UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 7200579 (SAN-6-1751)
US-6 OVER SANDUSKY RIVER
SANDUSKY COUNTY, OH
DISTRICT 2

May 2020

10/9/2020

Prepared for:

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

Prepared by:

COLLINS ENGINEERS INC.

124 Venture Court, Suite 10

Lexington, Kentucky 40511

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EXECUTIVE SUMMARY

Project: ODOT District 2 Underwater Bridge Inspections - 2020

Purpose of Project: To perform a detailed visual and tactile underwater investigation of scour critical bridges for District 2 of the Ohio Department of Transportation.

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

Inspection Date(s): May 27, 2020

Water Visibility:	1 ft	***Water Velocity:***	<1 ft/s
Water Temperature:	78 °F	***Weather:***	Cloudy – 87 °F
Waterline Elevation:	576.2 ft	***Type of Boat:***	23 ft Carolina Skiff
Coordinates:	41.367168°N, 83.106950°W		
Access Location:	Riverfront Marina & Campgrounds Public Boat Ramp		
Dive Mode:	Surface Supplied Air		
Waterline Reference:	11.4 ft below the top of ledge at the upstream nose of Pier 5.		
Maximum Depth at SSU:	18.5 ft – Southeast corner of the downstream nose Pier 4		
Shoreline Conditions:	The east and west shorelines consisted of moderately to heavily vegetated mild slopes that were well protected with signs minor erosion.		

Summary of Findings:

- **Pier 4:**
  - The channel bottom materiel consisted of soft silt and clay with up to 12 in. probe rod penetration on the east face of the pier and on the west face of the pier the channel bottom material consisted of gravel up to 6 in. diameter with up to 1 in. probe rod penetration.
  - The submerged portions of the pier exhibited light scaling up to 1/16 in. deep.
  - Heavy timber debris accumulation consisting of logs up to 24 in. diameter was observed on the southeast corner of the upstream nose on the south pier extending up to 20 ft off the face of the pier from the channel bottom to approximately 1 ft above the waterline.
  - The top of footing was observed at -13.5 ft and was exposed on the south pier from the upstream nose around the east face to the northwest corner. On the north pier the footing was exposed from approximately 5 ft south of the midpoint along the west face towards the south around the east face with the exposed footing ending 5 ft south of the northwest corner. The maximum vertical exposure was observed to be 5.0 ft at the southeast corner of the south pier.
- **Pier 5:**
  - The channel bottom materiel around the north pier consisted of sand and gravel up to 2 in. diameter with up to 2 in. probe rod penetration on the east face of the pier.
  - The channel bottom material around the south pier consisted of timber debris with branches up to 6 in. diameter with no probe rod penetration.
  - The submerged portions of the pier exhibited light scaling up to 1/16 in. deep.

- Moderate timber debris accumulation consisting of branches up to 6 in. diameter was observed around the south pier extending up to 10 ft off the face from the channel bottom to approximately 10 ft below the waterline.
- The top of footing was observed at -13.5 ft and was exposed on the upstream pier from the upstream nose around the east face to the northwest corner. On the downstream pier the footing was exposed from approximately 5 ft south of the midpoint along the west face towards the south around the east face with the exposed footing ending 5 ft south of the northwest corner. The maximum vertical exposure was observed to be 2.0 ft at the midpoint along the west face of the south pier.

Summary of Recommendations:

- Install scour protection at Piers 4 and 5.
- Monitor timber debris at Piers 4 and 5.

Underwater Inspection Coding:

NBI Ratings:

Item	Description	Coding	Condition
60	Substructure	6 – Satisfactory Condition	Exposed Footing
61	Channel	6 – Satisfactory Condition	Timber Debris Accumulation
62	Culvert	N/A	
92B	UW Insp. Frequency	60 Months	
93B	Previous Insp. Date	05/27/20	
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	120	120	0	0	0
220	Reinforced Concrete Pile Cap / Footing	LF	140	140	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. 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-6 Bridge over Sandusky River in Sandusky County, OH. Collins Engineers, Inc. (Collins) conducted the underwater investigation for District 2 of the Ohio Department of Transportation (ODOT) on May 27, 2020. 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.
- Obtain channel profile cross sections at the upstream and downstream fascias.
- 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. 7200579 (SAN-6-1751) spans 806.85 ft, carrying US-6 over Sandusky River and is approximately 60 ft wide. The bridge superstructure is constructed of eight continuous plate girder spans. 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 7. Existing record drawings were 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 and 2 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 a professional engineer-diver and team leader (Joshua Johnson, P.E.) and two engineer divers (Matthew Rogers, E.I.T. and Phillip Osborn, 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 boat and a note taker in the boat 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. Underwater photographs could not be obtained due to poor water conditions. 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, digital fathometer, and pneumofathometer. Soundings were collected at quarter points along the bridge centerline as well as at quarter points along the upstream and downstream fascias and 50 ft fascias. Additional soundings were collected adjacent to Piers 4 and 5 and at 10 feet intervals in-line with the piers, upstream and downstream, 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 7 in Exhibit 1 for the sounding plan 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 7200579 (SAN-6-1751) was located approximately 11.4 ft below the top of ledge at the downstream nose of Pier 4, which corresponds to a waterline elevation of 576.2 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 moderately to heavily vegetated mild slopes that were well protected with signs minor erosion. Refer to Photographs 3 through 8 in Exhibit 2 for views of the shorelines near the structure.

2.2 Substructure Conditions

2.2.1 Pier 4

The channel bottom materiel consisted of soft silt and clay with up to 12 in. probe rod penetration on the east face of the pier and on the west face of the pier the channel bottom material consisted of gravel up to 6 in. diameter with up to 1 in. probe rod penetration. The submerged portions of the pier exhibited light scaling up to 1/16 in. deep. Heavy timber debris accumulation consisting of logs up to 24 in. diameter was observed on the southeast corner of the upstream nose on the south pier extending up to 20 ft off the face of the pier from the channel bottom to approximately 1 ft above the waterline. The top of footing was observed at -13.5 ft and was exposed on the south pier from the upstream nose around the east face to the northwest corner. On the north pier the footing was exposed from approximately 5 ft south of the midpoint along the west face towards the south around the east face with the exposed footing ending 5 ft south of the northwest corner. The maximum vertical exposure was observed to be 5.0 ft at the southeast corner of the south pier. Refer to Figure 8 in Exhibit 1 for detailed inspection notes of Pier 4. Refer to Photographs 9 through 11 in Exhibit 2 for views of Pier 4 and typical concrete condition at the waterline.

