommendations:

- Monitor footing exposure.

Underwater Inspection Coding:

NBI Ratings:

Item	Description	Coding	Condition
60	Substructure	7– Good Condition	Light Concrete Scaling
61	Channel	6 – Satisfactory Condition	Scour Depression, Mild Erosion, Timber Debris Accumulation
92B	UW Insp. Frequency	60 Months	
93B	Insp. Date	05 03 22	
113	Scour Critical Bridges	5 – Within Foundation Limits	Stable (Inspector Recommended)

AASHTO National Bridge Element (NBE) Ratings:

Element #	Description	Units	Total	Condition State			
				1	2	3	4
210	Reinforced Concrete Pier Wall	LF	40	40	0	0	0

Note: Ratings were developed using the FHWA Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges. The recommended ratings consider inspected elements located within the waterway and conditions existing below the water surface only. The Ohio Department of Transportation manual states inspectors can change NBI Rating to a 4, 2, 1 or 0 based on observations performed in the field. Additional consideration is necessary for the assignment of overall condition ratings for this bridge.

1.0 INTRODUCTION

1.1 Purpose and Scope

This report consists of the results of a detailed underwater investigation performed at the US-36 Ramp Bridge over Big Stillwater Creek in Tuscarawas County, OH. Collins Engineers, Inc. (Collins) conducted the underwater investigation for the Ohio Department of Transportation (ODOT), District 11 on May 3, 2022. The primary purpose of the investigation was as follows:

- Determine the condition of the substructure components located in the water at the time of the inspection from the waterline to the channel bottom.
- Obtain channel bottom depth measurements along the bridge fascias, upstream and downstream of the bridge, and around the submerged substructure units.
- Determine the condition of the shorelines in the vicinity of the structure.
- Obtain photographs of the bridge and any significant defects.

In addition, a brief inspection was made of areas that could be submerged during periods of high water. The following report includes a description of the structure, the method of investigation, a description of existing conditions, an evaluation and recommendations based on the conditions, inspection figures, and photographs.

1.2 General Description of the Structure

Structure No. SFN7900511 spans 164 ft, carrying US-36 Ramp over Big Stillwater Creek and is approximately 42 ft wide. The bridge superstructure is constructed of a continuous concrete slab. The roadway orientation of the longitudinal axis of the bridge is west to east. The substructure units are labeled as Abutments 1 and 2 and Piers 1 through 3. Existing design drawings were not available at the time of the inspection. Refer to Figure 1 in Exhibit 1 for a Location Map of the bridge. Refer to Photographs 1 through 4 in Exhibit 2 for overall views of the bridge.

1.3 Method of Investigation

A detailed field inspection was conducted to determine the physical condition of the submerged bridge substructure units from the waterline to the channel bottom. A brief visual examination of the substructure units above the waterline was also made.

A three-person team consisting of professional engineer-divers and team leaders (Joshua M. Johnson, P.E., and Matthew O. Rogers, P.E.) and an engineer-diver (Kurt Lingo, E.I.T.) conducted the underwater inspection. The inspection was conducted using surface supplied air diving equipment. During the inspection, the inspectors worked from a 10ft kayak and a note taker on the shore recorded the inspection notes.

The underwater inspection consisted of a visual and tactile examination of the accessible surfaces of the substructure units from the waterline to the channel bottom with particular attention given to any observed areas of deterioration or apparent distress. Approximately 10 percent of the total area on the underwater surfaces of the substructure units was cleaned so that the condition could be more closely examined. Photographs were taken to document the general conditions and observed deficiencies. The type of channel bottom material, the presence or extent of scour, the presence or extent of riprap, the presence or extent of drift and debris, and the location of any foundation exposure or undermining were noted.

Channel bottom soundings were performed utilizing a telescoping survey rod and digital fathometer. Soundings were taken parallel to the bridge at the upstream and downstream fascias, at 10 ft intervals between the substructure units, and at 10 ft intervals in-line with the piers upstream and downstream up to 50 ft, and the waterline was referenced to a known elevation on the bridge. A sounding plan was developed using the soundings and approximate location of the shorelines. Refer to Figures 2 through 8 in Exhibit 1 for the sounding plan, hydrographic survey, and channel cross sections that show the channel limits and water depths around the structure.

2.0 EXISTING CONDITIONS

2.1 General Conditions

At the time of the inspection, the waterline of Big Stillwater Creek was located approximately 17.2 ft below the top of deck at the upstream nose of Pier 2, which corresponds to a waterline elevation of 82.8 ft. During the inspection, the waterway was flowing at approximately 1 ft per second. The bridge pier skew was consistent with the channel alignment and does not require attention at this time. The east and west shorelines consisted of heavily vegetated 2 ft vertical cut banks with trees up to 3 ft in diameter. Refer to Photographs 6 through 11 in Exhibit 2 for views of the shorelines near the structure.

2.2 Substructure Conditions

2.2.1 Pier 2

The channel bottom material around Pier 2 consisted of silt and timber debris. The submerged portions of the pier exhibited light scaling up to 1/16 in. deep from the channel bottom to 2 in. above the waterline. Heavy timber debris accumulation consisting of a tree with diameter up to 2 ft and approximately 50 ft long was observed resting on the upstream nose and all along the east face apron of the pier. The footing on the east face of the pier were exposed from the upstream nose to the downstream nose. At the upstream nose, the footing was exposed for up to 1.8 ft vertical before getting covered by timber debris. The piles were exposed 1.3 ft vertical at the midpoint of the east face of the pier. A scour depression was observed on the west face of the pier. Refer to Figure 9 in Exhibit 1 for detailed inspection notes of Pier 2. Refer to Photographs 12 through 14 in Exhibit 2 for views of Pier 2 and typical concrete condition at the waterline.

2.2.2 Pier 3

The channel bottom material around Pier 3 consisted of silt and timber debris. The submerged portions of the pier exhibited light scaling up to 1/16 in. deep from the channel bottom to 2 in. above the waterline. Refer to Figure 10 in Exhibit 1 for detailed inspection notes of Pier 3. Refer to Photograph 15 in Exhibit 2 for a view of Pier 3.

3.0 EVALUATION AND RECOMMENDATIONS

Overall, the submerged substructure units of Structure No. SFN7900511 were in good condition below water. The footing exposure and scour depression at Pier 2 are not a concern at this time given that the bottom of the footing was embedded a minimum of 1.8 feet below the current channel bottom. The channel bottom configuration should continue to be closely monitored during future underwater inspections to verify that the footing exposure and the scour depression at Pier 2 are not increasing and that all footings remain adequately embedded in the channel bottom.

