



UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 4808428 (LUC-475-1503)
SANITARY SEWER UNDER I-475 EB
LUCAS COUNTY, OH
DISTRICT 2

May 2020

Prepared for:



10/9/2020

Prepared by:

COLLINS
ENGINEERS INC.

124 Venture Court, Suite 10

Lexington, Kentucky 40511

859.367.0097 • www.collinsengr.com

UNDERWATER INSPECTION

Sanitary Sewer Under I-475 EB • Structure No. 4808428 (LUC-475-1503)

Lucas County, OH • May 2020



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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:	41.6805°N, 83.5935°W		
Access Location:	Manhole located at end of gore between I-475 EB and Ramp		
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 were observed. No moisture leakage was detected.

Summary of Recommendations:

- Monitor minor popouts.
- Monitor joint sealant deterioration.

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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	230	230	0	0	0
300	Expansion Joint	EA	29	29	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.

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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 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. 4808428 (LUC-475-1503) 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.

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2.0 EXISTING CONDITIONS

2.1 General Conditions

At the time of the inspection, the bottom of the pipe for Structure No. 4808428 (LUC-475-1503) was located approximately 70 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 230 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. 4808428 (LUC-475-1503) were in good condition with no significant deterioration noted. It is recommended that Structure No. 4808428 (LUC-475-1503) 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.

