



## LEAD-BASED PAINT INVESTIGATION REPORT

US 301/15 TRAIL BRIDGE OVER LAKE MARION OVERFLOW  
CLARENDON & ORANGEBURG COUNTIES, SOUTH CAROLINA

### PREPARED FOR:

The logo for TRANSSYSTEMS. The word 'TRANSSYSTEMS' is in a bold, blue, sans-serif font. The 'A' in 'TRANS' is stylized with a blue triangle pointing upwards.

C/O Mr. Peter Strub  
Sr. Vice President/Principal  
1859 Summerville Avenue, Suite 600  
Charleston, SC 29405

### PREPARED BY:

F&ME Consultants, Inc.  
211 Business Park Blvd.  
Columbia, South Carolina 29203

**August 18, 2023**

☒ Yes, LBP was found.  
☐ No, LBP was not found.

FME Project No.: G6744.000

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Appendix B – General Bridge Plan

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# 1 EXECUTIVE SUMMARY

This executive summary is intended as an overview for the convenience of the reader. This report should be reviewed in its entirety prior to making any decisions regarding this project. This investigation report is one of seven (7) completed for the project. The investigations included the existing north and southbound I-95 bridge structures, the former US 301/15 Trail Bridges, and the older remnants of the US 301 bridge. The below Bridge numbering system utilized for the investigations and referenced in this report reflects the numbering system developed by F&ME Consultants, Inc. (FME) field personnel during the field investigation and does not reflect any Bridge numbering system used by The South Carolina Department of Transportation (SCDOT). This report is specifically for the US 301/15 Trail Bridge Overflow only. Refer to other reports prepared by FME for the other bridges.

F&ME Consultants, Inc. (FME) has completed a Lead-Based Paint (LBP) investigation the existing US 301/15 Trail Overflow Bridge over Lake Marion (Bridge #5) in Clarendon and Orangeburg Counties in South Carolina, at the request of Transystems (Client). The purpose of the investigation was to locate, identify and test components of the Bridge that are painted or coated with LBP. The field investigations were performed on July 21, 2023, in anticipation of the potential demolition of the US 301/15 Trail Overflow Bridge over Lake Marion. Refer to Appendix A, Site Vicinity Map is provided to show the locations of the Bridge. Appendix B, General Bridge Plan, is provided to show the lay-out of the Bridge and a reference for locations of XRF scans.

Per an agreed upon scope of work, this LBP Investigation was conducted to identify accessible Bridge components that have been painted or coated with lead-containing materials that have concentrations greater than or equal ( $\geq$ ) to the regulatory limit of 0.7 mg/cm<sup>2</sup>. This investigation includes both a visual evaluation of the physical condition of painted materials as well as quantitative testing of surfaces using an X-Ray Fluorescence (XRF) LBP analyzer. The XRF documents the concentration of lead, if any, in the overall paint or coating. Bridge components were scanned with a Viken XRF analyzer (Model # Pb200i, Serial #1888, Reference Date: 11/01/22) with a limit of detection (LOD) of 0.1 mg/cm<sup>2</sup>.

LBP is regulated by multiple government agencies, and each requires different response actions when the concentration of lead exceeds specified thresholds. The Occupational Safety and Health Administration (OSHA) regulates worker exposure to lead dust, and as a result considers materials with any lead content to be a potential hazard. Additionally, South Carolina Department of Health and Environmental Control (SCDHEC) requires some waste materials to be disposed of at specific disposal facilities that are able to manage this waste. Appendix C, XRF Data, is provided to present the XRF data in a user-friendly format. Items in red text contain lead in concentrations regulated by SCDHEC and these materials must be addressed upon disposal. Items in blue and red text contain lead in concentrations that must be considered a potential for worker exposure by OSHA.