The embankment erosion along the east and west shoreline is not a concern at this time due to its location from the structure and the adequately protected shorelines at the structure. However, the erosion should continue to be monitored during future underwater inspections for evidence of increasing extent and severity that may threaten the structural integrity of the bridge.

The timber debris accumulation at Pier 2 did not significantly affect the channel flow, and as a result, does not require removal at this time. If the debris accumulation increases in size or density, it may be necessary to remove the debris to reduce excessive lateral loads on the pier, limit further debris accumulation, and reduce the likelihood of channel bottom degradation resulting from obstructed flow.

It is recommended that the submerged substructure units of Structure No. SFN7900511 be next inspected underwater at an interval not to exceed 60 months, no later than May 3, 2027.

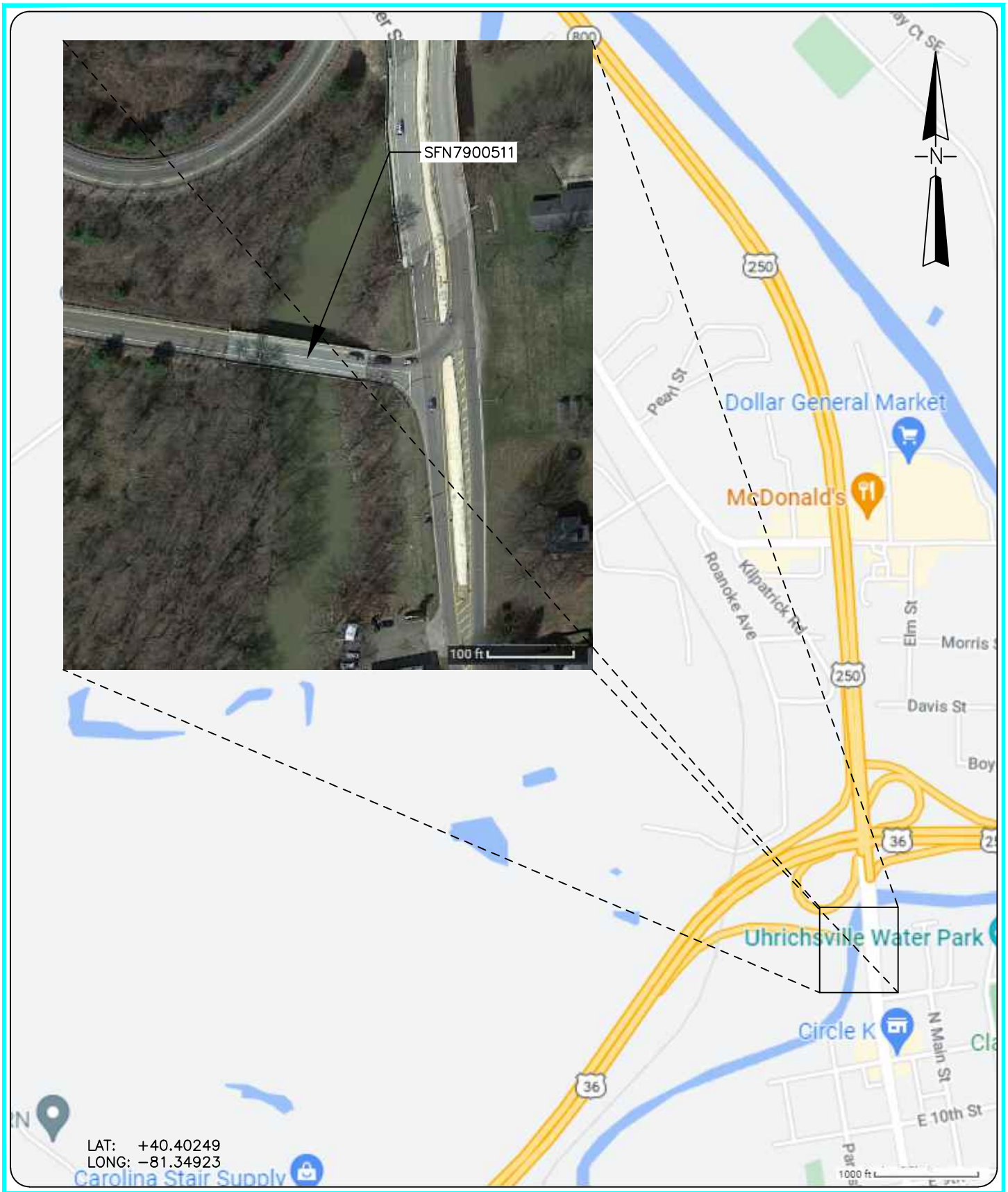
Respectfully Submitted,
COLLINS ENGINEERS, INC.



Matthew O. Rogers, P.E.
Project Manager

Originated by:
Olivia P. Farmer, E.I.T.

EXHIBIT 1 – FIGURES



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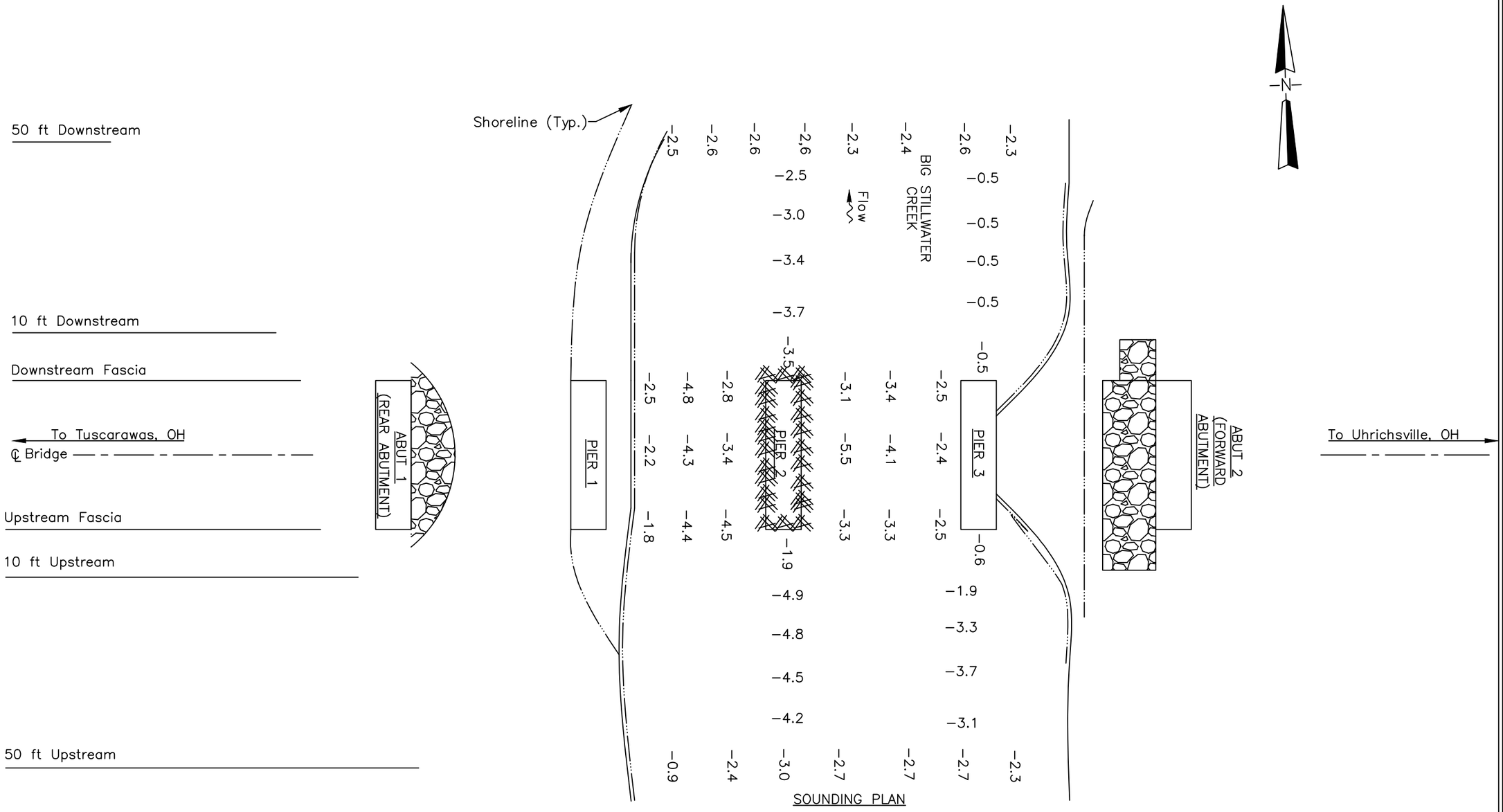
Phone: 330-330-6633