2.2.2 Pier 5

The channel bottom materiel around the north pier consisted of sand and gravel up to 2 in. diameter with up to 2 in. probe rod penetration on the east face of the pier. The channel bottom material around the south pier consisted of timber debris with branches up to 6 in. diameter with no probe rod penetration. The submerged portions of the pier exhibited light scaling up to 1/16 in. deep. Moderate timber debris accumulation consisting of branches up to 6 in. diameter was observed around the south pier extending up to 10 ft off the face from the channel bottom to approximately 10 ft below the waterline. The top of footing was observed at -13.5 ft and was exposed on the upstream pier from the upstream nose around the east face to the northwest corner. On the downstream pier the footing was exposed from approximately 5 ft south of the midpoint along the west face towards the south around the east face with the exposed footing ending 5 ft south of the northwest corner. The maximum vertical exposure was observed to be 2.0 ft at the midpoint along the west face of the south pier. Refer to Figure 9 in Exhibit 1 for detailed inspection notes of Pier 5. Refer to Photographs 12 and 13 in Exhibit 2 for views of Pier 5.

3.0 EVALUATION AND RECOMMENDATIONS

Overall, the inspected substructure units of Structure No. 7200579 (SAN-6-1751) were in satisfactory condition. A comparison of the soundings recorded during the previous inspection on November 18, 2015 and the soundings taken during this inspection revealed footing exposure of the substructure units. To prevent further deterioration of the bearing material, corrective actions should be taken at this time. Corrective actions may include placement of properly design riprap, installation of spur dikes, or other means of erosion control depending on site conditions. The channel bottom configuration should continue to be closely monitored during future underwater inspections to verify that the footing exposure and undermining is not increasing and that all footings remain adequately embedded in the channel bottom.

The timber debris accumulation at Piers 4 and 5 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.

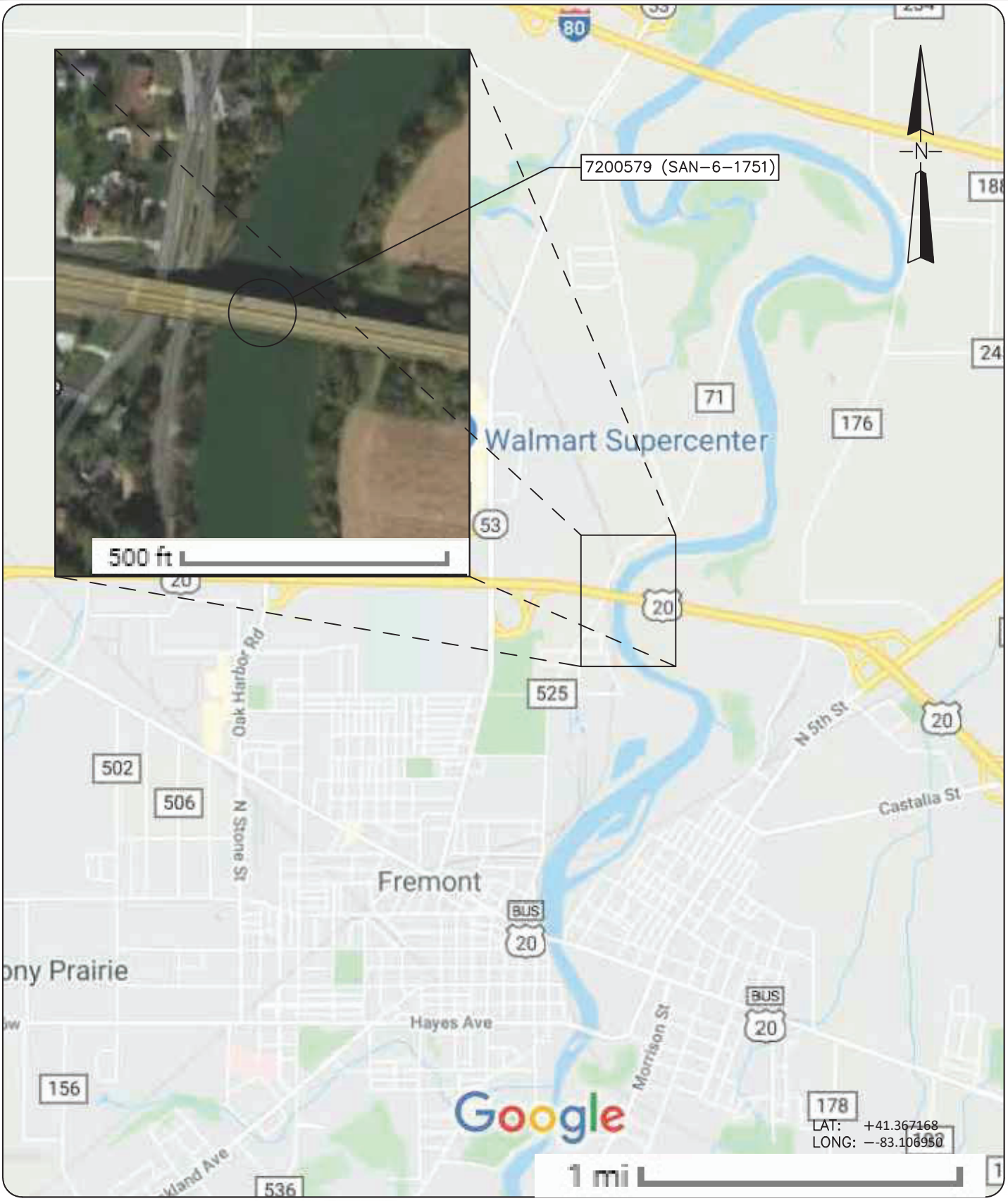
It is recommended that the submerged substructure units of Structure No. 7200579 (SAN-6-1751) be next inspected underwater at an interval not to exceed 60 months, no later than May 27, 2025.

Respectfully Submitted,
COLLINS ENGINEERS, INC.

Joshua Johnson, P.E.
Project Manager

Originated by:
Kevin Mitchell, E.I.T.

EXHIBIT 1 – FIGURES



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US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579
(SAN-6-1751)
LOCATION MAP
SANDUSKY COUNTY, OHIO

