



UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 4808479 (LUC-475-1538)
SANITARY SEWER UNDER RAMP TO I-475 EB
LUCAS COUNTY, OH
DISTRICT 2

May 2020

Prepared for:



10/9/2020

Prepared by:

COLLINS
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UNDERWATER INSPECTION

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Lucas County, OH • May 2020



TABLE OF CONTENTS

EXECUTIVE SUMMARY

1.0 INTRODUCTION 1

 1.1 Purpose and Scope 1

 1.2 General Description of the Structure 1

 1.3 Method of Investigation..... 1

2.0 EXISTING CONDITIONS..... 2

 2.1 General Conditions 2

 2.2 Substructure Conditions..... 2

 2.2.1 Storm Sewer..... 2

3.0 EVALUATION AND RECOMMENDATIONS 2

EXHIBIT 1 – FIGURES 3

 LOCATION MAP

 AERIAL VIEW

 DESIGN DRAWINGS

EXHIBIT 2 – INSPECTION PHOTOGRAPHS 7

 Photograph No. 1: Overall View of Access Location for Structure No. 4808479 (LUC-475-1538),
Looking East.

 Photograph No. 2: Overall View of Manhole for Structure No. 4808479 (LUC-475-1538), Looking
East.

 Photograph No. 3: View of the Typical Joint Condition, Looking South.

 Photograph No. 4: View of the Typical Concrete Condition, Looking South.

UNDERWATER INSPECTION

Sanitary Sewer Under Ramp to I-475 EB • Structure No. 4808479 (LUC-475-1538)
Lucas County, OH • May 2020



EXECUTIVE SUMMARY

Project: ODOT District 2 Underwater Bridge Inspections - 2020

Purpose of Project: To perform a detailed visual and tactile investigation of storm sewer 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 – Phil Osborn, E.I.T. – Collins Engineers, Inc.
Team Member – Kevin Mitchell, E.I.T. – Collins Engineers, Inc.
Team Member – Nicholas Lane – Collins Engineers, Inc.

Inspection Date(s): May 28, 2020

Water Visibility:	N/A	Water Velocity:	N/A
Water Temperature:	N/A	Weather:	Overcast – 80 °F
Waterline Elevation:	N/A	Type of Boat:	N/A
Coordinates:	41.6785°N, 83.5894°W		
Access Location:	Manhole located south of the right shoulder on the ramp to I-475 EB		
Dive Mode:	Surface Supplied Air equipment for confined space entry		
Waterline Reference:	N/A		
Maximum Depth at SSU:	4 in.		
Shoreline Conditions:	N/A		

Summary of Findings:

- **Storm Sewer:**
 - Random areas of 4 in. diameter by 1/8 in. popouts were observed along the length of the pipe.
 - Random areas of minor joint sealant failure was observed. No moisture leakage was detected.

Summary of Recommendations:

- Monitor minor popouts.
- Monitor joint sealant deterioration.

UNDERWATER INSPECTION

Sanitary Sewer Under Ramp to I-475 EB • Structure No. 4808479 (LUC-475-1538)

Lucas County, OH • May 2020



Underwater Inspection Coding:

NBI Ratings:

Item	Description	Coding	Condition
60	Substructure	N/A	
61	Channel	N/A	
62	Culvert	8	No noteworthy deficiencies
92B	UW Insp. Frequency	60 Months	
93B	Previous Insp. Date	05 28 20	
113	Scour Critical Bridges	N/A	

AASHTO National Bridge Element (NBE) Ratings:

Element #	Description	Units	Total	Condition State			
				1	2	3	4
241	Reinforced Concrete Culvert	LF	240	240	0	0	0
300	Expansion Joint	EA	30	30	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.

UNDERWATER INSPECTION

Sanitary Sewer Under Ramp to I-475 EB • Structure No. 4808479 (LUC-475-1538)
Lucas County, OH • May 2020



1.0 INTRODUCTION

1.1 Purpose and Scope

This report consists of the results of a detailed investigation performed on the storm sewer located under the ramp to I-475 EB in Lucas County, OH. Collins Engineers, Inc. (Collins) conducted the investigation for District 2 of the Ohio Department of Transportation (ODOT) on May 28, 2020. The primary purpose of the investigation was as follows:

- Determine the condition of the storm sewer at the time of the inspection.
- Obtain photographs of any significant defects.

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. 4808479 (LUC-475-1538) is a 10 ft diameter concrete storm sewer. Refer to Figures 1 and 2 in Exhibit 1 for a Location Maps of the structure. Refer to Photographs 1 and 2 in Exhibit 2 for overall views of the structure.