US-36 RAMP OVER BIG STILLWATER CREEK
STRUCTURE NO. SFN7900511
LOCATION MAP
TUSCARAWAS COUNTY, OHIO

INSPECTED BY: MOR	CEI PROJECT: 55−13380.01
DRAWN BY: MLA	DATE: 03 MAY 2022
CHECKED BY: JMJ	SHEET NO: 1

\\NASUNI-IL\KY\PROJECTS\55 - KENTUCKY\55-13380.01 - ODOT D11 UW BRIDGE INSP (2022)\ENGINEERING\BRIDGES\SFN 7900511 (TUS-36-18.17 J)\DRAWINGS\SFN 7900511 - MLA.DWG7/8/2022 4:24:31 PM



SOUNDING PLAN

GENERAL NOTES:

1. Piers 2 through 3 were inspected underwater. Substructure units are labeled according to Ohio Department of Transportation standard convention.
2. At the time of inspection on May 3, 2022, the waterline was located approximately 17.2 ft below the top of deck at the upstream nose of Pier 2 (EL. +100.0 ft). This corresponds with a waterline elevation of +82.8 ft.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at the upstream and downstream fascias, at 10 ft intervals between the substructure units, and at 10 ft intervals in−line with the piers upstream and downstream up to 50 ft.

LEGEND

−2.7	Sounding Depth from Waterline (ft)
	Timber Debris
	Rip−Rap

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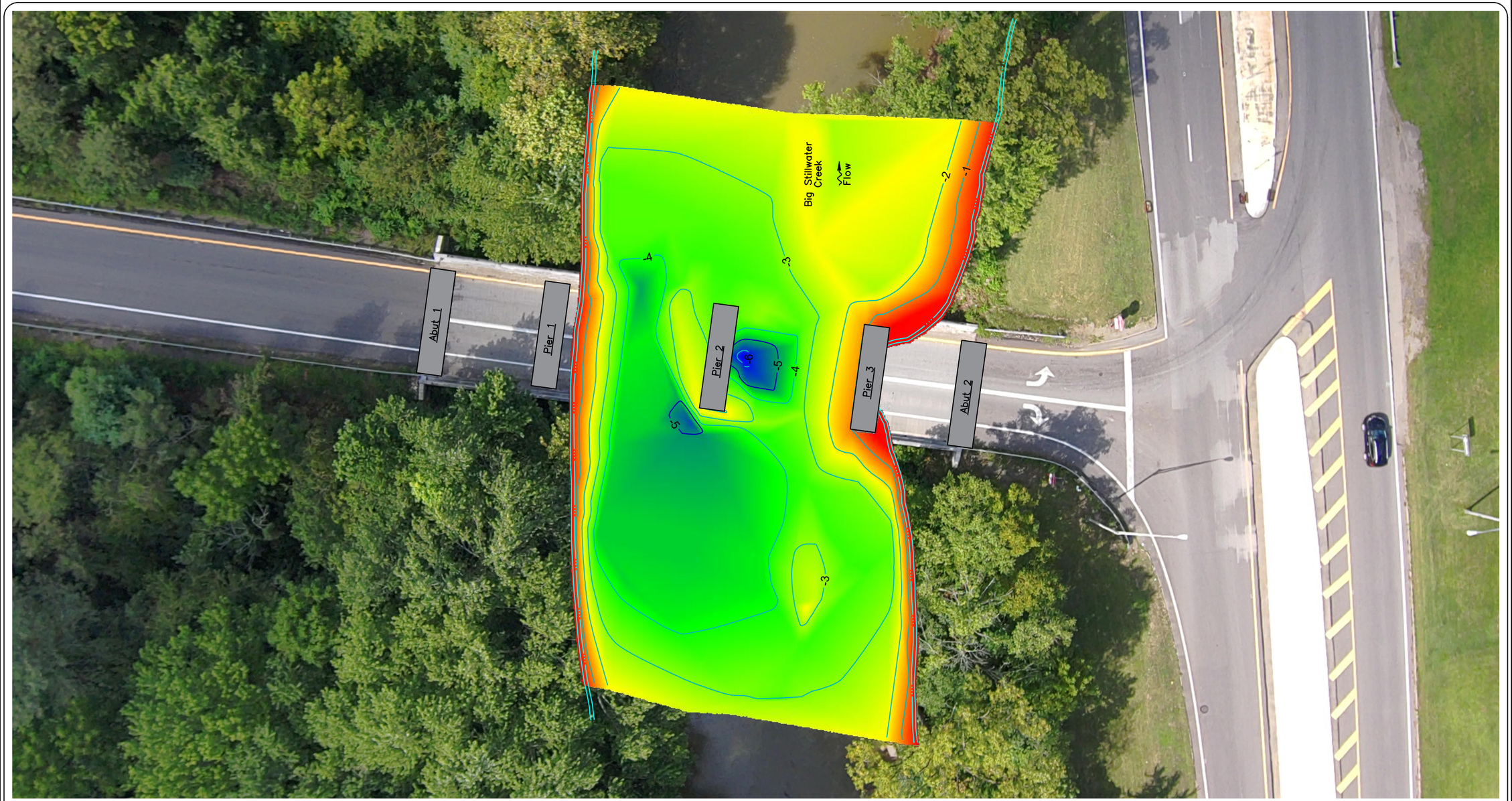
US-36 RAMP OVER BIG STILLWATER CREEK STRUCTURE NO. SFN7900511

