UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 6201776 (OTT-357-0016)
SR 357 OVER PUT-IN-BAY
OTTAWA COUNTY, OH
DISTRICT 2

April 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 underwater 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 – Nicholas Lane – Collins Engineers, Inc.

Inspection Date(s): April 24, 2020

Water Visibility:	5 ft	***Water Velocity:***	<1 ft/s
Water Temperature:	40 °F	***Weather:***	Overcast – 40 °F
Waterline Elevation:	98.5 ft	***Type of Boat:***	N/A
Coordinates:	41.657077°N, -82.826878°W		
Access Location:	Northeast Embankment		
Dive Mode:	Surface Supplied Air		

Waterline Reference: 1.5 ft below the top of deck at the midspan of upstream fascia.
Maximum Depth at SSU: 9.5 ft – Southeast corner of Abutment 2
Shoreline Conditions: The north and south shorelines consisted of sparsely vegetated moderate slopes that is well protected with no signs of erosion.

Summary of Findings:

- **Abutment 1:**
  - The channel bottom material consisted of sand with scattered gravel up to 4 in. diameter with no probe rod penetration.
  - The steel sheet-piles and H-piles exhibited light surface corrosion with pitting up to 1/16 in. deep.
  - A spall was observed on the southeast corner of the pile cap measuring approximately 6 in. horizontal by 6 in. vertical by 5 in. deep with one exposed horizontal steel reinforcement exhibiting light surface corrosion.
  - Area of heavy surface corrosion was observed on Pile 'A' measuring approximately 1.5 ft vertical by 6 in. horizontal with a corrosion hole in the center of the area measuring 3 in. vertical by 1 in. horizontal. The area was located approximately 2.5 ft about the channel bottom.
  - A spall was observed on the southwest corner of the pile cap measuring approximately 3 ft horizontal by 3 in. vertical 2 in. deep with no exposed steel reinforcement.
- **Abutment 2:**
  - The channel bottom material consisted of sand with scattered gravel up to 4 in. diameter with no probe rod penetration.
  - The steel sheet-piles and H-piles exhibited light surface corrosion with pitting up to 1/16 in. deep.

- A spall was observed on the northeast corner of the pile cap measuring approximately 3 ft horizontal by 1 ft vertical by 2 in. deep with no exposed steel reinforcement.
- A crack was observed on the northwest corner of the wingwall measuring approximately 1.5 ft long by up to a maximum of 1/4 in. wide.

Summary of Recommendations:

- Repair spalls on pile cap.
- Monitor steel corrosion.

Underwater Inspection Coding:

NBI Ratings:

Item	Description	Coding	Condition
60	Substructure	5 – Fair Condition	Spall, Heavy Surface Corrosion
61	Channel	8 – Very Good Condition	
62	Culvert	N/A	
92B	UW Insp. Frequency	60 Months	
93B	Previous Insp. Date	N/A	
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
220	Reinforced Concrete Pile Cap / Footing	LF	50	40	0	10	0
225	Steel Pile	EA	8	7	0	1	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 SR-357 Bridge over Put-In-Bay in Ottawa County, OH. Collins Engineers, Inc. (Collins) conducted the underwater investigation for District 2 of the Ohio Department of Transportation (ODOT) on April 24, 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. 6201776 (OTT-357-0016) spans 15 ft, carrying SR-357 over Put-In-Bay and is approximately 25 ft wide. The bridge superstructure is constructed of one reinforced concrete slab span. The roadway orientation of the longitudinal axis of the bridge is east to west. The substructure units are labeled as Abutments 1 and 2. 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 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.) an engineer-diver (Matthew Rogers, E.I.T.) and an engineer-technician(Nicholas Lane) conducted the underwater inspection. The inspection was conducted using surface supplied air diving equipment. During the inspection, the inspectors worked from the shore 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. 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 and digital fathometer. 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 Abutments 1 and 2 and at 10 feet intervals in-line with the abutments, 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 5 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 6201776 (OTT-357-0016) was located approximately 1.5 ft below the top of deck at mid-span along the upstream fascia, which corresponds to an assumed waterline elevation of 98.5 ft. During the inspection, the waterway was flowing at less than 1 ft per second. The bridge skew was consistent with the channel alignment and does not require attention at this time. The east and west shorelines consisted of sparsely vegetated moderate slopes that is well protected with no signs of erosion. Refer to Photographs 3 through 6 in Exhibit 2 for views of the shorelines near the structure.

2.2 Substructure Conditions

2.2.1 Abutment 1

The channel bottom material consisted of sand with scattered gravel up to 4 in. diameter with no probe rod penetration. The steel sheet-piles and H-piles exhibited light surface corrosion with pitting up to 1/16 in. deep. A spall was observed on the southeast corner of the pile cap measuring approximately 6 in. horizontal by 6 in. vertical by 5 in. deep with one exposed horizontal steel reinforcement exhibiting light surface corrosion. Area of heavy surface corrosion was observed on Pile 'A' measuring approximately 1.5 ft vertical by 6 in. horizontal with a corrosion hole in the center of the area measuring 3 in. vertical by 1 in. horizontal. The area was located approximately 2.5 ft about the channel bottom. A spall was observed on the southwest corner of the pile cap measuring approximately 3 ft horizontal by 3 in. vertical 2 in. deep with no exposed steel reinforcement. Refer to Figure 6 in Exhibit 1 for detailed inspection notes of Abutment 1. Refer to Photographs 7 and 8 in Exhibit 2 for views of Abutment 1.