The results from the XRF quantitative testing of the Bridge components indicate that lead is present in paint and/or coatings in concentrations greater than or equal to ( $\geq$ ) 0.7 mg/cm<sup>2</sup> in the following Bridge components:

**Bridge #5 (US 301/15 Trail Overflow Bridge over Lake Marion)**

- Green Steel Bridge Repair I-Beams
- White Steel Handrail Plates
- Gray Steel Bridge Repair I-Beams

For more information regarding the specific descriptions and locations of the items that were scanned, refer to the Appendix C, Summary of XRF Data. Appendix E, Site Photos for locations and pictures of the materials with concentrations greater than or equal to ( $\geq$ ) 0.7 mg/cm<sup>2</sup>. Appendix D includes the inspector's EPA lead-based paint inspector certification.

We appreciate the opportunity to assist you in this project. If you have any questions or require additional information, please feel free to contact our office at (803) 254-4540.

Sincerely,

F&ME CONSULTANTS



**Michael S. Mincey**

SC Lead Based Paint Inspector

EPA Certification No. LBP-I-1198708-2 (Exp. 2/21/25)



**Glynn M. Ellen**

Environmental Department Manager



## 2 LEAD-BASED PAINT BACKGROUND INFORMATION

Housing and Urban Development (HUD) defines “LBP” as any coating that has a lead concentration of 1.0 milligrams of lead per square centimeter (1.0 mg/cm<sup>2</sup>) or greater, or if the lead concentration is greater than one half of a percent (> 0.5%) by weight. The Consumer Product Safety Commission (CPSC) currently considers paint to be lead-containing if the concentration of lead exceeds 90 ppm (0.009% by weight). In 1978, the CPSC banned the sale of LBP to consumers, and banned its application in areas where consumers have direct access to painted surfaces. Both the CPSC and HUD definitions of lead-containing paint are aimed at protecting the general population from exposure to lead in residential settings.

In contrast, the mission of OSHA with respect to lead-containing paint is to protect workers during construction activities that may generate elevated airborne lead concentrations. OSHA states that construction work (including renovation, maintenance, and demolition) carried-out on structures coated with paint having lead concentrations lower than the HUD or CPSC can still result in airborne lead concentrations in excess of regulatory limits. For this reason, OSHA has not defined lead-containing paint, but states that paint having any measurable level of lead may pose a substantial exposure hazard during construction work, depending upon the work performed. Therefore, in these situations, OSHA guidelines and safety procedures should be followed. By OSHA standards and regulations, the employer shall ensure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 ug/m<sup>3</sup>) averaged over an 8-hour period.

Additionally, SCDHEC requires the use of specific waste disposal sites if materials contain lead concentrations greater than or equal to ( $\geq$ ) 0.7 mg/cm<sup>2</sup>. Due to the anticipated demolition of the Bridge structures, the SCDHEC lead disposal requirements were used as a threshold.

## 3 INTRODUCTION

The US 301 Pedestrian Bridge (Bridge #5) was constructed in the late 1940's based on the Bridge renovation drawings dated March 2021 that were obtained from the Client.

The Overflow portion of the US 15/ 301 Trail Bridge (Bridge #5) (~350.0' L x 31.0' W, inside curb to inside curb) is a two (2) lane, concrete and steel bridge structures with poured-in-place concrete bridge decking and concrete curbing with metal scuppers, with an asphalt overlay. The Bridges are constructed with poured-in-place (PIP) concrete beams, bent caps,

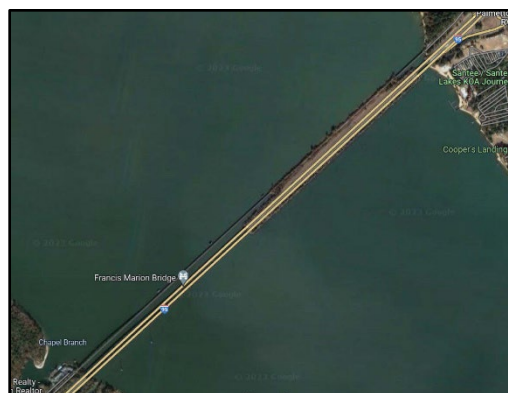


Photo 1 – I-95 over Lake Marion Bridges in Clarendon & Orangeburg Counties, SC.