SOUNDING PLAN

TUSCARAWAS COUNTY, OHIO

CEI PROJECT	55−13380.01
INSPECTED BY:	MOR
DRAWN BY:	MLA
CHECKED BY:	JMJ
DATE:	MAY 2022
SHEET NO:	2



GENERAL NOTES:

1. The hydrographic survey was completed on May 3, 2022 by Collins Engineers, Inc.
2. Soundings were obtained using a continuously recording fathometer operating at 200kHz and linked to a WAAS capable GPS receiver.
3. All water depths are in feet and are referenced to the waterline elevation stated in the Structure Notes.
4. Base map information shown on this drawing shall be considered approximate.

2022 HYDROGRAPHIC SURVEY

SCALE: 1" = 30'

0 15' 30'

N

1

LEGEND:

- Major Contour
- Minor Contour

STRUCTURE NOTES:

1. The measured waterline elevation was 82.8 ft on the survey date of 05-03-2022.
2. The waterline was measured 17.2 feet below the top of deck at the upstream nose of Pier 2. The top of deck was located at 100 ft.
3. Access to the site was the upstream side embankment at Abutment 2. GPS Coordinates: N 40.4024°, W 81.3490°.

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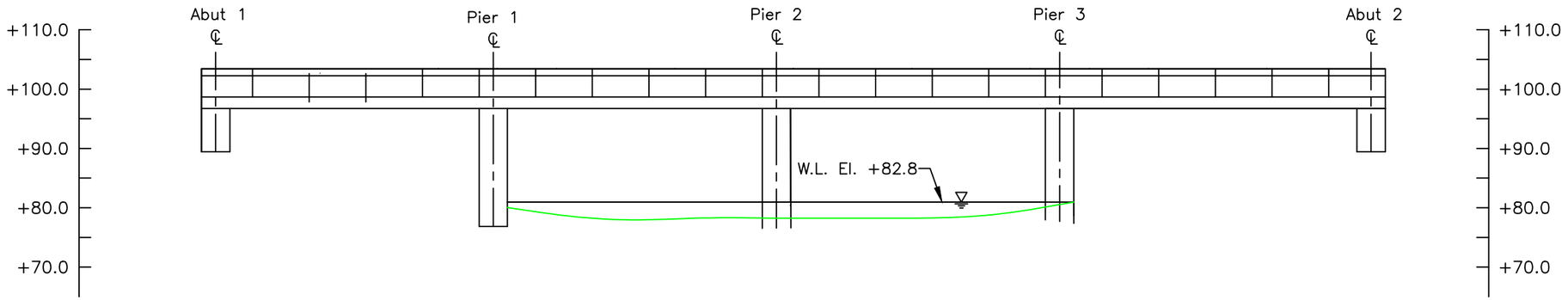
US-36 OVER BIG STILLWATER CREEK
STRUCTURE NO. SFN7900511
HYDROGRAPHIC SURVEY
TUSCARAWAS COUNTY, OH

CEI PROJECT	55-13380.01
INSPECTED BY:	MOR
DRAWN BY:	OPF
CHECKED BY:	JMJ
DATE:	MAY 2022
SHEET NO:	3



50 FT UPSTREAM CHANNEL
CROSS SECTION
(LOOKING DOWNSTREAM)

Note:

Footing elevations unknown due to unavailable record drawings.

Drawing not drawn to scale for clarity.

LEGEND

- Approximate Channel Bottom – May 2022
- Approximate Channel Bottom – May 2017 (No Data)
- Approximate Channel Bottom – May 2012 (No Data)
- Timber Debris
- Water Surface
- +450 Elevation (ft)

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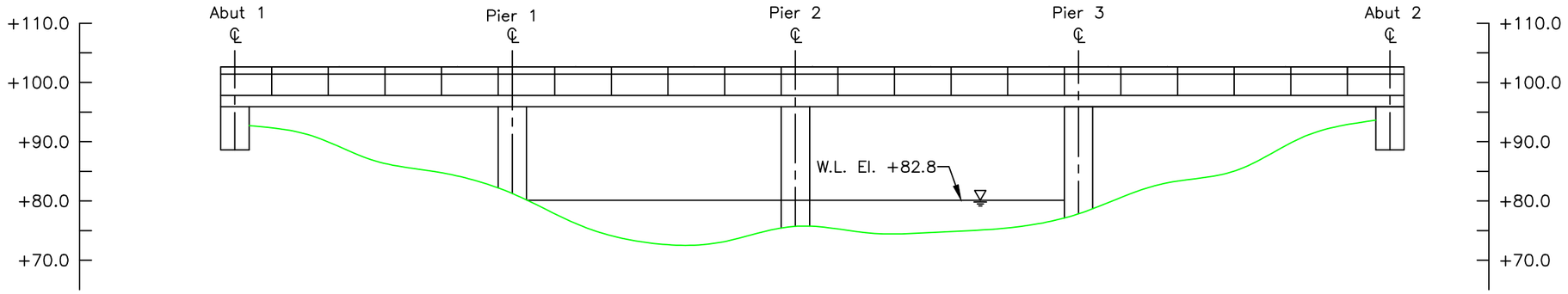
US-36 RAMP OVER BIG STILLWATER CREEK STRUCTURE NO. SFN7900511

CROSS SECTION - 50 FT US

TUSCARAWAS COUNTY, OHIO

CEI PROJECT	55–13380.01
INSPECTED BY:	MOR
DRAWN BY:	MLA
CHECKED BY:	JMJ
DATE:	MAY 2022
SHEET NO:	4



UPSTREAM FASCIA
CHANNEL CROSS SECTION
(LOOKING DOWNSTREAM)

Upstream Elevations (Looking Downstream)	
Location	Height (ft.)
A1	45.1
1/4	6.8
1/2	11.0
3/4	12.9
P1	16.5
1/4	22.6
1/2	25.0
3/4	24.9
P2	22.1
1/4	23.3
1/2	23.1
3/4	22.5
P3	20.0
1/4	14.9
1/2	12.8
3/4	6.9
A2	4.2

Note:

Footing elevations unknown due to unavailable record drawings.