1.3 Method of Investigation

A detailed field inspection was conducted to determine the physical condition of the interior surfaces of the storm sewer. A five-person team consisting of a professional engineer-diver and team leader (Joshua Johnson, P.E.), three engineer divers (Matthew Rogers, E.I.T., Phil Osborn, E.I.T., and Kevin Mitchell, E.I.T.) and a technician diver (Nicholas Lane) conducted the confined spaced entry inspection. The inspection was conducted using surface supplied air diving equipment. During the inspection, the inspectors worked from roadway shoulder and a note taker recorded the inspection notes.

The inspection consisted of a visual and tactile examination of the accessible surfaces of the with particular attention given to any observed areas of deterioration or apparent distress. Approximately 10 percent of the total area on the surfaces of the storm sewer was cleaned so that the condition could be more closely examined. Photographs were taken to document the general conditions and observed deficiencies.

UNDERWATER INSPECTION

Sanitary Sewer Under Ramp to I-475 EB • Structure No. 4808479 (LUC-475-1538)
Lucas County, OH • May 2020



2.0 EXISTING CONDITIONS

2.1 General Conditions

At the time of the inspection, the bottom of the pipe for Structure No. 4808479 (LUC-475-1538) was located approximately 60 ft below grade. During the inspection, the storm sewer had approximately 4 in. of water in the bottom with no flow. The storm sewer runs northwest to southeast and terminates in the Maumee River. Inspectors were able to inspect approximately 240 ft northwest of the access point.

2.2 Substructure Conditions

2.2.1 *Storm Sewer*

The storm sewer pipe exhibited light scaling up to 1/8 in deep and light marine growth along the bottom surface. Random areas of 4 in. diameter by 1/8 in. popouts were observed along the length of the pipe. Random areas of minor joint sealant failure were observed. No moisture leakage was detected. No significant defects that require attention were documented. Refer to Figure 3 in Exhibit 1 for design drawings for the storm sewer. Refer to Photographs 3 and 4 in Exhibit 2 for views of typical joint condition and typical concrete condition.

3.0 EVALUATION AND RECOMMENDATIONS

Overall, the inspected portions of Structure No. 4808479 (LUC-475-1538) were in good condition with no significant deterioration noted. It is recommended that Structure No. 4808479 (LUC-475-1538) be next inspected at an interval not to exceed 60 months, no later than May 28, 2025.

Respectfully Submitted,
COLLINS ENGINEERS, INC.

A handwritten signature in black ink, appearing to read "Joshua Johnson".

Joshua Johnson, P.E.
Project Manager

Originated by:
Joshua Johnson, P.E.