decking, curb/gutter system, and concrete piers. Metal guardrails run along each side of the Bridge and are attached to the concrete curbs. Multiple structural repairs to stabilize and to provide new supports for the concrete beams were noted along the underside of both of these Bridges, along with railing repairs on each side of the Bridge. The repairs consisted of steel I-Beams supporting multiple horizontal PIP concrete beams at the tops of several PIP concrete bent caps., with multiple steel bearing plates inserted at the location of each repair to stabilize and level the bridge supports. Refer to Appendix A, Site Vicinity Map, for the location of the Bridge. Appendix B, Sample Location Plan, for a layout of the samples taken from the Bridge.

## 4 INVESTIGATION PROCEDURES AND RESULTS

FME's LBP Investigation sampling protocol consisted of randomly selecting bridge components and scanning them with a Viken X-Ray Fluorescence (XRF) Portable Analyzer (Model # Pb200i, Serial #1888). The following Bridge components tested positive for lead in concentrations greater than or equal to ( $\geq$ ) 0.7 mg/cm<sup>2</sup>:

### **Bridge #5 (US 301/15 Trail Overflow Bridge over Lake Marion)**

- Green Steel Bridge Repair I-Beams
- White Steel Handrail Plates
- Gray Steel Bridge Repair I-Beams

For more information regarding the specific descriptions and locations of the items that were scanned, refer to the Appendix C, Summary of XRF Data. On the XRF Data Table, items highlighted in **Red** are positive and contain lead in concentrations greater than or equal to ( $\geq$ ) 0.7 mg/cm<sup>2</sup>. Items in **Blue** text contain lead in concentrations that must be considered a potential for worker exposure by OSHA. Appendix D, Site Photos for locations and pictures of the materials with concentrations greater than or equal to ( $\geq$ ) 0.7 mg/cm<sup>2</sup>. Appendix E includes the inspector's EPA lead-based paint inspector certification.

## 5 RECOMMENDATIONS

The results, conclusions and recommendations from this investigation are representative of the conditions observed at the site on the dates of the field investigations. FME does not assume responsibility for any changes in conditions or circumstances that occur after the date of the field investigation. No other environmental issues were addressed as part of this report.

The results from the XRF quantitative testing of Bridge components scanned indicate that lead was found to be present in paint and/or coatings in concentrations greater than or equal to ( $\geq$ ) 0.7 mg/cm<sup>2</sup> in the following Bridge components:

## Bridge #5 (US 301/15 Trail Overflow Bridge over Lake Marion)

- Green Steel Bridge Repair I-Beams
- White Steel Handrail Plates
- Gray Steel Bridge Repair I-Beams

Therefore, OSHA regulations and procedures should be followed when impacting these components. If possible, they should be removed in whole and disposed of properly. Also, SCDHEC disposal requirements for lead containing materials should also be followed.

As stated previously, OSHA regulates any measurable level of lead, as it may pose a substantial exposure hazard to workers. Therefore, in these situations, OSHA regulations and safety procedures should be followed. These regulations also list the proper personal protective equipment to be used by the workers disturbing the LBP items and the requirements for personal air monitoring. OSHA's exposure action level (AL) for lead, regardless of respirator use, is an airborne concentration of  $30\mu\text{g}/\text{cm}^3$ , averaged over an eight-hour period. The action level (AL) is the level at which an employer must begin specific compliance activities as outlined in OSHA's lead standards. By OSHA standards and regulations, the employer shall ensure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air ( $50\mu\text{g}/\text{m}^3$ ) averaged over an 8-hour period which is the permissible exposure level (PEL).