Drawing not drawn to scale for clarity.

LEGEND

- Approximate Channel Bottom – May 2022
- Approximate Channel Bottom – May 2017 (No Data)
- Approximate Channel Bottom – May 2012 (No Data)
- Timber Debris
- Water Surface
- +450 Elevation (ft)

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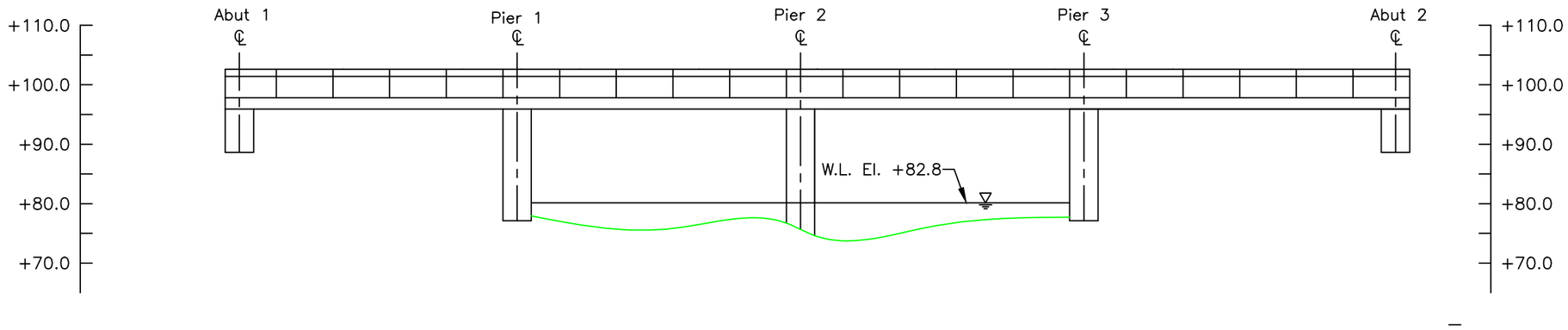
US-36 RAMP OVER BIG STILLWATER CREEK STRUCTURE NO. SFN7900511
CROSS SECTION - US FASCIA
TUSCARAWAS COUNTY, OHIO

CEI PROJECT 55–13380.01
INSPECTED BY: MOR
DRAWN BY: MLA
CHECKED BY: JMJ
DATE: MAY 2022
SHEET NO: 5



STRUCTURE CENTERLINE
CHANNEL CROSS SECTION
(LOOKING DOWNSTREAM)

Note:

Footing elevations unknown due to unavailable record drawings.

Drawing not drawn to scale for clarity.

LEGEND

- Approximate Channel Bottom – May 2022
- Approximate Channel Bottom – May 2017 (No Data)
- Approximate Channel Bottom – May 2012 (No Data)
- Timber Debris
- Water Surface
- +450 Elevation (ft)

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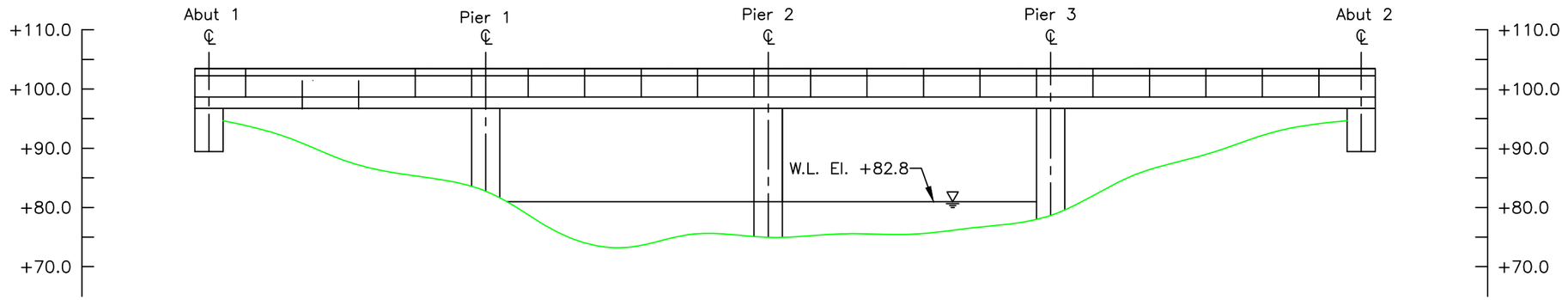
US-36 RAMP OVER BIG STILLWATER CREEK STRUCTURE NO. SFN7900511
CROSS SECTION- STRUCTURE CL
TUSCARAWAS COUNTY, OHIO

CEI PROJECT 55–13380.01
INSPECTED BY: MOR
DRAWN BY: MLA
CHECKED BY: JMJ
DATE: MAY 2022
SHEET NO: 6



DOWNSTREAM FASCIA
CHANNEL CROSS SECTION
(LOOKING DOWNSTREAM)

Downstream Elevations (Looking Downstream)	
Location	Height (ft.)
A1	4.0
1/4	5.8
1/2	9.7
3/4	13.1
P1	20.0
1/4	22.1
1/2	23.2
3/4	23.1
P2	23.7
1/4	23.2
1/2	25.4
3/4	23.3
P3	15.9
1/4	13.2
1/2	10.9
3/4	6.7
A2	4.0

Note:

Footing elevations unknown due to unavailable record drawings.

Drawing not drawn to scale for clarity.

LEGEND

- Approximate Channel Bottom – May 2022
- Approximate Channel Bottom – May 2017 (No Data)
- Approximate Channel Bottom – May 2012 (No Data)
- Timber Debris
- Water Surface
- +450 Elevation (ft)

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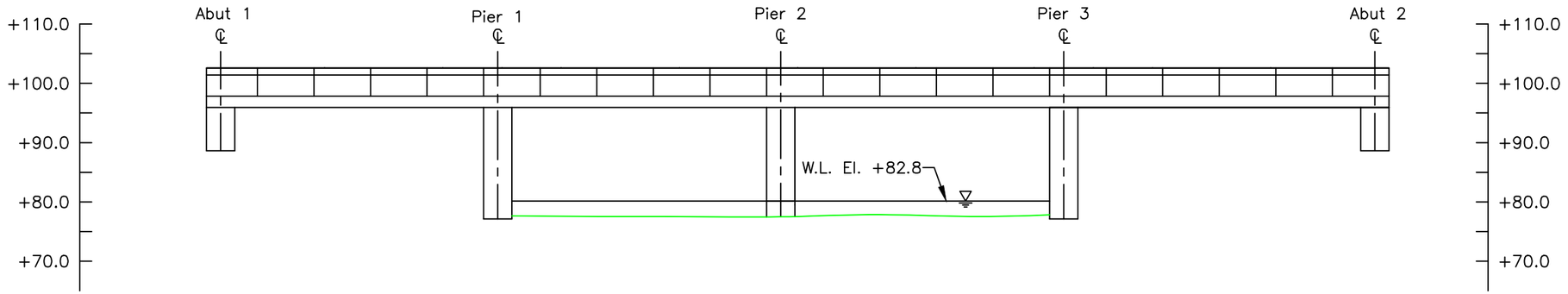
US-36 RAMP OVER BIG STILLWATER CREEK STRUCTURE NO. SFN7900511
CROSS SECTION - DS FASCIA
TUSCARAWAS COUNTY, OHIO