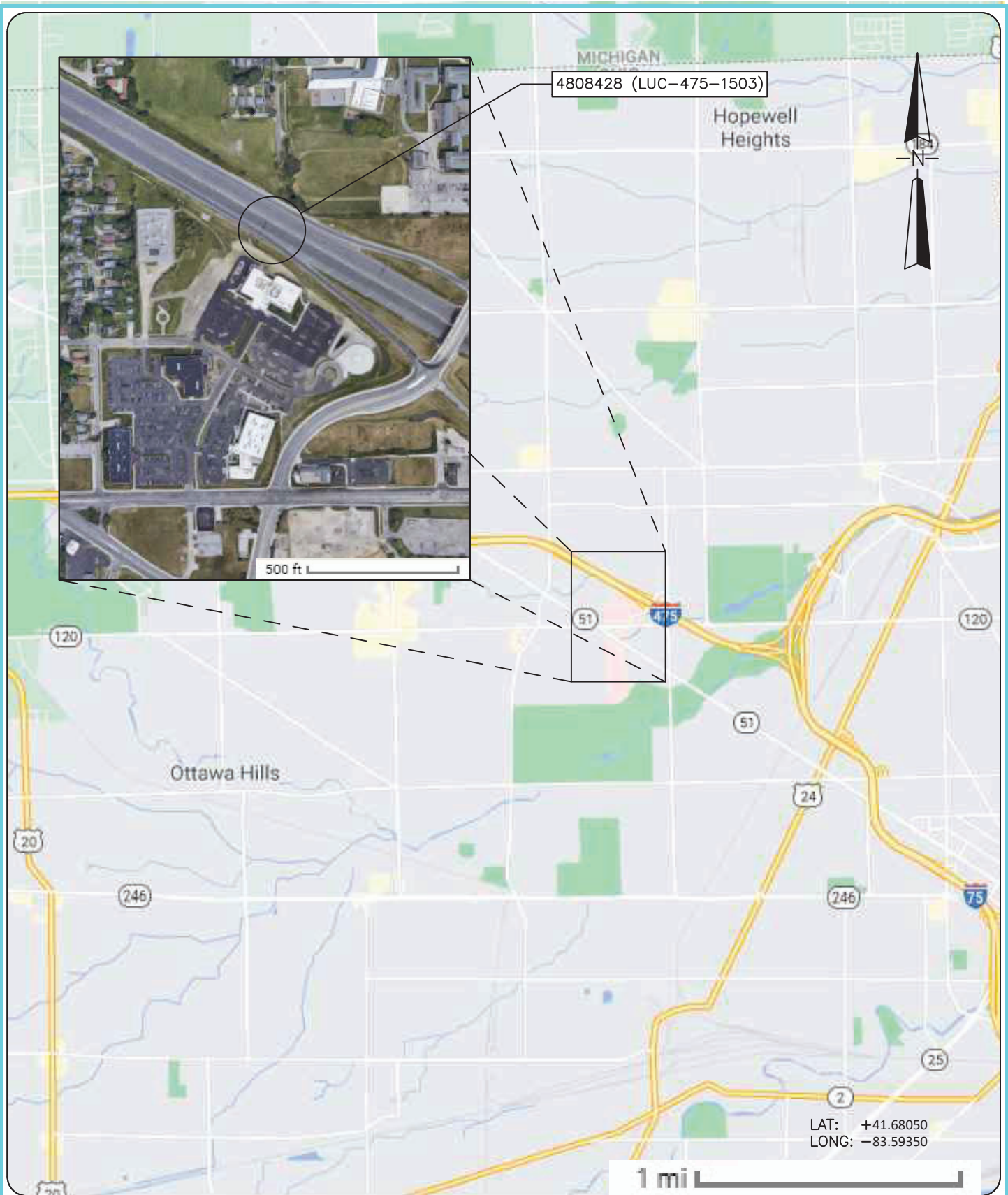
UNDERWATER INSPECTION

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EXHIBIT 1 – FIGURES



**COLLINS
ENGINEERS**

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



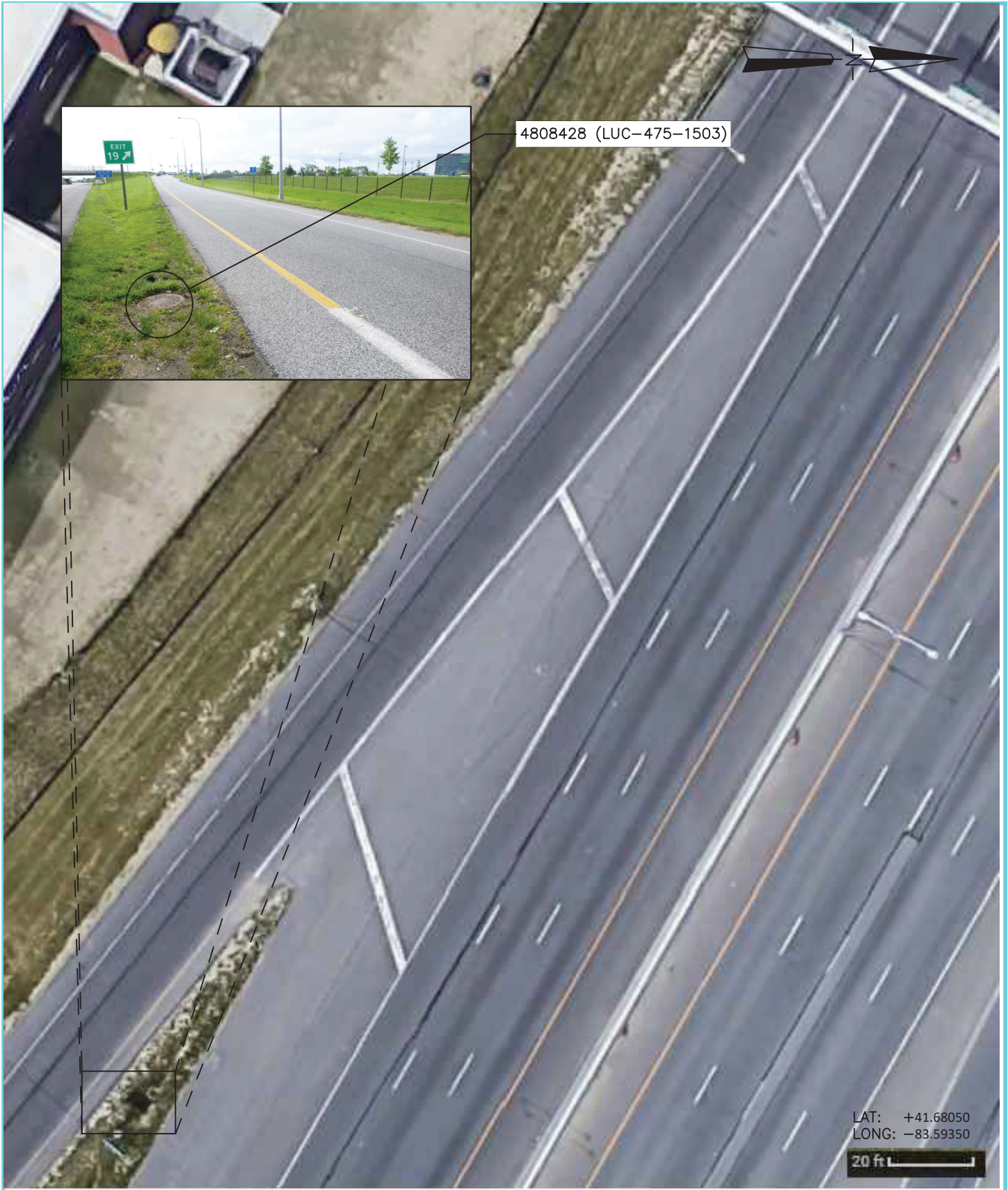
Ohio Department of
Transportation, District 2
317 East Poe Rd.
Bowling Green, OH 45601
Phone: 419-353-8131