2.2.2 Abutment 2

The channel bottom material consisted of sand with scattered gravel up to 4 in. diameter with no probe rod penetration. The steel sheet-piles and H-piles exhibited light surface corrosion with pitting up to 1/16 in. deep. A spall was observed on the northeast corner of the pile cap measuring approximately 3 ft horizontal by 1 ft vertical by 2 in. deep with no exposed steel reinforcement. A crack was observed on the northwest corner of the wingwall measuring approximately 1.5 ft long by up to a maximum of 1/4 in. wide. Refer to Figure 7 in Exhibit 1 for detailed inspection notes of Abutment 2. Refer to Photographs 9 through 12 in Exhibit 2 for views of Abutment 2 and typical concrete and steel conditions at the waterline.

3.0 EVALUATION AND RECOMMENDATIONS

Overall, the inspected substructure units of Structure No. 6201776 (OTT-357-0016) were in fair condition. Since no design or as-built plans were available for the bridge, the amount of embedment of the footings in the channel bottom is unknown. As a result, the channel bottom configuration should continue to be monitored during future underwater inspections to verify that localized scour or overall channel degradation is not occurring and that both pier footings remain adequately embedded in the channel bottom. Design or as-built drawings for the bridge should be obtained and reviewed, if possible, prior to the next underwater inspection to determine the exact construction of the piers and their foundations.

The corrosion on the pile of Abutment 1 is not a structural concern at this time, and as a result, no repairs are recommended. However, since the available design plans and construction documentation did not indicate the thickness of the piles, the percentage of section loss due to corrosion is unknown. It is therefore recommended that the extent and severity of the corrosion be closely monitored during future inspections. Should the extent or severity of the corrosion progress, it may be necessary to repair the piles by cleaning the piles and installing wraps or encasements. It is also recommended that during future inspections the remaining thickness of the steel piles be measured with the use of an ultrasonic thickness measuring device.

The spalls and associated concrete delaminations at Abutments 1 and 2 are not structural concerns at this time; however, they should be repaired to prevent further deterioration. The repairs should include removal of unsound concrete to a minimum of 1 inch behind the reinforcing steel, cleaning and replacing reinforcing steel as required, and placing concrete designed to provide high durability with low permeability.

It is recommended that the submerged substructure units of Structure No. 6201776 (OTT-357-0016) be next inspected underwater at an interval not to exceed 60 months, no later than April 25, 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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SR-357 OVER PUT-IN-BAY
STRUCTURE NO. 6201776
(OTT-357-0016)
LOCATION MAP
OTTAWA COUNTY, OHIO

INSPECTED BY: JMJ	CEI PROJECT: 55–12239.00
DRAWN BY: BBM	DATE: 24 APRIL 2020
CHECKED BY: JMJ	SHEET NO: 1

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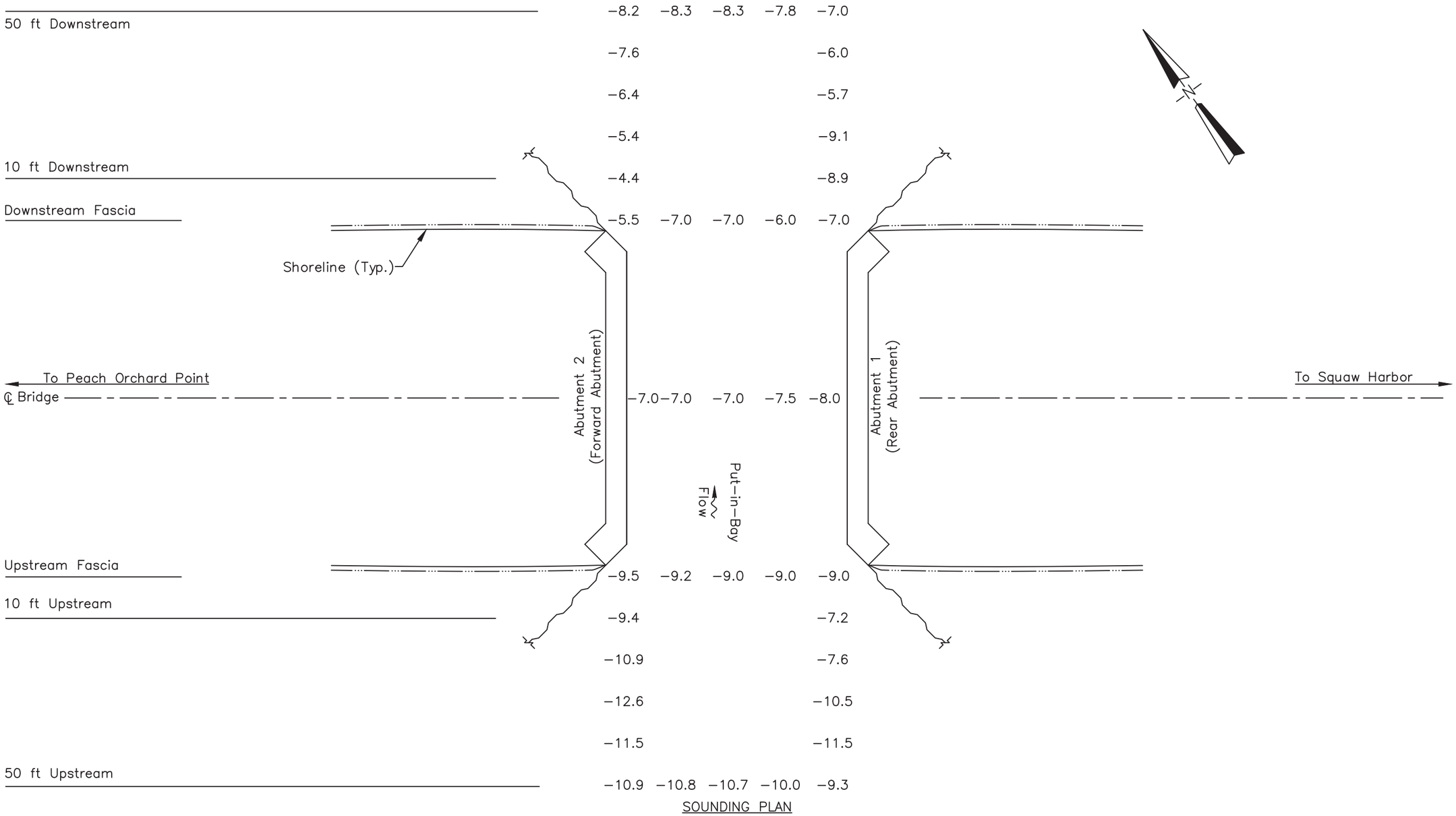