CEI PROJECT 55–13380.01
INSPECTED BY: MOR
DRAWN BY: MLA
CHECKED BY: JMJ
DATE: MAY 2022
SHEET NO: 7



50 FT DOWNSTREAM
CHANNEL CROSS SECTION
(LOOKING DOWNSTREAM)

Note:

Footing elevations unknown due to unavailable record drawings.

Drawing not drawn to scale for clarity.

LEGEND

- Approximate Channel Bottom – May 2022
- Approximate Channel Bottom – May 2017 (No Data)
- Approximate Channel Bottom – May 2012 (No Data)
- Timber Debris
- Water Surface
- +450 Elevation (ft)

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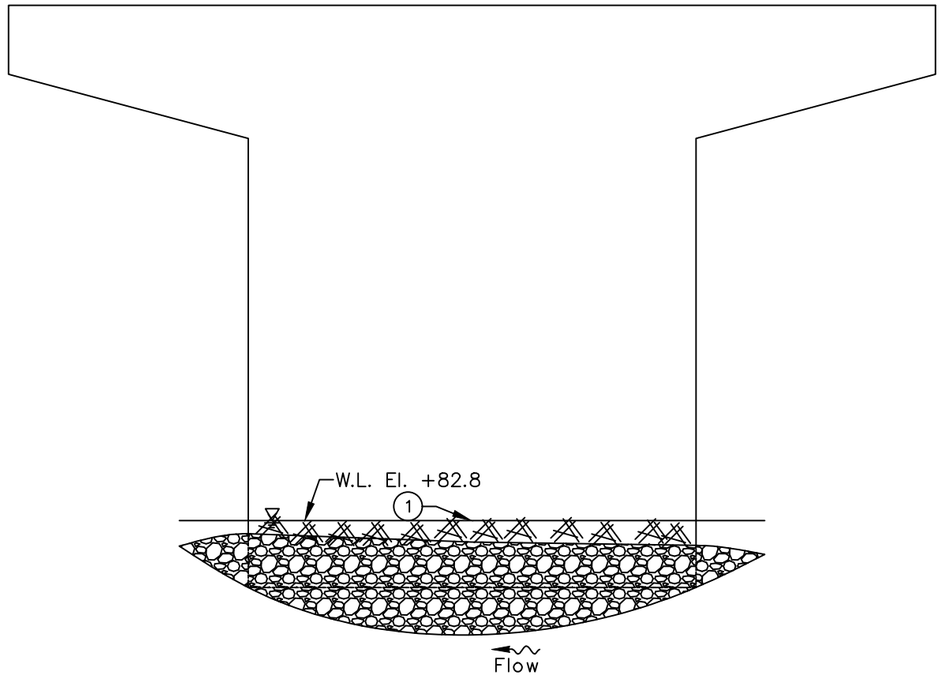
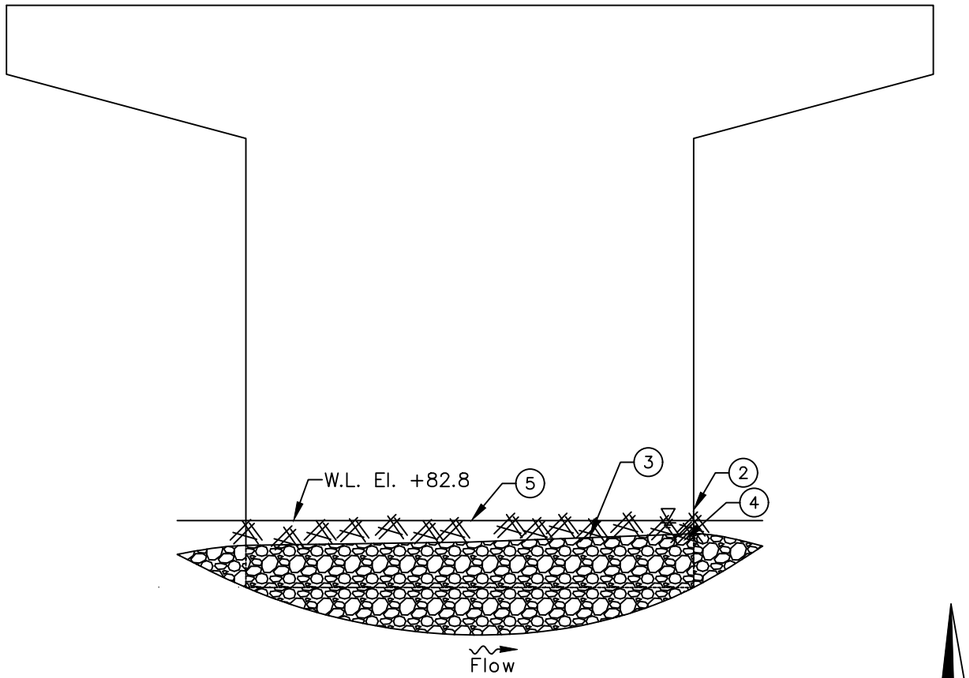
US-36 RAMP OVER BIG STILLWATER CREEK STRUCTURE NO. SFN7900511
CROSS SECTION - 50 FT DS
TUSCARAWAS COUNTY, OHIO

CEI PROJECT 55–13380.01
INSPECTED BY: MOR
DRAWN BY: MLA
CHECKED BY: JMJ
DATE: MAY 2022
SHEET NO: 8



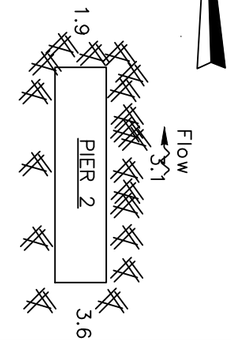
WEST ELEVATION
(LOOKING EAST)



EAST ELEVATION
(LOOKING WEST)

INSPECTION NOTES:

1. A scour depression was observed on the west face of the pier.
2. Submerged portion of the Pier exhibited light scaling up to 1/16 in. deep from the channel bottom to 2 in. above the waterline.
3. Heavy timber debris accumulation consisting of a tree with diameter up to 2 ft and approximately 50 ft long was observed resting on the upstream nose and all along the east face apron of the pier.
4. The pile on the east face of the pier was exposed from the upstream nose to the downstream nose. At the upstream nose, the pile was exposed for up to 1.8 ft vertical before getting covered by timber debris.
5. The pile was exposed 1.3 ft. vertical at the midpoint of the east face of the pier.