SCDHEC regulates the proper disposal of LBP and associated debris. SCDHEC defines two types of LBP debris. The first is LBP *waste*, which is defined as material such as wood, brick and metal that is painted with LBP. The other is LBP *residue* which is defined as residue that is generated from the removal (e.g., scraped, chipped, sandblasted, or chemical) of LBP from a structure. LBP *waste* that comes from a commercial or residential facility may be disposed of in either a class 2 or 3 landfill, while LBP *residue* from a commercial facility must have a toxicity characteristic leaching procedure (TCLP) analysis to determine the lead content. TCLP analysis is used to determine whether or not a waste is a characteristic hazardous waste due to leachability under the South Carolina Hazardous Waste Management Regulations. LBP *residue* with a TCLP analysis result greater than or equal to five milligrams per liter ( $\geq 5\text{ mg/l}$ ) lead must be disposed of in a Subtitle C landfill (Hazardous Waste). However, LBP *residue* from a commercial facility with a TCLP analysis result less than five milligrams per liter ( $< 5\text{ mg/l}$ ) lead is required to be disposed of in a Class 3 landfill.

We sincerely appreciate the opportunity to be of service to Transystems on this project. If you have any questions regarding the information presented herein, please contact our office at (803) 254-4540.

## APPENDICES

Appendix A – Site Vicinity Map

Appendix B – General Bridge Plan

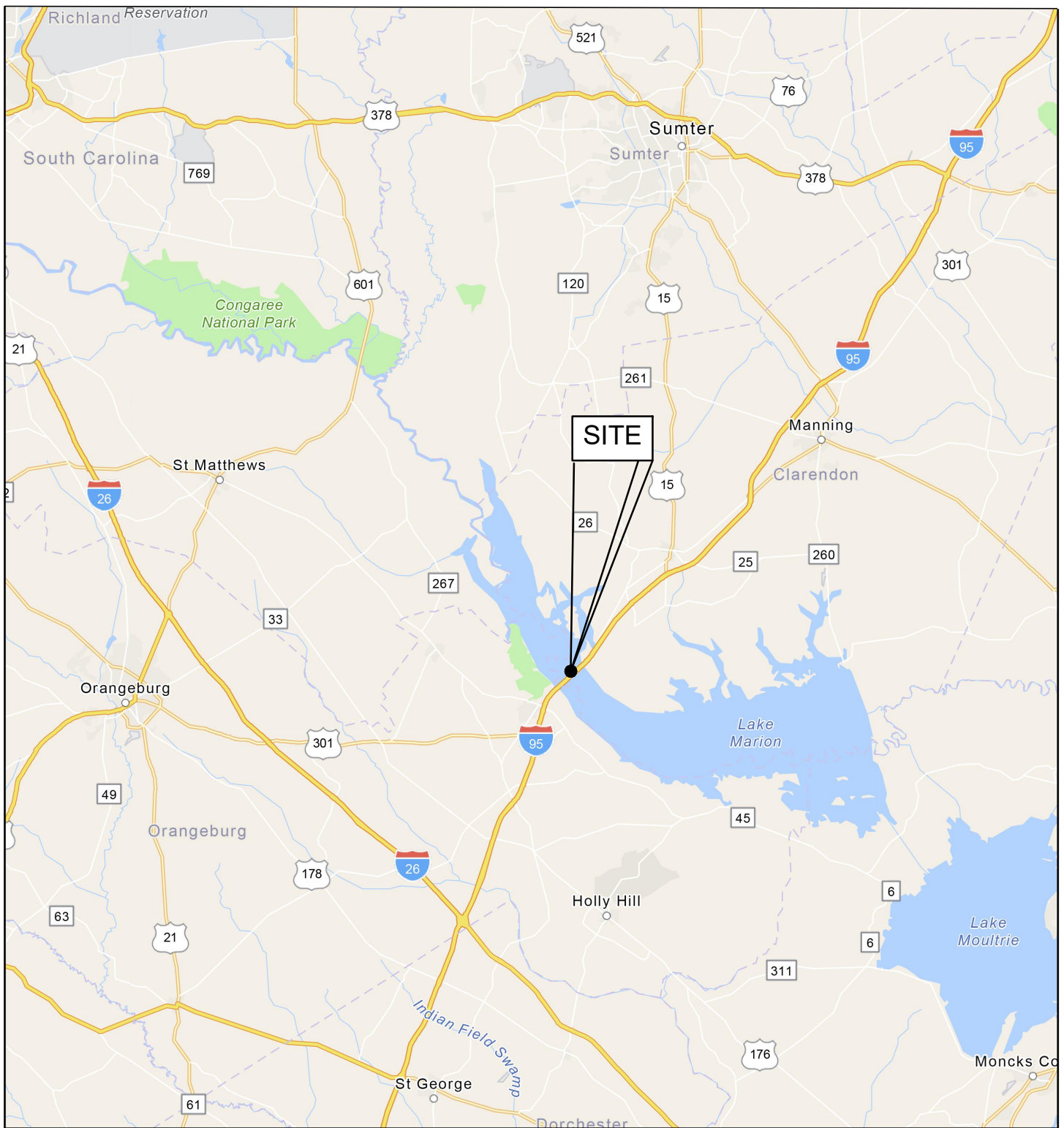
Appendix C – Summary of XRF Data Table

Appendix D – Site Photos

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## Appendix A

### Site Vicinity Map



1:577,791

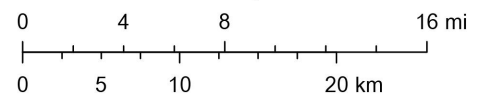