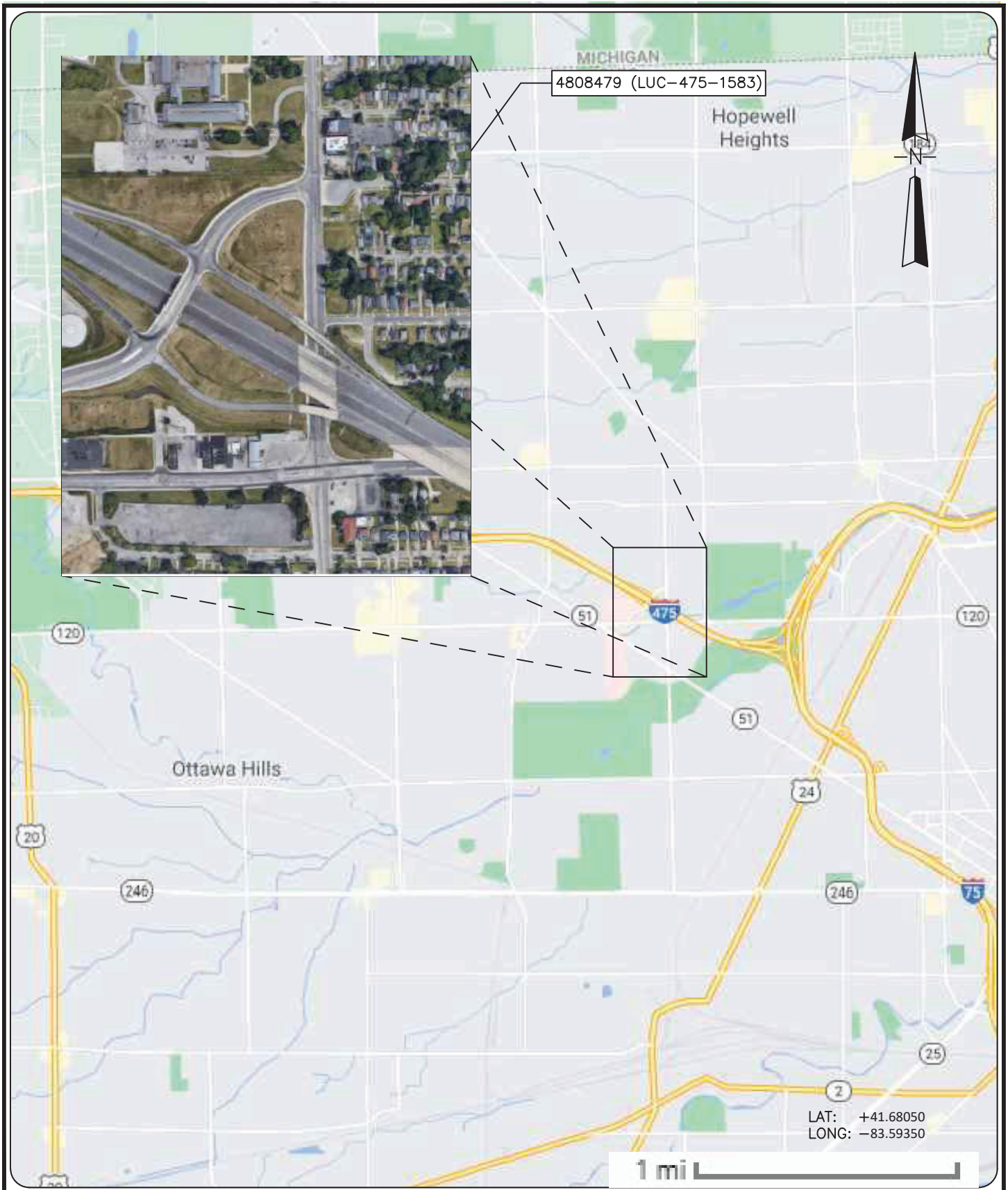
UNDERWATER INSPECTION

Sanitary Sewer Under Ramp to I-475 EB • Structure No. 4808479 (LUC-475-1538)

Lucas County, OH • May 2020



EXHIBIT 1 – FIGURES



4808479 (LUC-475-1583)

Hopewell Heights

Ottawa Hills

LAT: +41.68050
LONG: -83.59350

1 mi

COLLINS ENGINEERS

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Ohio Department of
Transportation, District 2
317 East Poe Rd.
Bowling Green, OH 45601
Phone: 419-353-8131

SANITARY SEWER UNDER RAMP TO I-475 EB
STRUCTURE NO. 4808479
(LUC-475-1538)

LOCATION MAP
LUCAS COUNTY, OHIO

INSPECTED BY: MOR	CEI PROJECT: 55-12239.00
DRAWN BY: BBM	DATE: 28 MAY 2020
CHECKED BY: JMJ	SHEET NO: 1



**COLLINS
ENGINEERS**

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SANITARY SEWER UNDER RAMP TO I-475 EB
STRUCTURE NO. 4808479
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AERIAL VIEW
LUCAS COUNTY, OHIO

INSPECTED BY: MOR	CEI PROJECT: 55-12239.00
DRAWN BY: BBM	DATE: 28 MAY 2020
CHECKED BY: JMJ	SHEET NO: 2



HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED MER
CHECKED RWK

PLAN I.R. 475
STA. 315+00 TO STA. 320+00

LUC-475-14.18

234
1331

To Be Relocated By Others:
△ - Ex. Elec. Line

For Storm Sewer Profiles
See Sheets:
362 363
366 448
549 550
563 672
673

(TBR) = To Be Removed
(TBA) = To Be Abandoned

Ramp D4
P.I. STA. 315+37.05
Δ = 7° 16' 12" (RT)
Dc = 4° 00' 00"
R = 1,432.39'
T = 91.00'
L = 181.75'
E = 2.89'
emax = 0.040