SOUNDING PLAN

GENERAL NOTES:

1. Abutments 1 and 2 were inspected underwater. Substructure units are labeled according to available record drawings.
2. At the time of inspection on April 24, 2020, the waterline was located approximately 1.5 ft below Top of Deck at midspan of upstream face (Assumed EL. +100.0 ft). This corresponds with a waterline elevation of +98.5 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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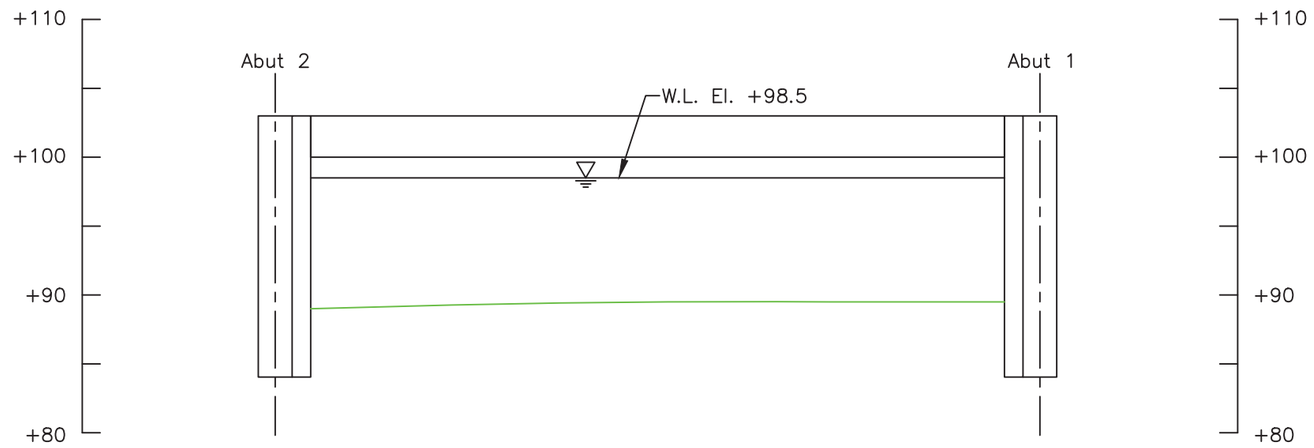
SR-357 OVER PUT-IN-BAY
STRUCTURE NO. 6201776 (OTT-357-0016)
SOUNDING PLAN
OTTAWA COUNTY, OHIO

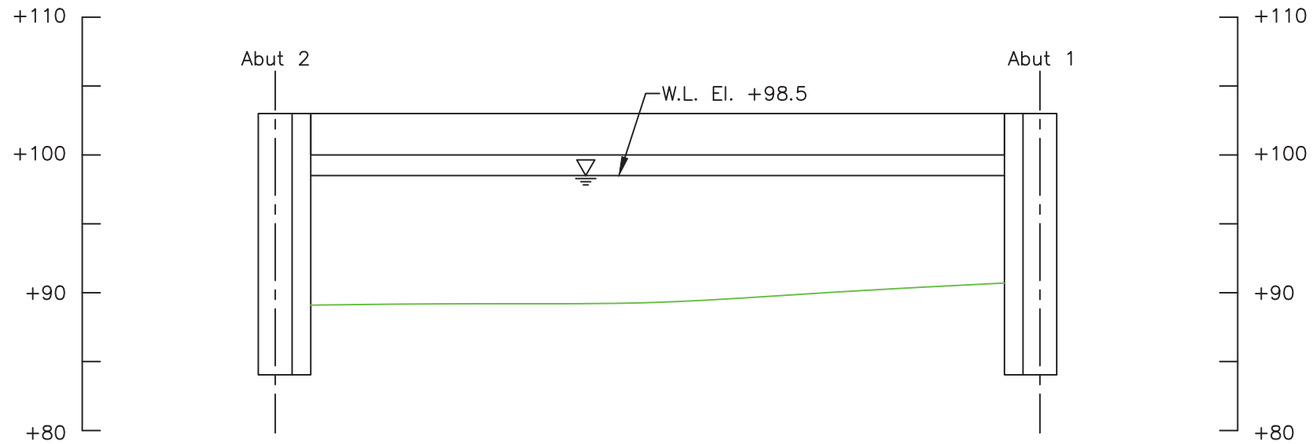
CEI PROJECT	55−12239.00
INSPECTED BY:	JMJ
DRAWN BY:	BBM
CHECKED BY:	JMJ
DATE:	APR 2020
SHEET NO:	2

UPSTREAM FASCIA LOOKING DOWNSTREAM	
Location	Y(ft)*
A2	11.0
1/4	10.7
1/2	10.5
3/4	10.5
A1	10.5

*Profile taken from top of deck



CHANNEL CROSS SECTION
UPSTREAM FASCIA
(LOOKING DOWNSTREAM)



CHANNEL CROSS SECTION
50 FT UPSTREAM
(LOOKING DOWNSTREAM)

Note:

Footing elevations unknown due to unavailable record drawings.