**SANITARY SEWER UNDER I-475 EB
STRUCTURE NO. 4808428
(LUC-475-1503)
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



4808428 (LUC-475-1503)

LAT: +41.68050
LONG: -83.59350

20 ft

**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

**SANITARY SEWER UNDER I-475 EB
STRUCTURE NO. 4808428
(LUC-475-1503)
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

To Be Relocated By Others:
 ▲ - Ex. Elec. Line (On Structure)
 ▽ - Ex. Tele. Line

3 05-14-2010

For Storm Sewer Profiles
 See Sheets: 244 346
 350 429
 432 551
 669 671

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

Ramp D3
 P.I. STA. 304+54.90
 $\Delta = 12^\circ 30' 50" (LT)$
 $Dc = 4^\circ 00' 00"$
 $R = 1,432.39'$
 $Ls1 = 200.00'$
 $ts1 = 4^\circ 00' 00"$
 $LT1 = 133.37'$
 $ST1 = 66.70'$
 $x1 = 199.90'$
 $y1 = 4.65'$
 $k1 = 99.98'$
 $p1 = 1.16'$
 $Ls2 = 0.00'$
 $ts2 = 0^\circ 00' 00"$
 $LT2 = 0.00'$
 $ST2 = 0.00'$
 $x2 = 0.00'$
 $y2 = 0.00'$
 $k2 = 0.00'$
 $p2 = 0.00'$
 $\Delta c = 8^\circ 30' 50" (LT)$
 $Lc = 212.85'$
 $Ts1 = 251.79'$
 $Ts2 = 162.42'$
 $Es = 9.18'$
 $emax = 0.046$