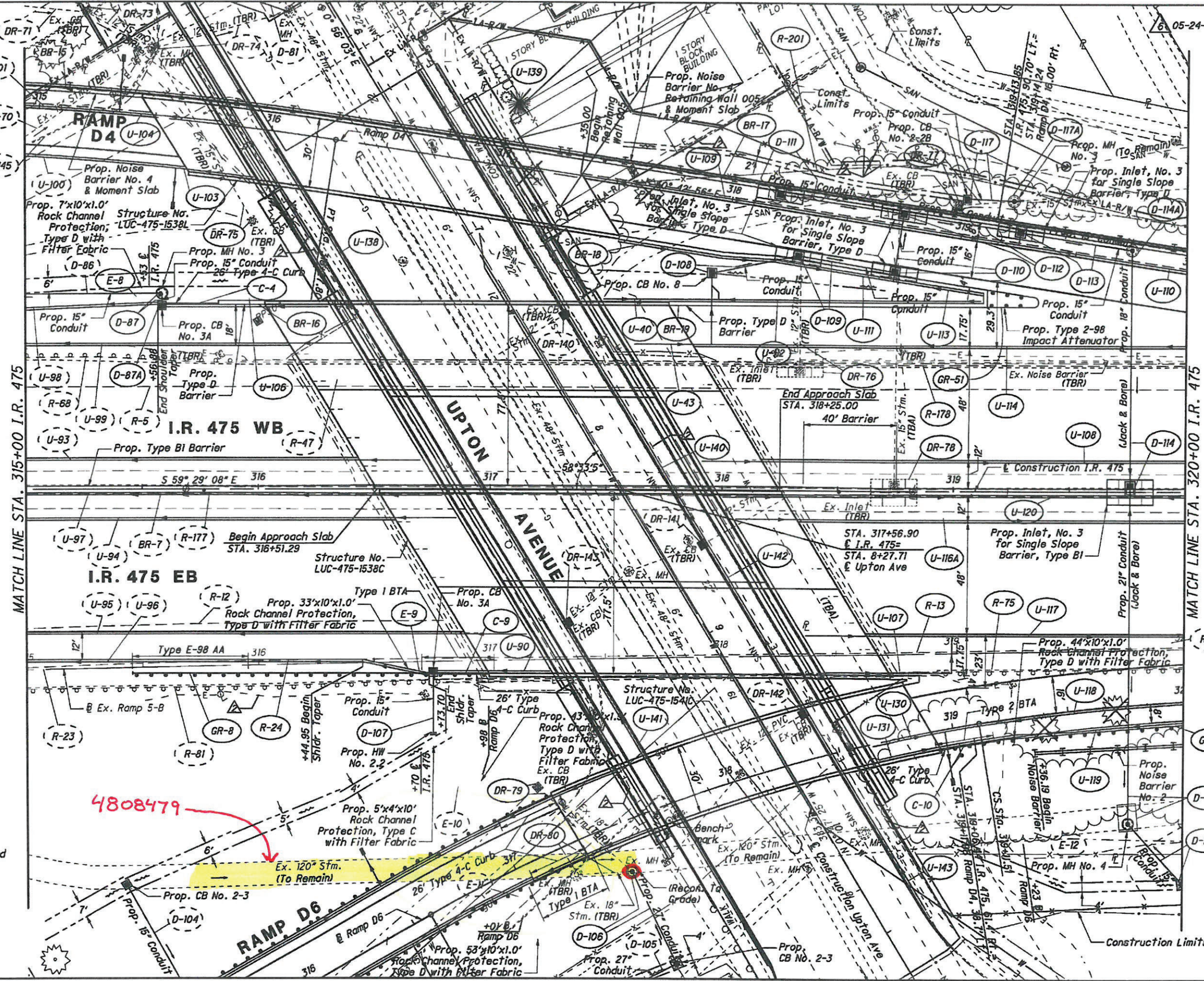
Ramp D6
P.I. STA. 318+43.51
Δ = 28° 15' 11" (RT)
Dc = 8° 00' 00"
R = 716.20'
Ls1 = 0.00'
θs1 = 0° 00' 00"
LT1 = 0.00'
ST1 = 0.00'
x1 = 0.00'
y1 = 0.00'
k1 = 0.00'
p1 = 0.00'
Ls2 = 200.00'
θs2 = 8° 00' 00"
LT2 = 133.47'
ST2 = 66.79'
x2 = 199.61'
y2 = 9.30'
k2 = 99.94'
p2 = 2.33'
Δc = 20° 15' 11" (RT)
Lc = 253.16'
Ts1 = 185.16'
Ts2 = 275.86'
Es = 23.55'
emax = 0.060

For Interchange Details
See Sheets 641- 643

⊗ Structures To Be Demolished By Others.

Remove Concrete Island And Replace With Full Depth Asphalt

Benchmark:
Mag Nail Set
Elev. 595.79' Sta. 317+70.11,
Offset 6.76' Rt.
Ramp D6



MATCH LINE STA. 315+00 I.R. 475

MATCH LINE STA. 320+00 I.R. 475

4808479

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Lucas County, OH • May 2020



EXHIBIT 2 – INSPECTION PHOTOGRAPHS

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Lucas County, OH • May 2020



Photograph No. 1: Overall View of Access Location for Structure No. 4808479 (LUC-475-1538), Looking East.



Photograph No. 2: Overall View of Manhole for Structure No. 4808479 (LUC-475-1538), Looking East.

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Photograph No. 3: View of the Typical Joint Condition, Looking South.



Photograph No. 4: View of the Typical Concrete Condition, Looking South.