LEGEND

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

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SR-357 OVER PUT-IN-BAY
STRUCTURE NO. 6201776 (OTT-357-0016)
CROSS SECTIONS - UPSTREAM
OTTAWA COUNTY, OHIO

CEI PROJECT	55–12239.00
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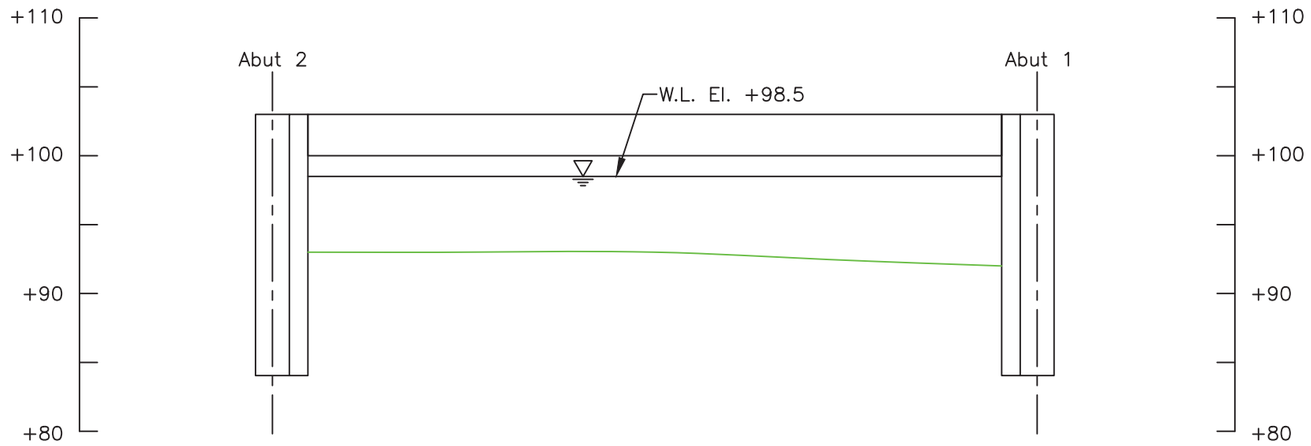
DATE:	APR 2020
SHEET NO:	3



CHANNEL CROSS SECTION
STRUCTURE CENTERLINE
(LOOKING DOWNSTREAM)

Note:

Footing elevations unknown due to unavailable record drawings.

LEGEND

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

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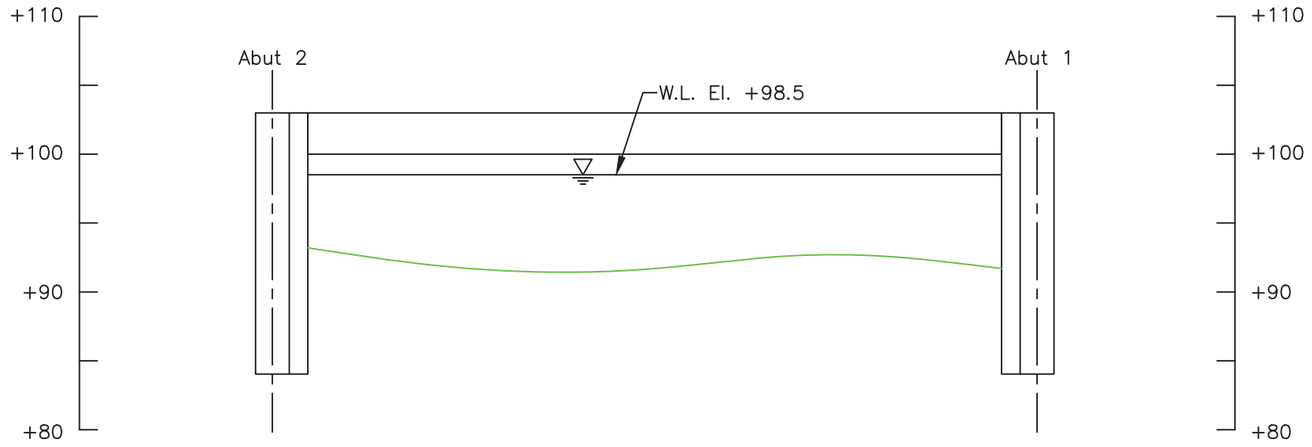
SR-357 OVER PUT-IN-BAY
STRUCTURE NO. 6201776 (OTT-357-0016)
CROSS SECTIONS - CENTERLINE
OTTAWA COUNTY, OHIO