Plan

LEGEND

−2.7	Sounding Depth from Waterline (ft)
———	Approximate Channel Bottom – May 2022(No Data)
	Timber Debris
	Water Surface

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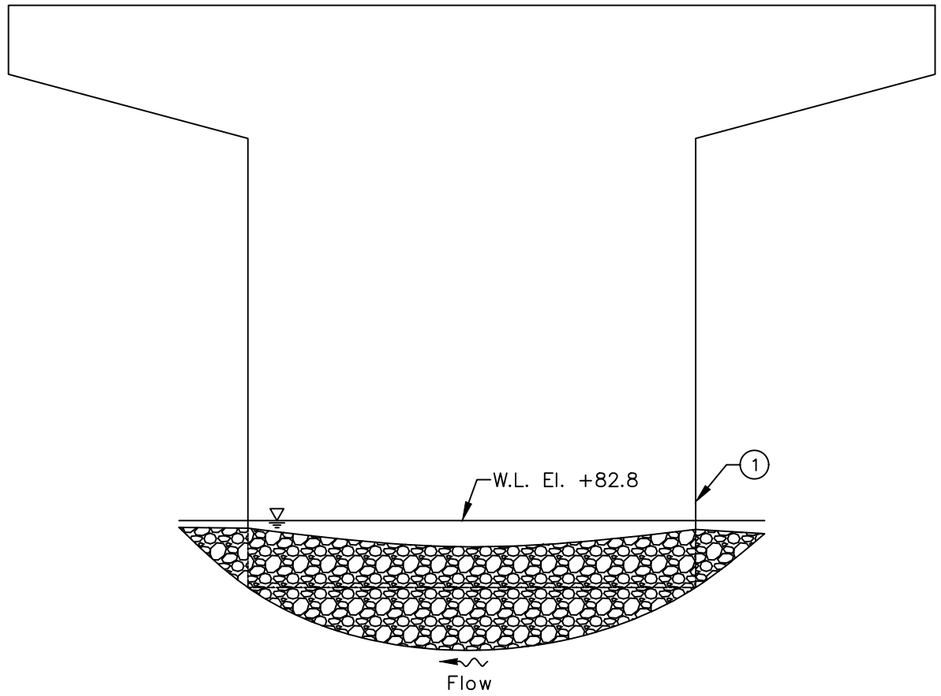
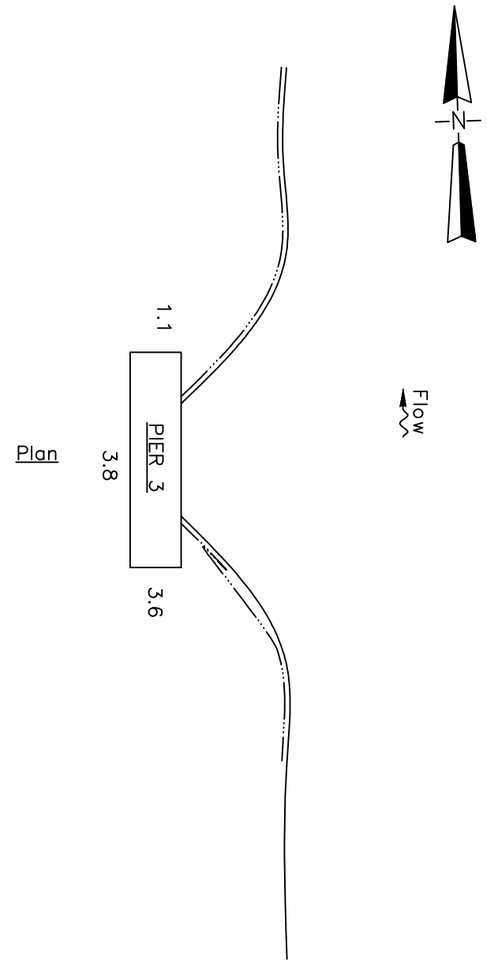
US-36 RAMP OVER BIG STILLWATER CREEK STRUCTURE NO. SFN7900511
PIER 2
TUSCARAWAS COUNTY, OHIO

CEI PROJECT	55–13380.01
INSPECTED BY:	MOR
DRAWN BY:	MLA
CHECKED BY:	JMJ
DATE:	MAY 2022
SHEET NO:	9



WEST ELEVATION
(LOOKING EAST)



Plan

INSPECTION NOTES:

(1) The submerged portion of the pier exhibited light scaling up to 1/16 in. deep from the channel bottom to 2 in. above the waterline.

LEGEND

−2.7	Sounding Depth from Waterline (ft)
———	Approximate Channel Bottom – May 2022(No Data)
	Timber Debris
———	Water Surface

COLLINS ENGINEERS
124 Venture Court, Ste 10
Lexington, KY 40511
Phone: 859-367-0097
Fax: 859-367-0140

Ohio Department of Transportation, District 11
2201 Reiser Ave.
New Philadelphia, OH 44663
Phone: 330-339-6633

US-36 RAMP OVER BIG STILLWATER CREEK STRUCTURE NO. SFN7900511

PIER 3

TUSCARAWAS COUNTY, OHIO

CEI PROJECT	55–13380.01
INSPECTED BY:	MOR
DRAWN BY:	MLA
CHECKED BY:	JMJ
DATE:	MAY 2022
SHEET NO:	10

EXHIBIT 2 – INSPECTION PHOTOGRAPHS



Photograph No. 1: Overall View of Structure No. SFN7900511, Looking North.



Photograph No. 2: Overall View of Structure No. SFN7900511, Looking South.



Photograph No. 3: View of the East Approach of Structure No. SFN7900511, Looking West.



Photograph No. 4: View of the West Approach of Structure No. SFN7900511, Looking East.



Photograph No. 5: View of the Typical Underdeck of Structure No. SFN7900511, Looking West.



Photograph No. 6: View of the West Embankment Upstream of the Structure, Looking Southwest.



Photograph No. 7: View of the West Embankment at the Structure, Looking West.



Photograph No. 8: View of the West Embankment Downstream of the Structure, Looking Northwest.



Photograph No. 9: View of the East Embankment Upstream of the Structure, Looking Southeast.



Photograph No. 10: View of the East Embankment at the Structure, Looking Southeast.



Photograph No. 11: View of the East Embankment Downstream of the Structure, Looking Northeast.



Photograph No. 12: View of the West Face of Pier 2, Looking Southeast.