INSPECTED BY: MOR	CEI PROJECT: 55-12239.00
DRAWN BY: BLV	DATE: 27 MAY 2020
CHECKED BY: JMJ	SHEET NO: 1

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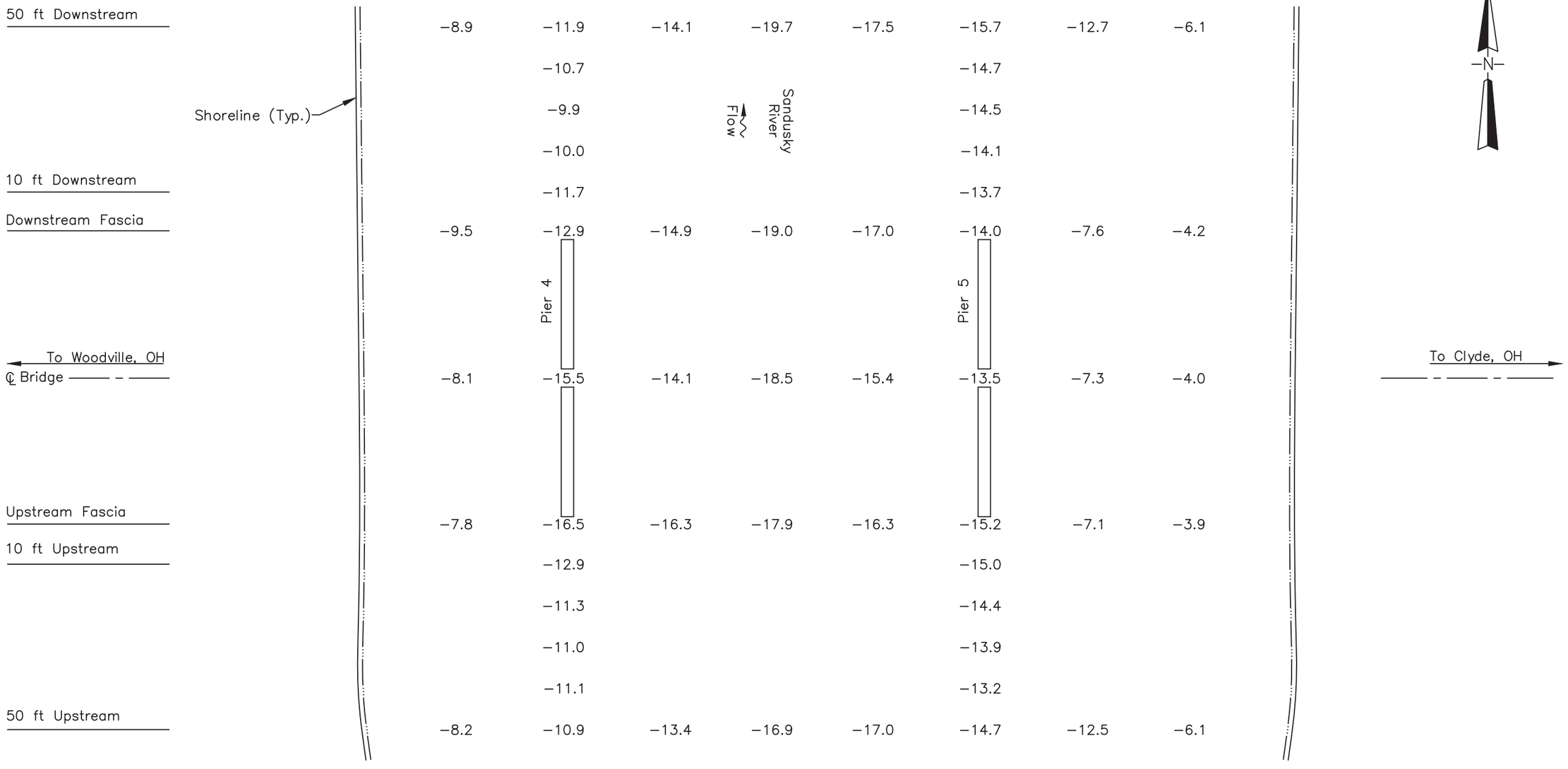

SOUNDING PLAN

GENERAL NOTES:

1. Piers 4 and 5 were inspected underwater. Substructure units are labeled according to available record drawings.
2. At the time of inspection on May 27, 2020, the waterline was located approximately 11.4 ft below Top of Ledge/Stepout at upstream nose of Pier 5 (EL. +587.6 ft). This corresponds with a waterline elevation of +576.2 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

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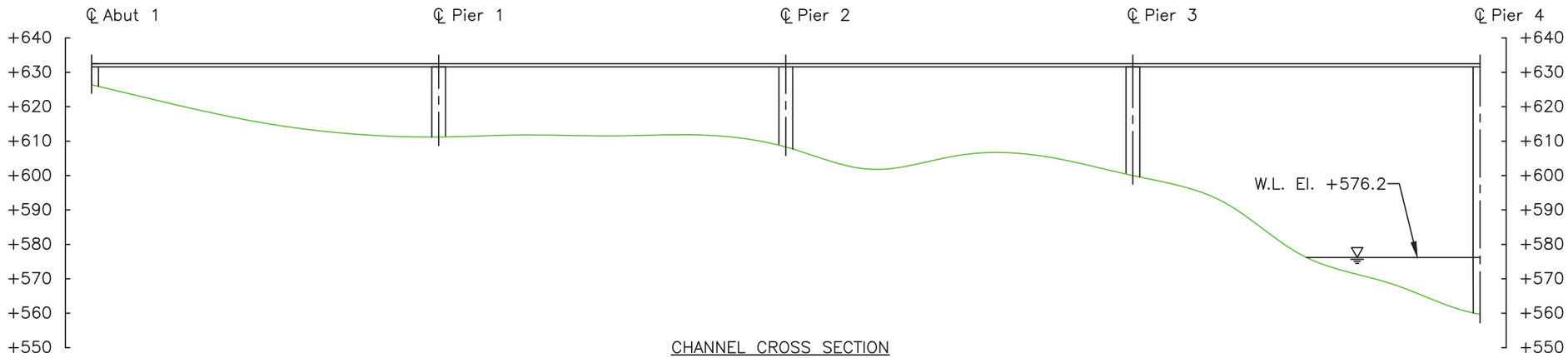
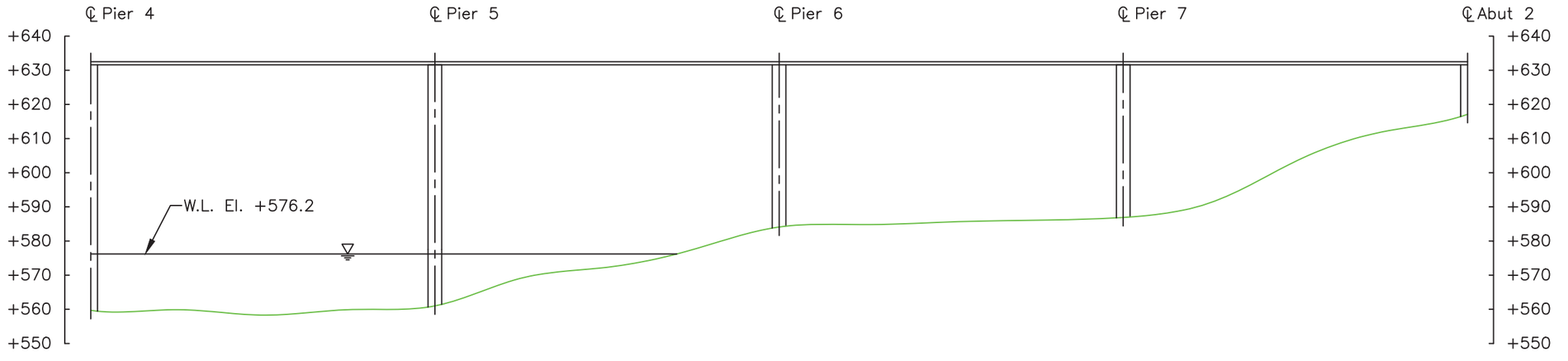
US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579 (SAN-6-1751)
SOUNDING PLAN
SANDUSKY COUNTY, OHIO