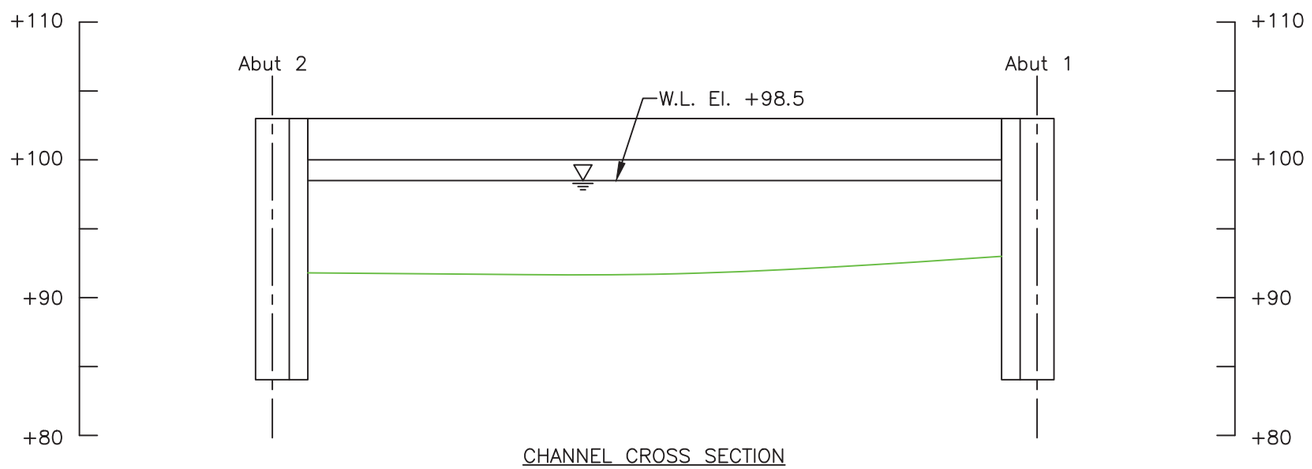
CEI PROJECT	55–12239.00
INSPECTED BY:	JMJ
DRAWN BY:	BBM
CHECKED BY:	JMJ
DATE:	APR 2020
SHEET NO:	4

DOWNSTREAM FASCIA LOOKING DOWNSTREAM	
Location	Y(ft)*
A2	6.8
1/4	8.3
1/2	8.3
3/4	7.3
A1	8.3

*Profile taken from top of deck



CHANNEL CROSS SECTION
DOWNSTREAM FASCIA
(LOOKING DOWNSTREAM)



CHANNEL CROSS SECTION
50 FT DOWNSTREAM
(LOOKING DOWNSTREAM)

Note:

Footing elevations unknown due to unavailable record drawings.

LEGEND

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

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SR-357 OVER PUT-IN-BAY
STRUCTURE NO. 6201776 (OTT-357-0016)
CROSS SECTIONS - DOWNSTREAM
OTTAWA COUNTY, OHIO

CEI PROJECT	55–12239.00
INSPECTED BY:	JMJ
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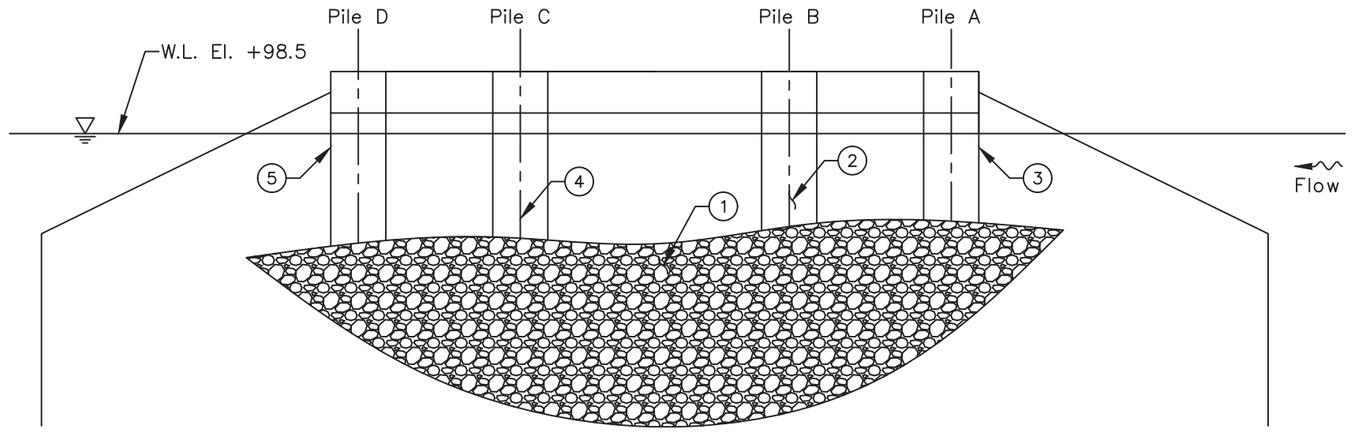
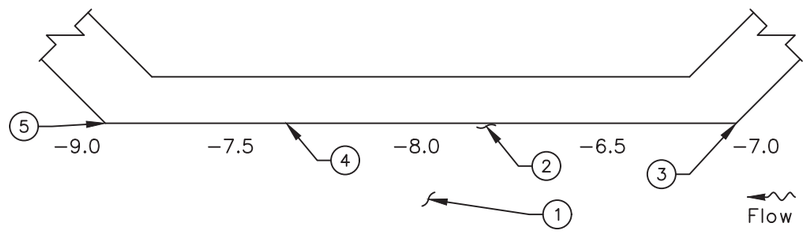
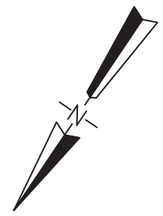
DATE:	APR 2020
SHEET NO:	5