FIGURE  
NUMBER:

1

F&ME CONSULTANTS  
PROJECT NUMBER:

G6744.000

LEAD-BASED PAINT INVESTIGATION  
US 301/15 Trail Overflow Bridge over Lake Marion  
Clarendon & Orangeburg Counties, South Carolina

SITE VICINITY MAP

Prepared for:  
Transystems  
1859 Summerville Ave., Suite 600  
Charleston, SC 29405



211 BUSINESS PARK BLVD.  
COLUMBIA, SC 29203

ORIGINAL:  
August 11, 2023

REVISIONS:

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_

SCALE:  
Shown

DRWN. BY: MSM  
CHKD. BY: MSM  
APPR. BY: GME

NOTES:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Appendix B

### General Bridge Plan



US 301/15 Trail Bridge over Lake Marion Overflow



F&ME CONSULTANTS, INC.  
COLUMBIA, SC

US 301/15 TRAIL OVERFLOW BRIDGE OVER LAKE MARION  
CLARENDON & ORANGEBURG COUNTIES, SOUTH CAROLINA

GENERAL BRIDGE PLAN

F&ME JOB NO. G6744.000

SCALE: N.T.S.

FIGURE 2

4			
3			
2			
1			
REV.	BY	DATE	DESCRIPTION OF REVISION
TOPO.		DATE	
DWG.	MSM	DATE 08/11/2023	GROUP ____ - ____
R/W		DATE	

## Appendix C

### Summary of XRF Data Table

Appendix C – XRF Data  
Date Scanned: 07/21/2023  
US 301/15 Trail Overflow Bridge over Lake Marion

Scan No.	Pbc (mg/cm <sup>2</sup> )	Component	Substrate	Side	Condition	Color
Bridge #5 (US 301/15 Trail Overflow Bridge) 07/21/2023						
1	0.93	Calibrate				
2	0.91	Calibrate				
3	0.94	Calibrate				
4	0.97	Repair I-Beam	Metal	D	Poor	Gray
5	2.05	Repair I-Beam	Metal	D	Poor	Green
6	0.24	Handrail	Metal	D	Intact	White
7	0.49	Handrail Plate	Metal	D	Intact	White
8	0.31	Handrail Plate	Metal	D	Intact	White
9	2.49	Handrail Plate	Metal	D	Intact	White
10	0.38	Handrail	Metal	D	Intact	White
11	0.12	Handrail	Metal	D	Intact	White
12	0.81	Calibrate				
13	0.87	Calibrate				
14	0.93	Calibrate				