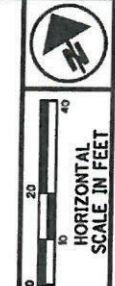
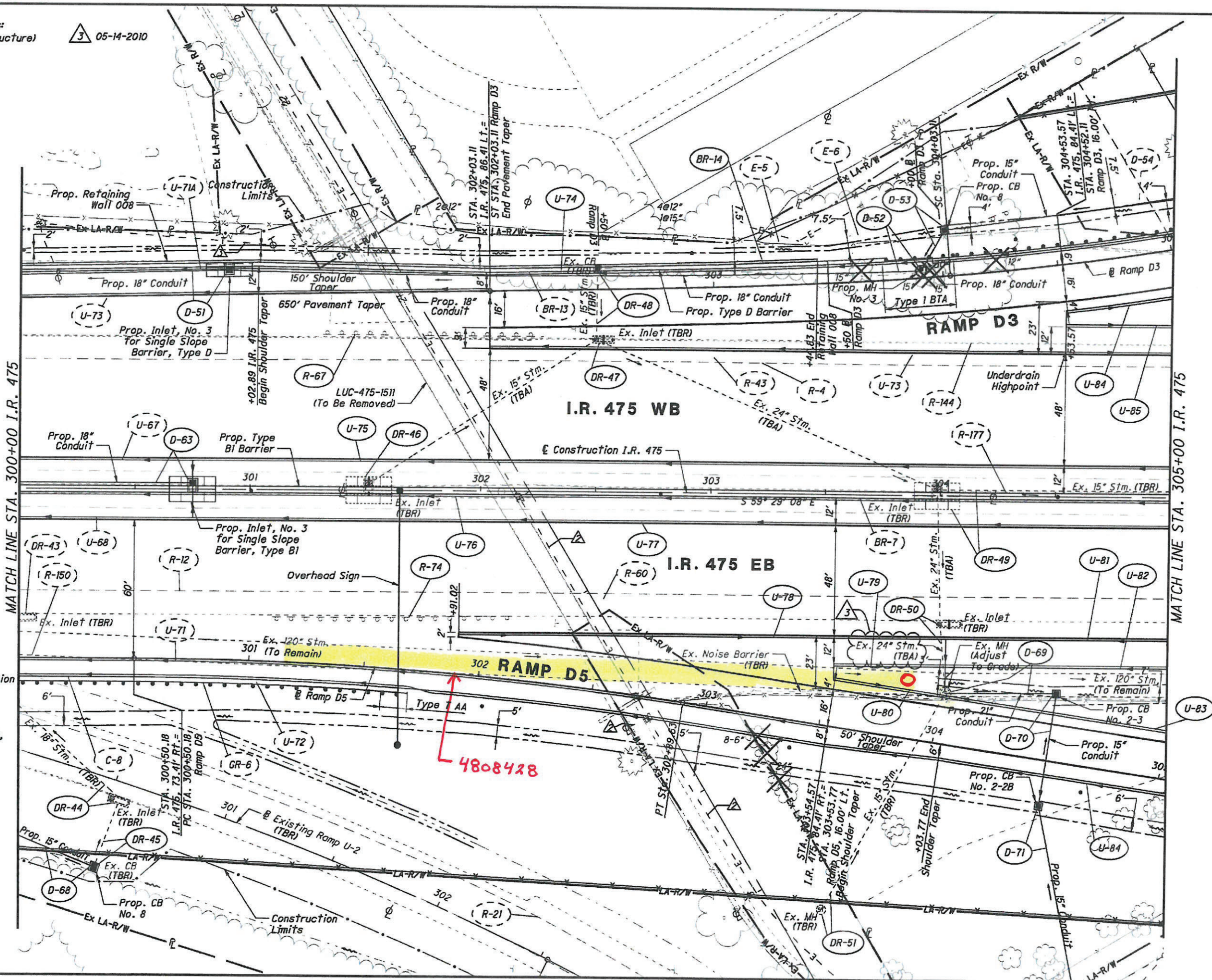
Ramp D5
 P.I. STA. 301+70.12
 $\Delta = 8^\circ 22' 50" (RT)$
 $Dc = 3^\circ 30' 00"$
 $R = 1,637.02'$
 $T = 119.94'$
 $L = 239.45'$
 $E = 4.39'$
 $emax = 0.048$

-  Item 670- Ditch Erosion Protection
-  Item 836- Seeding & Erosion Control with Turf Reinforcing Mat, Type 1

For Interchange Details
 See Sheets 639 & 640

For Ramp Removal
 See Sheets 303 & 304

Benchmark:
 Mag Nail Set
 Elev. 616.11'
 Sta. 305+18.46,
 Offset 319.82' Rt
 Ramp D5



CALCULATED
 MER
 CHECKED
 RWK

PLAN I.R. 475
 STA. 300+00 TO STA. 305+00

LUC-475-14.18

231
 1331

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EXHIBIT 2 – INSPECTION PHOTOGRAPHS

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Photograph No. 1: Overall View of Access Location for Structure No. 4808428 (LUC-475-1503), Looking East.



Photograph No. 2: Overall View of Manhole for Structure No. 4808428 (LUC-475-1503), 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.