NORTH ELEVATION
(LOOKING SOUTH)



PLAN



INSPECTION NOTES:

1. The channel bottom material consisted of sand with gravel up to 4 in. diameter with no probe rod penetration.
2. Steel sheet–pile and pile typically exhibited light surface corrosion with pitting up to 1/16 in. deep.
3. Spall measuring approximately 6 in. long by 6 in. wide by 5 in. deep was found with one exposed horizontal rebar exhibiting light surface corrosion.
4. Area of heavy surface corrosion with rust nodules measuring 1.5 ft vertical by 6 in. horizontal located on Pile 'A' at 2.5 ft above channel bottom. Centered in area is a corrosion hole measuring approximately 3 in. vertical by 1 in. horizontal.
5. Spall measuring 3 ft horizontal by 3 in. vertical by 2 ft deep was found along bottom face of cap at southwest corner of Abutment 1 with no exposed steel reinforcement.

LEGEND

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

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SR-357 OVER PUT-IN-BAY
STRUCTURE NO. 6201776 (OTT-357-0016)
ABUTMENT 1
OTTAWA COUNTY, OHIO

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DATE: APR 2020
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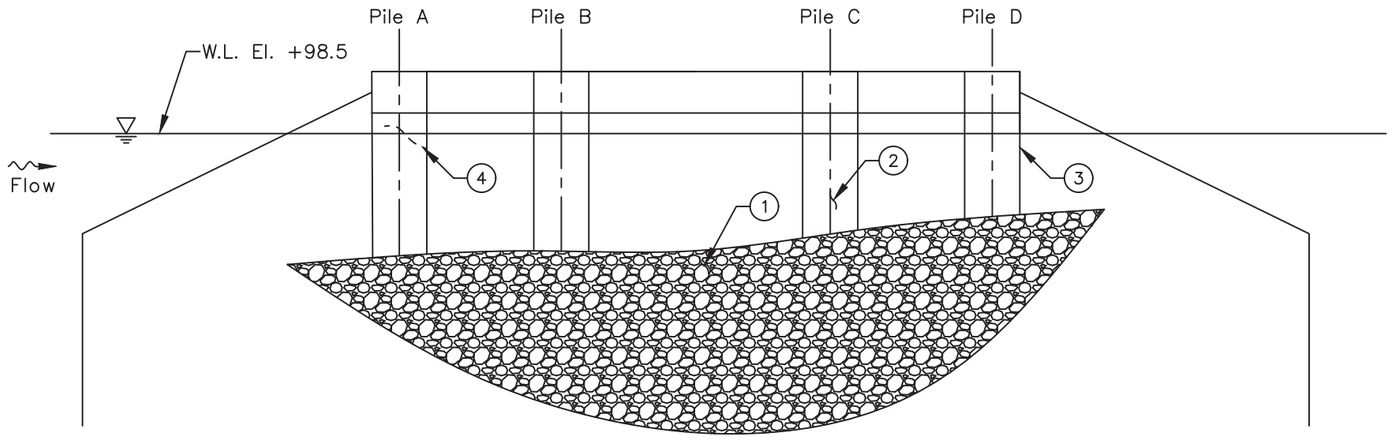
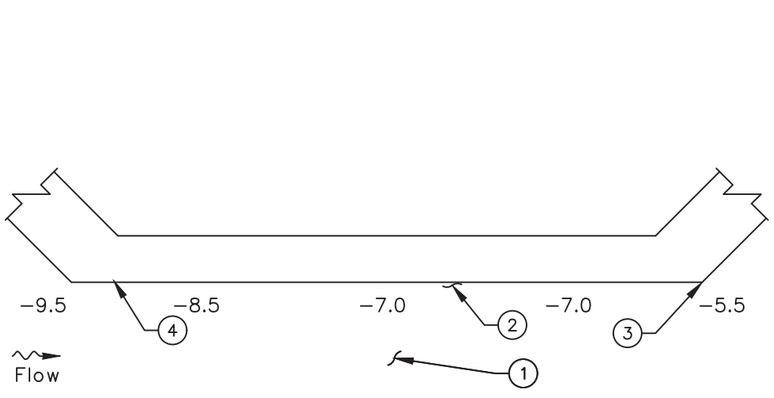


SOUTH ELEVATION
(LOOKING NORTH)



PLAN

INSPECTION NOTES:

1. The channel bottom material consisted of sand with gravel up to 4 in. diameter with no probe rod penetration.
2. Steel sheet–pile and pile typically exhibited light surface corrosion with pitting up to 1/16 in. deep.
3. Spall measuring 3 ft horizontal by 1 ft vertical by 2 ft deep was found along bottom face of cap at the northeast corner with no observed steel rebar.
4. Crack measuring 1.5 ft long by 1/4 in. wide located on the northwest corner of Abutment 2.

LEGEND

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

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SR-357 OVER PUT-IN-BAY
STRUCTURE NO. 6201776 (OTT-357-0016)
ABUTMENT 2
OTTAWA COUNTY, OHIO

CEI PROJECT 55–12239.00
INSPECTED BY: JMJ
DRAWN BY: BBM
CHECKED BY: JMJ
DATE: APR 2020
SHEET NO: 7

EXHIBIT 2 – INSPECTION PHOTOGRAPHS

Photograph No. 1: Overall View of Structure No. 6201776 (OTT-357-0016), Looking Northeast.