CEI PROJECT 55−12239.00
INSPECTED BY: MOR
DRAWN BY: BLV
CHECKED BY: JMJ
DATE: MAY 2020
SHEET NO: 2

UPSTREAM FASCIA LOOKING DOWNSTREAM	
Location	Y(ft)*
A1	6.1
1/4	11.2
1/2	16.4
3/4	19.5
P1	20.4
1/4	19.8
1/2	20.1
3/4	19.8
P2	23.3
1/4	29.8
1/2	25.7
3/4	26.1
P3	31.6
1/4	38.7
1/2	55.4
3/4	55.4
P4	55.4
1/4	55.0
1/2	54.5
3/4	54.3
P5	54.1
1/4	54.1
1/2	54.1
3/4	54.1
P6	47.5
1/4	46.8
1/2	46.0
3/4	45.5
P7	44.7
1/4	40.5
1/2	28.3
3/4	19.7
A2	14.5



CHANNEL CROSS SECTION
UPSTREAM FASCIA
(LOOKING DOWNSTREAM)



CHANNEL CROSS SECTION
UPSTREAM FASCIA
(LOOKING DOWNSTREAM)

LEGEND

- Approximate Channel Bottom – May 2020
- Approximate Channel Bottom – Nov 2015 (No Data)
- Approximate Channel Bottom – (No Data)
- Timber Debris
- Water Surface
- +450 Elevation (ft)

Note:

Footing elevations unknown due to unavailable design drawings.

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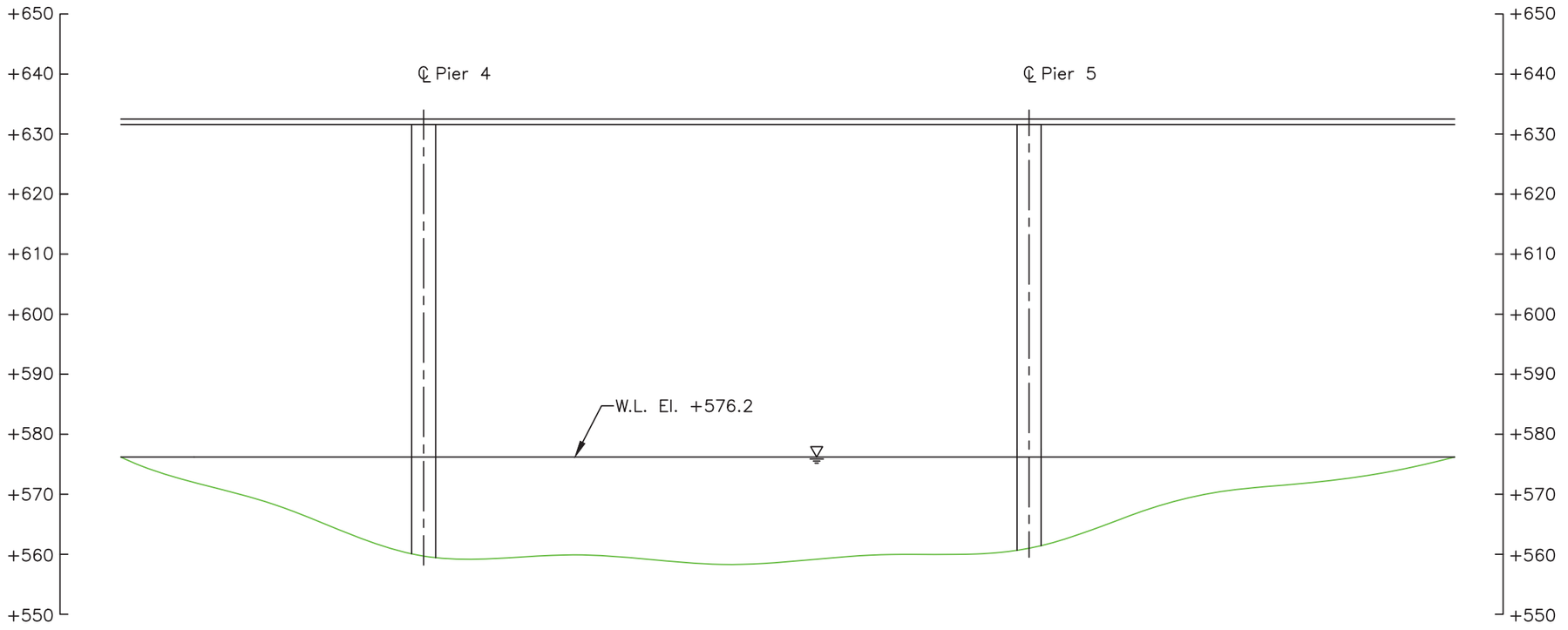
US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579 (SAN-6-1751)
CROSS SECTIONS - UPSTREAM
SANDUSKY COUNTY, OHIO

CEI PROJECT 55–12239.00
INSPECTED BY: MOR
DRAWN BY: BLV
CHECKED BY: JMJ
DATE: MAY 2020
SHEET NO: 3



CHANNEL CROSS SECTION
50 FT UPSTREAM
(LOOKING DOWNSTREAM)

LEGEND

———	Approximate Channel Bottom – May 2020
- - - - -	Approximate Channel Bottom – Nov 2015 (No Data)
– – – – –	Approximate Channel Bottom – (No Data)
	Timber Debris
	Water Surface
+450	Elevation (ft)

Note:

Footing elevations unknown due to unavailable design drawings.