Photograph No. 13: View of the East Face of Pier 2, Looking Northwest.



Photograph No. 14: View of the Typical Concrete Condition at the Waterline on the West Face of Pier 2, Looking East.



Photograph No. 15: View of the West Face of Pier 3, Looking Southeast.

EXHIBIT 3 – DIVE PROCEDURES CHECKLIST

Underwater Dive Inspection Procedure Checklist

Acceptable written procedures communicate to the next dive team what is necessary to ensure a safe and successful inspection. Each bridge requiring underwater dive techniques must have a unique written inspection procedure. The prior inspection report does not suffice for the required procedures. It is valuable to review the last inspection notes, but they do not serve the same purpose as a stand-alone inspection procedure.

This document shall be completed for all underwater dive inspections. This document shall be reviewed prior to performing the field work and it shall be updated when necessary.

I. Bridge Identification

a. Agency with Inspection Responsibility: ODOT DISTRICT 11

Dive Frequency: 60 months

SFN: 7900511 Bridge Number (County-Route-SLM-SD): TUS-36-1817J

Superstructure Type Main Span Type: REINFORCED CONCRETE

Approach Span: REINFORCED CONCRETE

Substructure Type Abutment Type: REINFORCED CONCRETE

Pier Type: REINFORCED CONCRETE

Total Pier Count: 3

Total Pier Count in water: 2

Foundations: CAST-IN-PLACE REINFORCED CONCRETE PILES

Feature Intersected BIG STILLWATER CREEK

b. Photographs



Endview



Elevation



Underside

II. Office and Field Assessment

Prior to the inspection, obtain and review copies of the previous underwater inspection reports, routine inspection reports, scour and hydraulic information, and design plans in preparation of the inspection. Divers should pay particular attention given to any observed areas of deterioration, the channel conditions and factors that may accelerate material deterioration. Changes shall be noted in the inspection procedure. Site conditions should be reviewed prior to diving.

a. Channel Conditions

____Waterway features

____Rapid stream flows

__X__Significant debris accumulation

____Constricted waterway openings

____Soft or unstable streambeds

____Meandering channels

____Other which may promote scour and undermining of substructure elements

____Navigable Waterway

____Flow Controls

b. Anticipated Water conditions which may affect the inspection

____Cold Water (Apprx. Temp____)

____Black water

____Rapid stream flows

____Near military facility

____Tribal fishing

____Water quality

____History of Log jams

c. Identify factors that may accelerate the deterioration of the bridge elements:

____Highly corrosive water

____Unprotected steel members

____Other

Risk Factor Narrative:

III. **Contacts Prior to Work**

Dr. Waseem Khalifa, Ph. D., P.E.

District Bridge Engineer

2201 Reiser Avenue SE

New Philadelphia, OH 44663

(330) 308-7873

Point of contact for immediate action (such as closing the bridge due to findings)

Contact Bridge Owner _____14_____ (number) days before the proposed underwater inspection.

Special contracting and scheduling procedures prior to inspection, include recommended lead time

Entity	Contact Name and Title	Contact Phone	Lead Time
Coast Guard	N/A	N/A	N/A
Property Owner	N/A	N/A	N/A
Access Equipment	N/A	N/A	N/A
Lake or River draw-down	N/A	N/A	N/A
Canal dry time	N/A	N/A	N/A
Tree removal	N/A	N/A	N/A
Other:	N/A	N/A	N/A
Other:	N/A	N/A	N/A

IV. **Dive Team Shall Include the Following:**

Dive Team Narrative:

The structure shall be investigated using a three-member dive team: one dive supervisor to monitor communications and air supply while taking notes, one diver, and one tender/standby diver. There shall be one NBIS Team Leader onsite at all times.

Example: The Bridge shall be investigated using a three-member dive team: one supervisor to monitor rack box and take notes, one diver, and one tender/standby diver. There shall be one NBIS Team Leader onsite at all times.

V. Site Information

Navigable waterway: Y / **N**

If Yes, waterway river point _____

Anticipated water visibility depth __1.5__ ft

Anticipated Dive depth __3.8__ ft

Anticipated current _1_ ft

Scour Critical (item 113): _5_

POA in place: Y/**N**

Scour Monitoring devices present: Y/**N**

Verify the Scope of Services when work is contracted for the procedure for underwater elements that are not in water during an inspection.

Site Information Narrative:

The underwater inspection consists of a visual and tactile examination of the accessible surfaces of the substructure items in water. Additional items should reference the scope of services in the contract. For reference the following items are in water:

Item	Number of Units	Level of Inspection (1, 2 or 3) with Commentary
Piers and Number of Columns	2	100% Level 1 10% Level 2
Abutment	N/A	
Culvert	N/A	
Scour Countermeasures	N/A	
Fenders or Dolphins	N/A	

Photographs should be taken, if water clarity permits, for typical conditions, conditions that have changed since last inspection and significant or noteworthy deficiencies. The type of channel bottom material, the presence or extent of scour, the presence or extent of riprap, the presence or extent of drift and debris, and the location of any foundation exposure or undermining shall be quantified. Include depth, length, height and location of deficiencies.

VI. **Equipment and Field Logistics**

a. The inspection should be conducted using:

____Chest waders

____Hip waders

__X__Diving equipment

____SCUBA (Note that ADCI Consensus Standards require communication systems be employed for both SCUBA and Surface-Supplied (whether air or mixed-gas) dive modes)

____SCUBA with communication

__X__Surface Supplied with communication

b. The channel bottom should be sounded utilizing

__X__Digital fathometer

__X__Telescoping survey rod

____ acoustic imaging

c. During the inspection, the divers should work from

____Shore

__X__Boat

____Either

The note taker should work alongside the dive team.

d. Access to the waterway should be obtained from the shore (north bank, southwest quadrant, driveway 30 yards north etc.)

THE UPSTREAM SIDE EMBANKMENT AT ABUTMENT 2

e. The maximum depth of the channel is typically measured 3.8 feet AT THE MIDPOINT OF THE WEST FACE OF PIER 3.

Reference Datum: 17.2 FEET BELOW THE TOP OF DECK AT THE UPSTREAM NOSE OF PIER 2.

Soundings should be dictated by the scope of work. When not detailed in the scope they should be repeated from the previous soundings. If neither exist then they need to be taken in a grid pattern between substructure units 100’ upstream and 100’ downstream.

VII. Inspection Procedure History

Created: COLLINS ENGINEERS, INC. Date: 07/06/2022

Updated By: _____ Date: _____

Updated By: _____ Date: _____

Updated By: _____ Date: _____

Updated By: _____ Date: _____

Updated By: _____ Date: _____

VIII. Other Narrative Not Included In Previous Sections