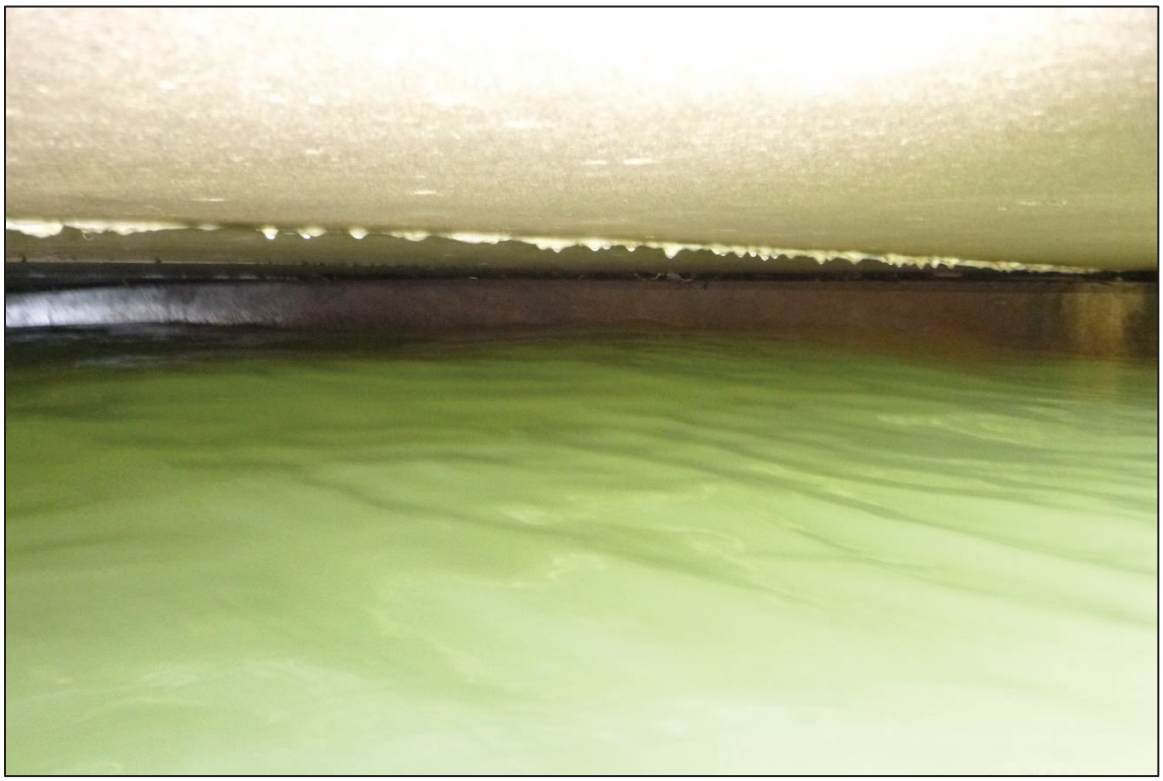
Photograph No. 2: Overall View of Structure No. 6201776 (OTT-357-0016), Looking Southwest.

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

Photograph No. 4: View of the North Embankment Downstream of the Structure, Looking North.

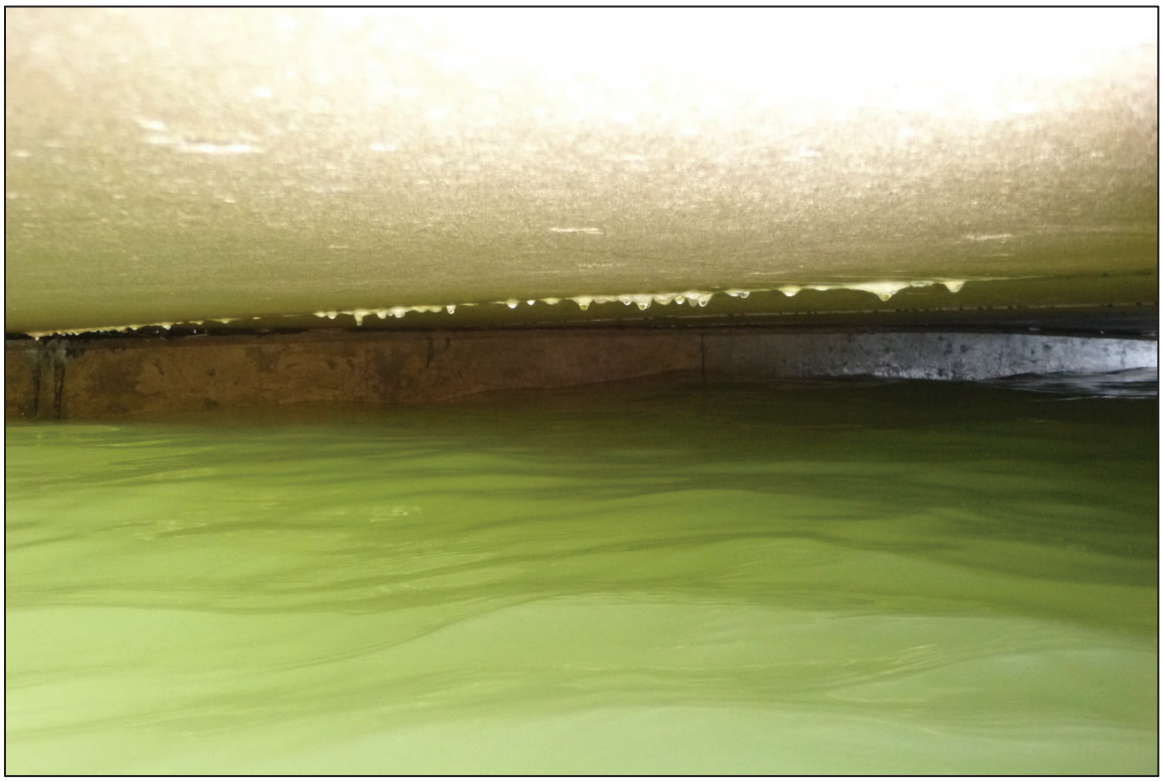
Photograph No. 5: View of the South Embankment Upstream of the Structure, Looking Southeast.