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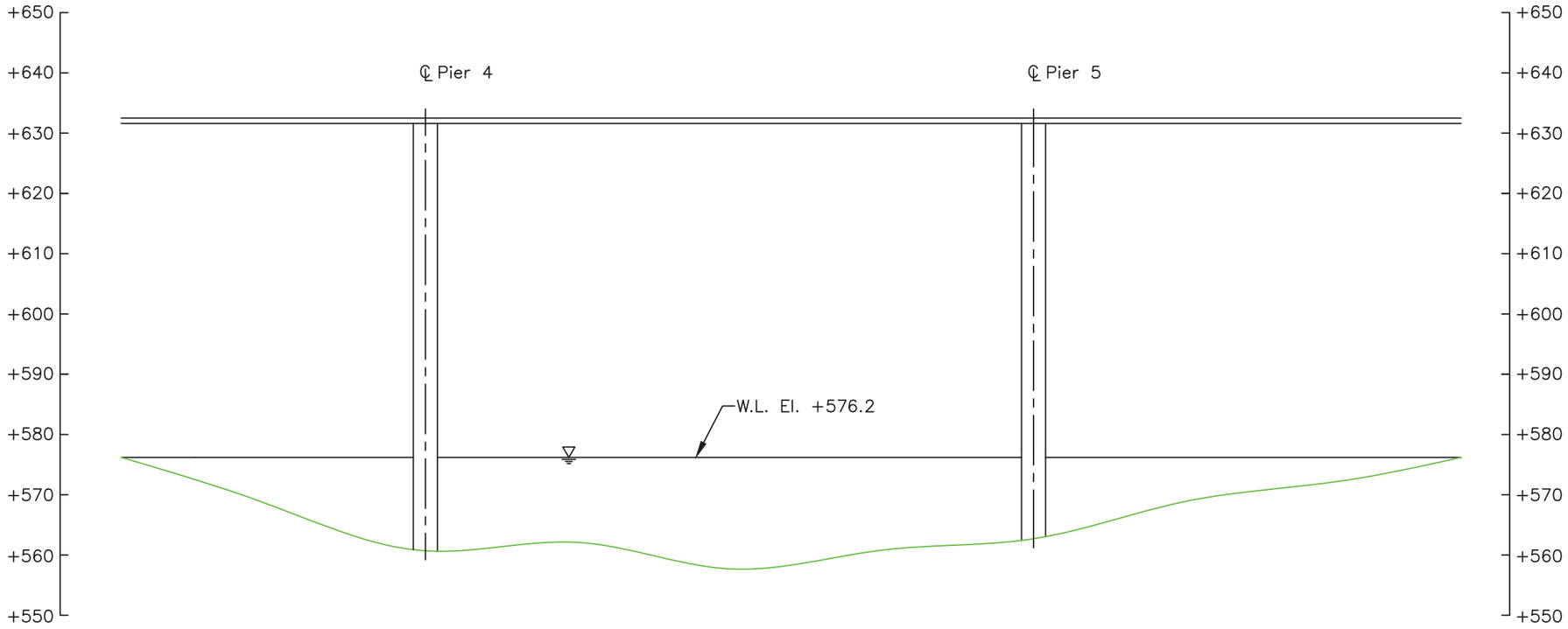
US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579 (SAN-6-1751)
CROSS SECTIONS - UPSTREAM 50 FT
SANDUSKY COUNTY, OHIO

CEI PROJECT	55–12239.00
INSPECTED BY:	MOR
DRAWN BY:	BLV
CHECKED BY:	JMJ
DATE:	MAY 2020
SHEET NO:	4



CHANNEL CROSS SECTION
STRUCTURE CENTERLINE
(LOOKING DOWNSTREAM)

Note:

Footing elevations unknown due to unavailable design drawings.

LEGEND

———	Approximate Channel Bottom – May 2020
- - - - -	Approximate Channel Bottom – Nov 2015 (No Data)
– – – – –	Approximate Channel Bottom – (No Data)
	Timber Debris
	Water Surface
+450	Elevation (ft)

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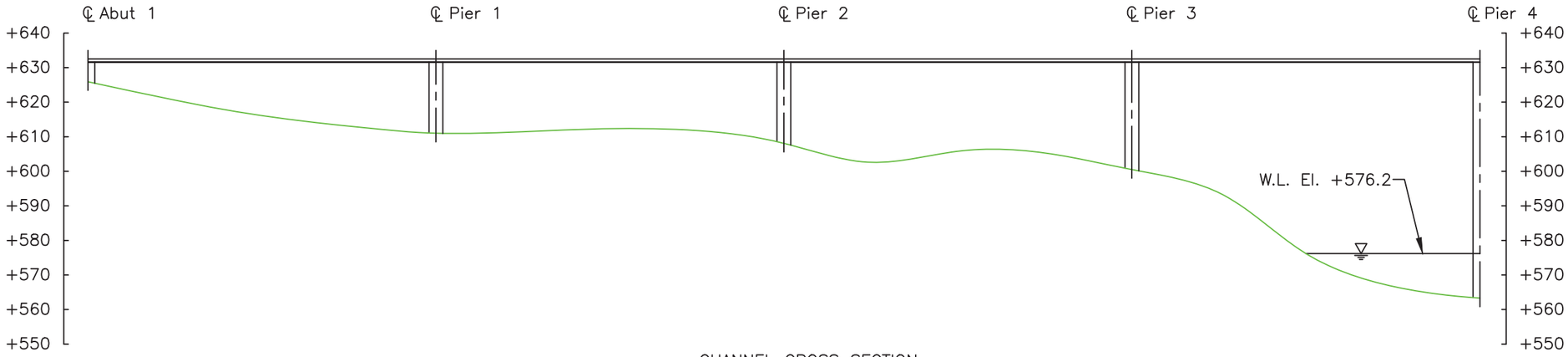
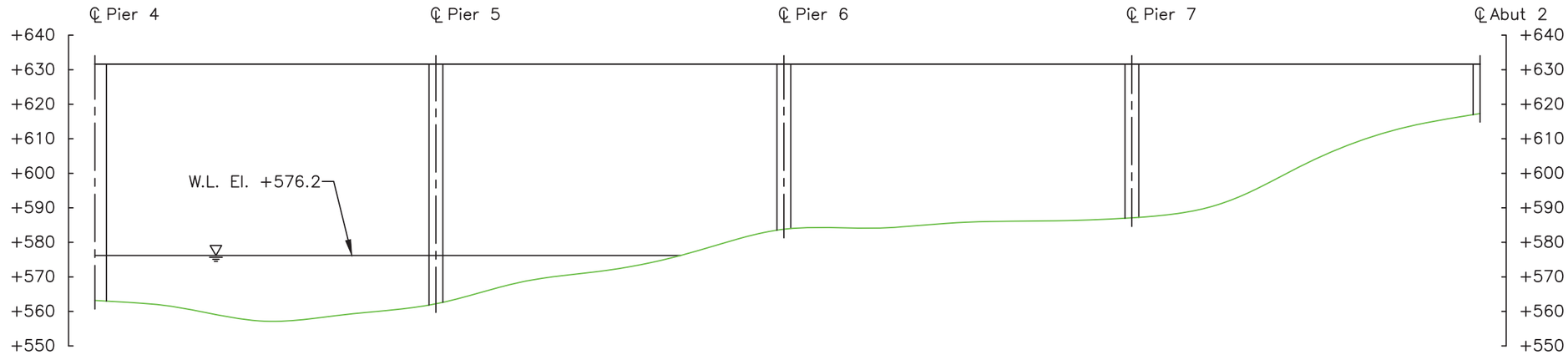
US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579 (SAN-6-1751)
CROSS SECTIONS - CENTERLINE
SANDUSKY COUNTY, OHIO