LOD (Limit of Detection) = 0.1 mg/cm<sup>2</sup>

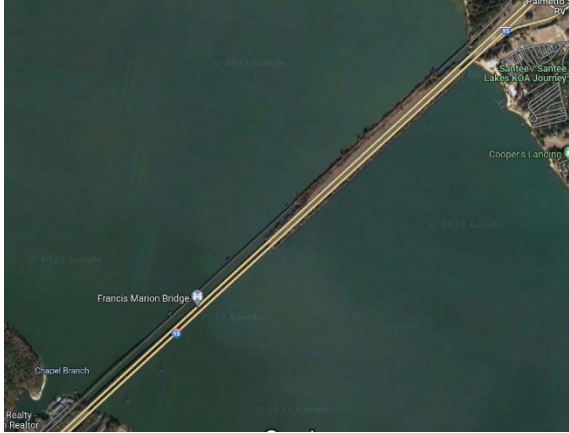
Blue text indicates any concentrations of LBP which OSHA considers a potential exposure risk when removed.

Red text indicates concentrations of LBP that have specific disposal requirements regulated by SCDHEC.

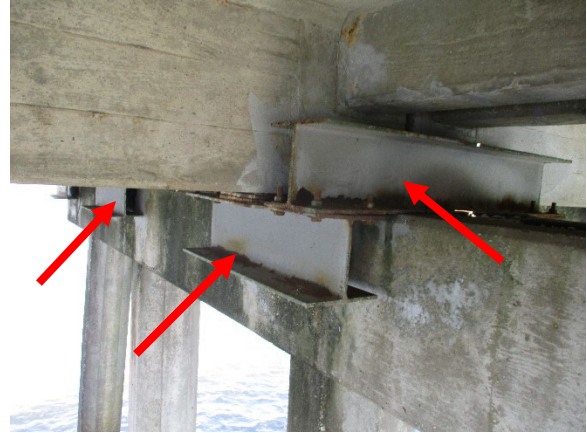
Side A = North, then go clockwise.

## Appendix D

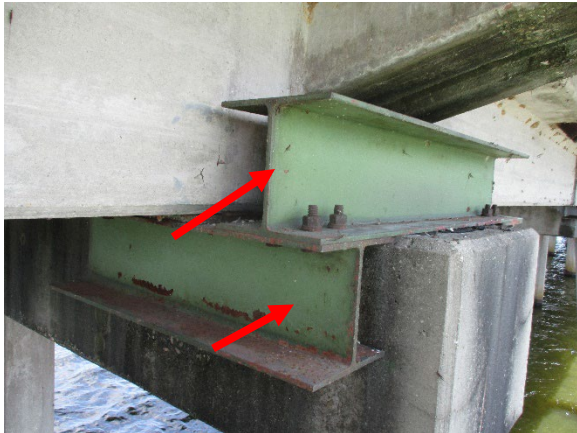
### Site Photos



**Photo 1.** Top View of Bridges.



**Photo 2.** LBP on Gray Repair I-Beams on Underside of Bridge #5.



**Photo 3.** LBP on Green Repair I-Beams on Underside of Bridge #5.



**Photo 4.** LBP on Gray Metal Handrail Plates along each Side of Bridge #5.



**Photo 5.** Underside View of Bridge #5.



**Photo 6.** Top Deck View of Bridge #5.



## Appendix E

### EPA LBP Inspector Certification

# United States Environmental Protection Agency

This is to certify that



Michael S Mincey

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Inspector

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires February 21, 2025

LBP-I-1198708-2

Certification #

January 05, 2022

Issued On



Adrienne Priselac, Manager, Toxics Office

Land Division