Photograph No. 6: View of the South Embankment Downstream of the Structure, Looking South.



Photograph No. 7: View of Abutment 1, Looking Southeast.

Photograph No. 8: View of Abutment 1, Looking South.



Photograph No. 9: View of Abutment 2, Looking North.

Photograph No. 10: View of Abutment 2, Looking Northwest.

Photograph No. 11: View of the Typical Concrete Condition and Crack at the Waterline on the Abutment 2, Looking North.

Photograph No. 12: View of the Typical Steel Condition at the Waterline on the Abutment 2, Looking North.

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: 6201776 Bridge Number (County-Route-SLM-SD): OTT-357-0016

Superstructure Type Main Span Type: REINFORCED CONCRETE SLAB

Approach Span: REINFORCED CONCRETE

Substructure Type Abutment Type: REINFORCED CONCRETE

Pier Type: N/A

Total Pier Count: N/A

Total Pier Count in water: N/A

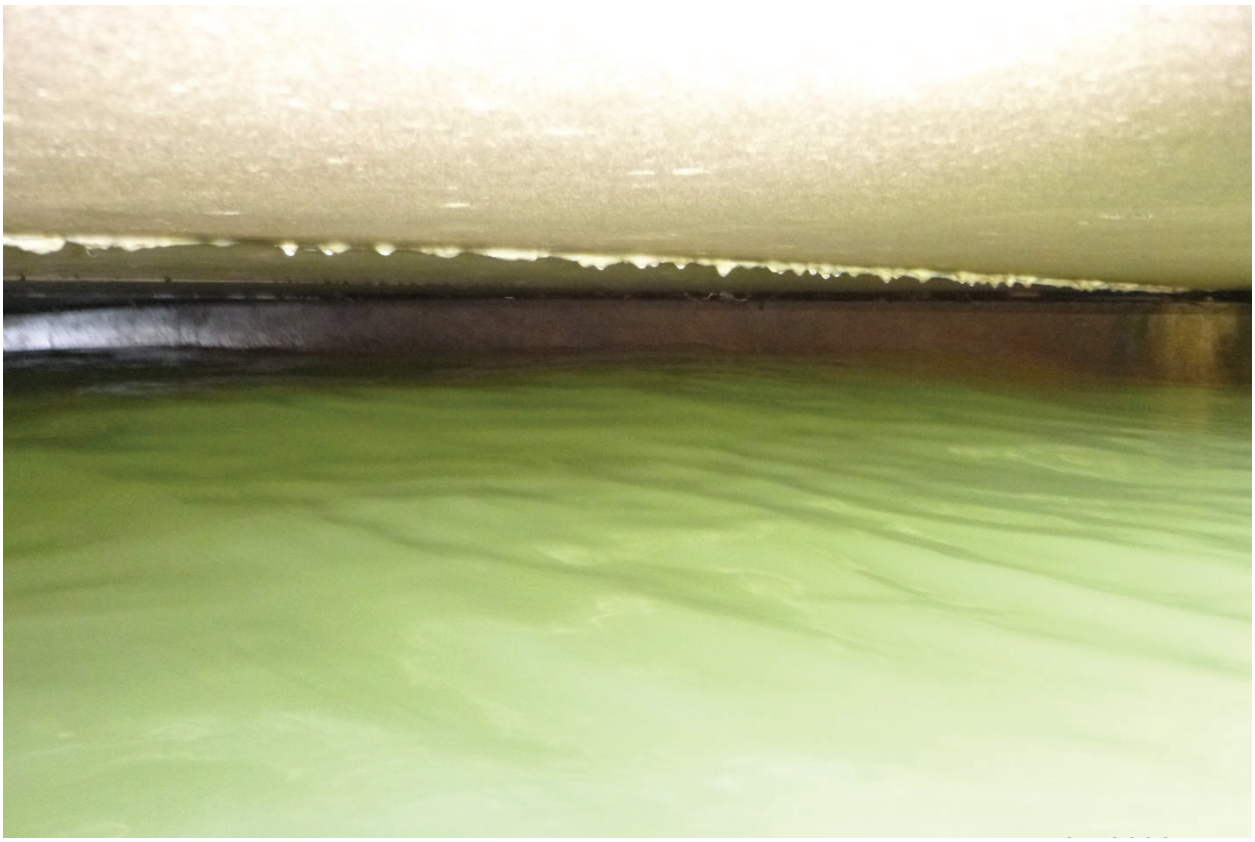
Foundations: UNKNOWN

Feature Intersected PUT-IN-BAY

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	___5__ ft	POA in place: Y/N	
Anticipated Dive depth	__9.5__ 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	N/A	
Abutment	2	100% LEVEL I 10% LEVEL II
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

____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

__X__Shore

____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.)

__NORTHEAST EMBANKMENT____

e. The maximum depth of the channel is typically measured_30__ feet from _UPSTREAM NOSE OF ABUTMENT 2___

Reference Datum: Top of Deck at the Midspan of the Upstream Fascia

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