CEI PROJECT	55–12239.00
INSPECTED BY:	MOR
DRAWN BY:	BLV
CHECKED BY:	JMJ
DATE:	MAY 2020
SHEET NO:	5

DOWNSTREAM FASCIA LOOKING DOWNSTREAM	
Location	Y(ft)*
A1	5.7
1/4	11.0
1/2	15.5
3/4	18.5
P1	20.6
1/4	20.1
1/2	19.3
3/4	19.8
P2	23.5
1/4	29.0
1/2	25.8
3/4	26.3
P3	31.1
1/4	37.8
1/2	55.4
3/4	55.4
P4	55.4
1/4	55.0
1/2	54.5
3/4	54.3
P5	54.2
1/4	54.2
1/2	54.1
3/4	54.1
P6	47.8
1/4	47.5
1/2	45.9
3/4	45.4
P7	44.5
1/4	40.6
1/2	28.8
3/4	19.2
A2	14.3



CHANNEL CROSS SECTION
DOWNSTREAM FASCIA
(LOOKING DOWNSTREAM)



CHANNEL CROSS SECTION
DOWNSTREAM FASCIA
(LOOKING DOWNSTREAM)

LEGEND

- Approximate Channel Bottom – May 2020
- Approximate Channel Bottom – Nov 2015 (No Data)
- Approximate Channel Bottom – (No Data)
- Timber Debris
- Water Surface
- +450 Elevation (ft)

Note:

Footing elevations unknown due to unavailable design drawings.

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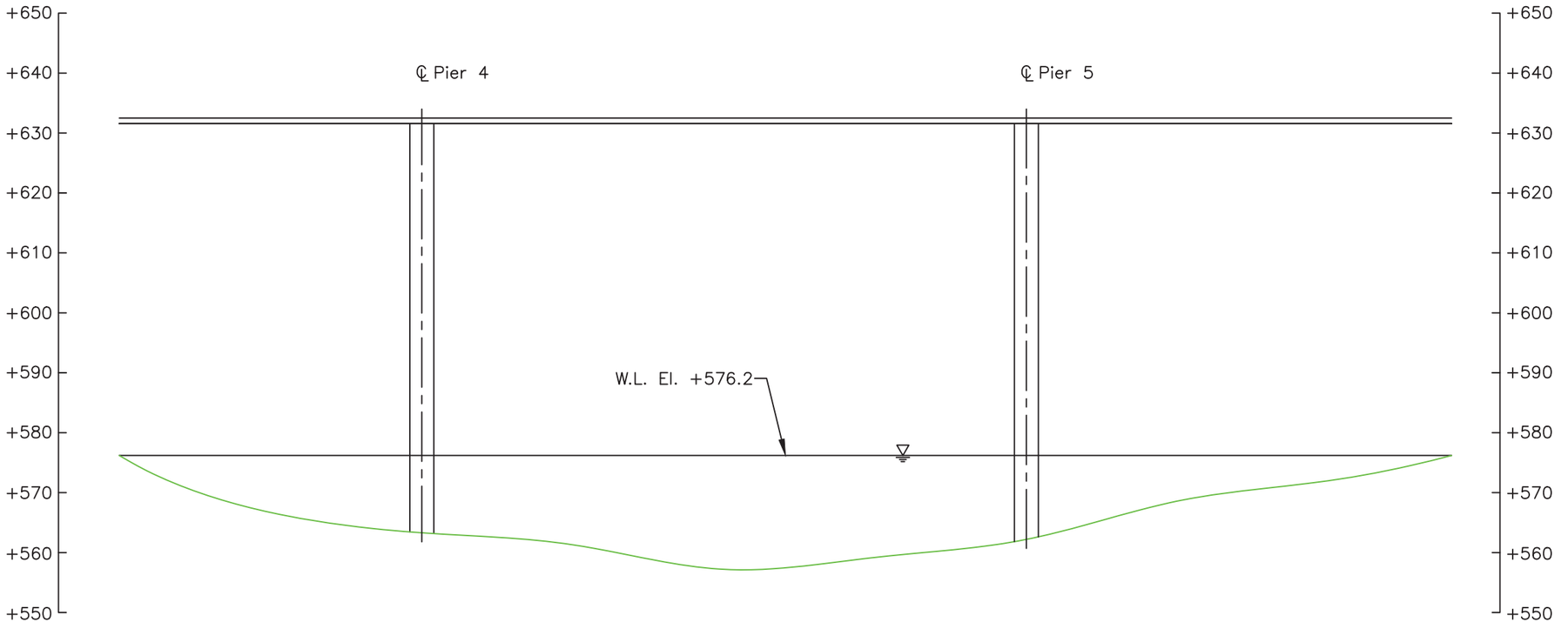
US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579 (SAN-6-1751)
CROSS SECTIONS - DOWNSTREAM
SANDUSKY COUNTY, OHIO

CEI PROJECT 55–12239.00
INSPECTED BY: MOR
DRAWN BY: BLV
CHECKED BY: JMJ
DATE: MAY 2020
SHEET NO: 6



CHANNEL CROSS SECTION
50 FT DOWNSTREAM
(LOOKING DOWNSTREAM)

LEGEND

- Approximate Channel Bottom – May 2020
- Approximate Channel Bottom – Nov 2015 (No Data)
- Approximate Channel Bottom – (No Data)
- Timber Debris
- Water Surface
- +450 Elevation (ft)

Note:

Footing elevations unknown due to unavailable design drawings.

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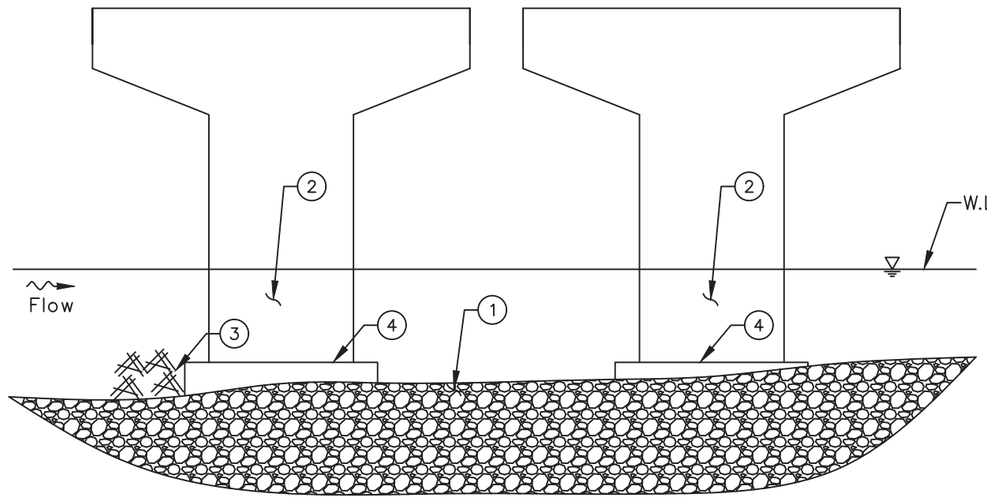
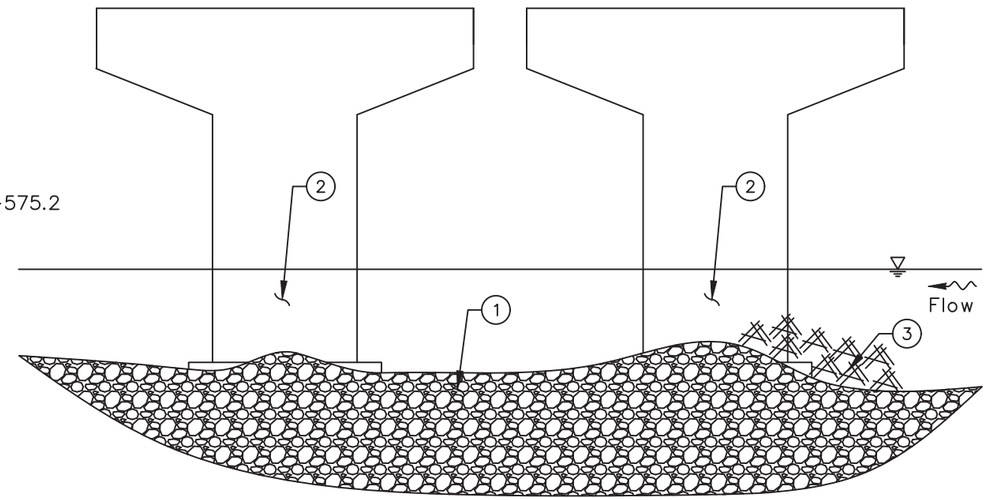
US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579 (SAN-6-1751)
CROSS SECTIONS - DOWNSTREAM 50 FT
SANDUSKY COUNTY, OHIO

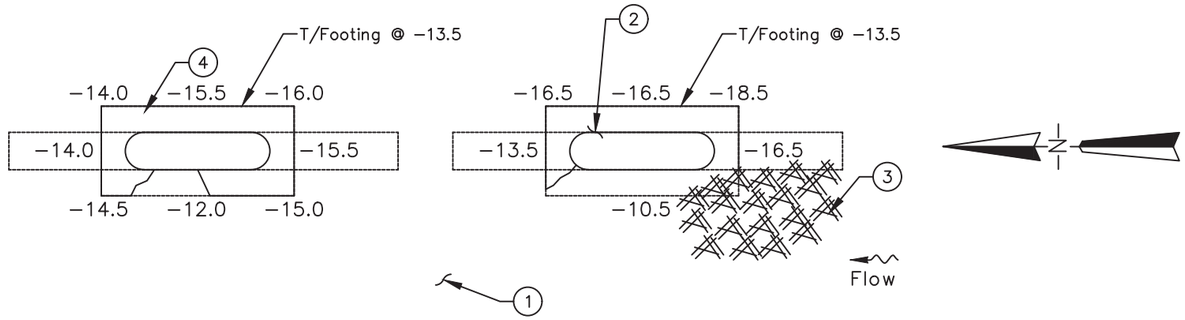
CEI PROJECT	55–12239.00
INSPECTED BY:	MOR
DRAWN BY:	BLV
CHECKED BY:	JMJ
DATE:	MAY 2020
SHEET NO:	7



EAST ELEVATION
(LOOKING WEST)



WEST ELEVATION
(LOOKING EAST)



PLAN

INSPECTION NOTES:

1. The channel bottom material consisted of soft silt and clay with up to 12 in. probe rod penetration on the east face of the pier and on the west face of the pier the channel bottom material consisted of gravel up to 6 in. diameter with up to 1 in. probe rod penetration.

2. The submerged portions of the pier exhibited light scaling up to 1/16 in. deep.

3. Heavy timber debris accumulation consisting of logs up to 24 in. diameter was observed on the southeast corner of the upstream nose on the south pier extending up to 20 ft off the face of the pier from the channel bottom to approximately 1 ft above the waterline.

4. The top of footing was observed at −13.5 ft and was exposed on the south pier from the upstream nose around the east face to the northwest corner. On the north pier the footing was exposed from approximately 5 ft south of the midpoint along the west face towards the south around the east face with the exposed footing ending 5 ft south of the northwest corner. The maximum vertical exposure was observed to be 5.0 ft at the southeast corner of the south pier.

LEGEND

−2.7	Sounding Depth from Waterline (ft)
———	Approximate Channel Bottom – May 2020
	Timber Debris
	Water Surface

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US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579 (SAN-6-1751)
PIER 4
SANDUSKY COUNTY, OHIO

CEI PROJECT
55–12239.00

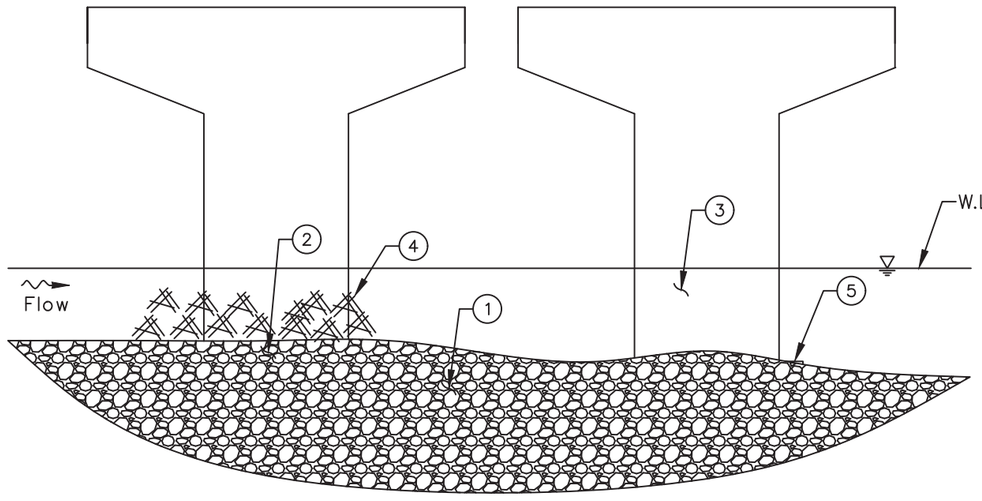
INSPECTED BY:
MOR

DRAWN BY:
BLV

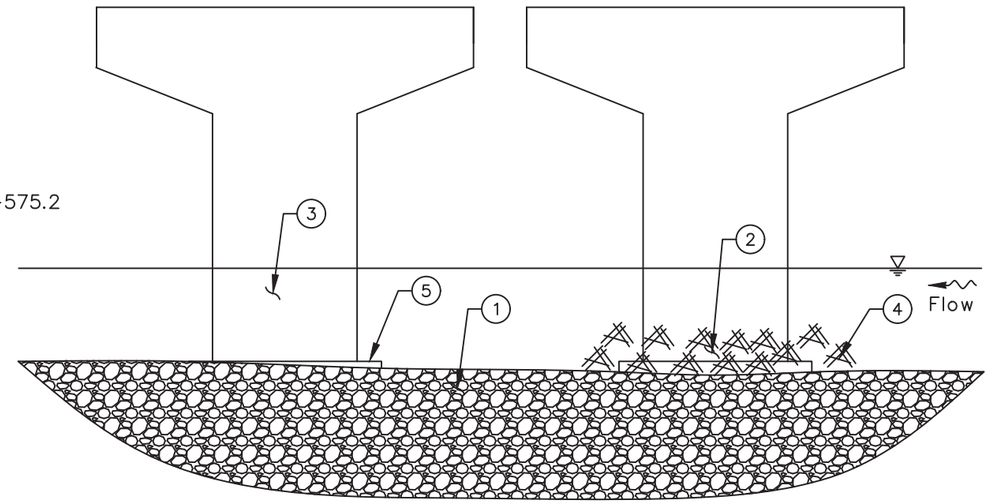
CHECKED BY:
JMJ

DATE:
MAY 2020

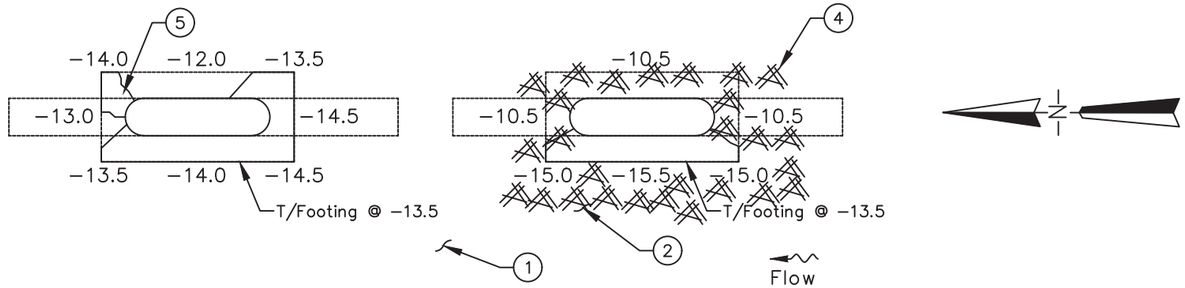
SHEET NO:
8



EAST ELEVATION
(LOOKING WEST)



WEST ELEVATION
(LOOKING EAST)



PLAN

INSPECTION NOTES:

1. The channel bottom material around the north pier consisted of sand and gravel up to 2 in. diameter with up to 2 in. probe rod penetration on the east face of the pier.

2. The channel bottom material around the south pier consisted of timber debris with branches up to 6 in. diameter with no probe rod penetration.

3. The submerged portions of the pier exhibited light scaling up to 1/16 in. deep.

4. Moderate timber debris accumulation consisting of branches up to 6 in. diameter was observed around the south pier extending up to 10 ft off the face from the channel bottom to approximately 10 ft below the waterline.

5. The top of footing was observed at −13.5 ft and was exposed on the upstream pier from the upstream nose around the east face to the northwest corner. On the downstream pier the footing was exposed from approximately 5 ft south of the midpoint along the west face towards the south around the east face with exposed footing ending 5 ft south of the northwest corner. The maximum vertical exposure was observed to be 2.0 ft at the midpoint along the west face of the south pier.

LEGEND

−2.7	Sounding Depth from Waterline (ft)
———	Approximate Channel Bottom – May 2020
	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 2
317 East Poe Rd.
Bowling Green, OH 45601
Phone: 419-353-8131

US-6 OVER SANDUSKY RIVER
STRUCTURE NO. 7200579 (SAN-6-1751)
PIER 5
SANDUSKY COUNTY, OHIO

CEI PROJECT	55−12239.00
INSPECTED BY:	MOR
DRAWN BY:	BLV
CHECKED BY:	JMJ
DATE:	MAY 2020
SHEET NO:	9

EXHIBIT 2 – INSPECTION PHOTOGRAPHS

Photograph No. 1: Overall View of Structure No. 7200579 (SAN-6-1751), Looking North.

Photograph No. 2: Overall View of Structure No. 7200579 (SAN-6-1751), Looking South.

Photograph No. 3: View of the West Embankment Upstream of the Structure, Looking Southwest.

Photograph No. 4: View of the West Embankment at the Structure, Looking West.

Photograph No. 5: View of the West Embankment Downstream of the Structure, Looking Northwest.

Photograph No. 6: View of the East Embankment Upstream of the Structure, Looking Southeast.

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

Photograph No. 8: View of the East Embankment Downstream of the Structure, Looking Northeast.

Photograph No. 9: View of the West Face of Pier 4, Looking Southeast.

Photograph No. 10: View of the East Face of Pier 4, Looking Northwest.

Photograph No. 11: View of the Typical Concrete Condition at the Waterline on the Upstream Nose of Pier 4, Looking West.

Photograph No. 12: View of the West Face of Pier 5, Looking Southeast.

Photograph No. 13: View of the East Face of Pier 5, Looking Northwest.

EXHIBIT 3 – UNDERWATER DIVE INSPECTION PROCEDURE 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 2

Dive Frequency: 60 months

SFN: 7200579 Bridge Number (County-Route-SLM-SD): SAN-6-1751

Superstructure Type Main Span Type: CONTINUOUS PLATE GIRDER

Approach Span: REINFORCED CONCRETE

Substructure Type Abutment Type: REINFORCED CONCRETE

Pier Type: REINFORCED CONCRETE HAMMERHEAD

Total Pier Count: 2

Total Pier Count in water: 2

Foundations: UNKNOWN

Feature Intersected SANDUSKY RIVER

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,

____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**

District 2 Bridge Engineer: David Geckle, P.E.

Email: david.geckle@dot.ohio.gov – Phone: 419-373-4377

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			
Property Owner			
Access Equipment			
Lake or River draw-down			
Canal dry time			
Tree removal			
Other:			
Other:			

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

Dive Team Narrative:

The dive team consisted of one Team Leader (NBIS, P.E., ADCI) and two Team Members (NBIS, UW, ADCI)

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	Anticipated current	__<1__ ft
If Yes, waterway river point	___N/A___	Scour Critical (item 113):	___5____
Anticipated water visibility depth	__1___ ft	POA in place:	Y/N
Anticipated Dive depth	__16.5___ ft	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 I 10% LEVEL II
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.)

_Riverfront Marina & Campgrounds Public Boat Ramp_____

_____

e. The maximum depth of the channel is typically measured_____ feet from

_The Midpoint of the Downstream 50 ft Fascia Between Piers 4 and 5_____

Reference Datum: Below the Top of Ledge at the Upstream Nose of Pier 5

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: 9/25/2020

Updated By: _____ Date: _____

Updated By: _____ Date: _____

Updated By: _____ Date: _____

Updated By: _____ Date: _____

Updated By: _____ Date: _____

VIII. Other Narrative Not Included In Previous Sections