



LEAD-BASED PAINT INVESTIGATION REPORT

S-23-115 (DILL RD.) RBO MIDDLE TYGER RIVER
GREENVILLE COUNTY, SOUTH CAROLINA
PROJECT ID P043994

PREPARED FOR:



C/o Mr. Trapp Harris, PE
955 Park St,
Columbia, SC 29201

PREPARED BY:

FME Consultants, Inc.
211 Business Park Blvd.
Columbia, South Carolina 29203

November 6, 2024

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

FME Project No.: G7100.007

TABLE OF CONTENTS

1.	Executive Summary.....	1
2.	Lead-Based Paint Background Information.....	3
3.	Introduction.....	3
4.	Investigation Procedures and Results.....	4
5.	Recommemndations.....	4
	APPENDICES	6

Appendix A – Site Vicinity Map

Appendix B – General Bridge Plan

Appendix C – Summary of XRF Data Table

Appendix D – Site Photos

Appendix E – EPA LBP Inspector Certification



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.

F&ME Consultants, Inc. (FME) has completed a Lead-Based Paint (LBP) on the S-23-115 (Dill Rd.) over Middle Tyger River (Bridge), in Greenville County, SC, at the request of the South Carolina Department of Transportation (SCDOT) (Client). The purpose of the investigation was to locate, identify and test components of the Bridge that are painted or coated with suspect LBP. The field investigation was performed on November 1, 2024, in anticipation of the on-alignment replacement of the existing Bridge. Refer to Appendix A, Site Vicinity Map is provided to show the location of the Bridge. Appendix B, General Bridge Plan, is provided to show the lay-out of the Bridge and a reference for locations of X-Ray Fluorescence (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 suspect lead-containing materials that have concentrations greater than or equal (\geq) to the regulatory limit of 0.7 milligram per square centimeter (mg/cm^2). This investigation includes both a visual evaluation of the physical condition of painted materials as well as quantitative testing of surfaces using an 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 $0.1 \text{ mg}/\text{cm}^2$.

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 Environmental Services (SCDES) 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 SCDES and these materials must be addressed upon disposal. Items 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) $0.7 \text{ mg}/\text{cm}^2$ in the following Bridge components:

- Orange Tie Rod Washers
- Silver Structural Steel Beams
- Orange L-Brackets

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/cm². Refer to Appendix E, Site Photos for locations and pictures of the materials with concentrations greater than or equal to (\geq) 0.7 mg/cm². 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,

FME CONSULTANTS



Brianna M. Bailey

SC Lead Based Paint Inspector

EPA Certification No. LBP-I-I267501-1 (Exp. 8/21/27)



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^2) 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^3) averaged over an 8-hour period.

Additionally, SCDES requires the use of specific waste disposal sites if materials contain lead concentrations greater than or equal to (\geq) 0.7 mg/cm^2 . Due to the anticipated demolition of the structure, the SCDES lead disposal requirements were used as a threshold.

3. INTRODUCTION

The existing bridge structure ($\approx 167' \text{ L} \times 26' \text{ W}$, inside curb to inside curb), is located on route S-23-115 (Dill Rd.) and crosses over Middle Tyger River in Greenville County, South Carolina. The construction date of the Bridge is unknown. The structure is a two (2) lane, seven (7) span Bridge constructed with pre-cast concrete bridge deck, concrete curbing, and an asphalt overlay. The Bridge deck is supported by nine (9) pre cast horizontal double-T concrete beams. Each poured-in-place (PIP) bent cap is supported by a combination of either five (5) structural timber piles with metal end caps or five (5) steel H-piles with metal bearing plates. Timber and steel cross bracing were used sporadically. Metal piping was



Photo 1 – S-23-115 (Dill Rd.) over Middle Tyger River, Greenville County.

noted along the east side of the Bridge. Drainage scuppers were not noted on the Bridge. Refer to Appendix A, Site Vicinity Map, for the location of 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 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/cm²:

- Orange Tie Rod Washers
- Silver Structural Steel Beams
- Orange L-Brackets

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/cm². Refer to Appendix E, Site Photos for locations and pictures of the materials with concentrations greater than or equal to (\geq) 0.7 mg/cm². Appendix D 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 date of the field investigation. 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/cm² in the following Bridge components:

- Orange Tie Rod Washers
- Silver Structural Steel Beams
- Orange L-Brackets



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, SCDES 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).

SCDES regulates the proper disposal of LBP and associated debris. SCDES 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 SCDOT 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

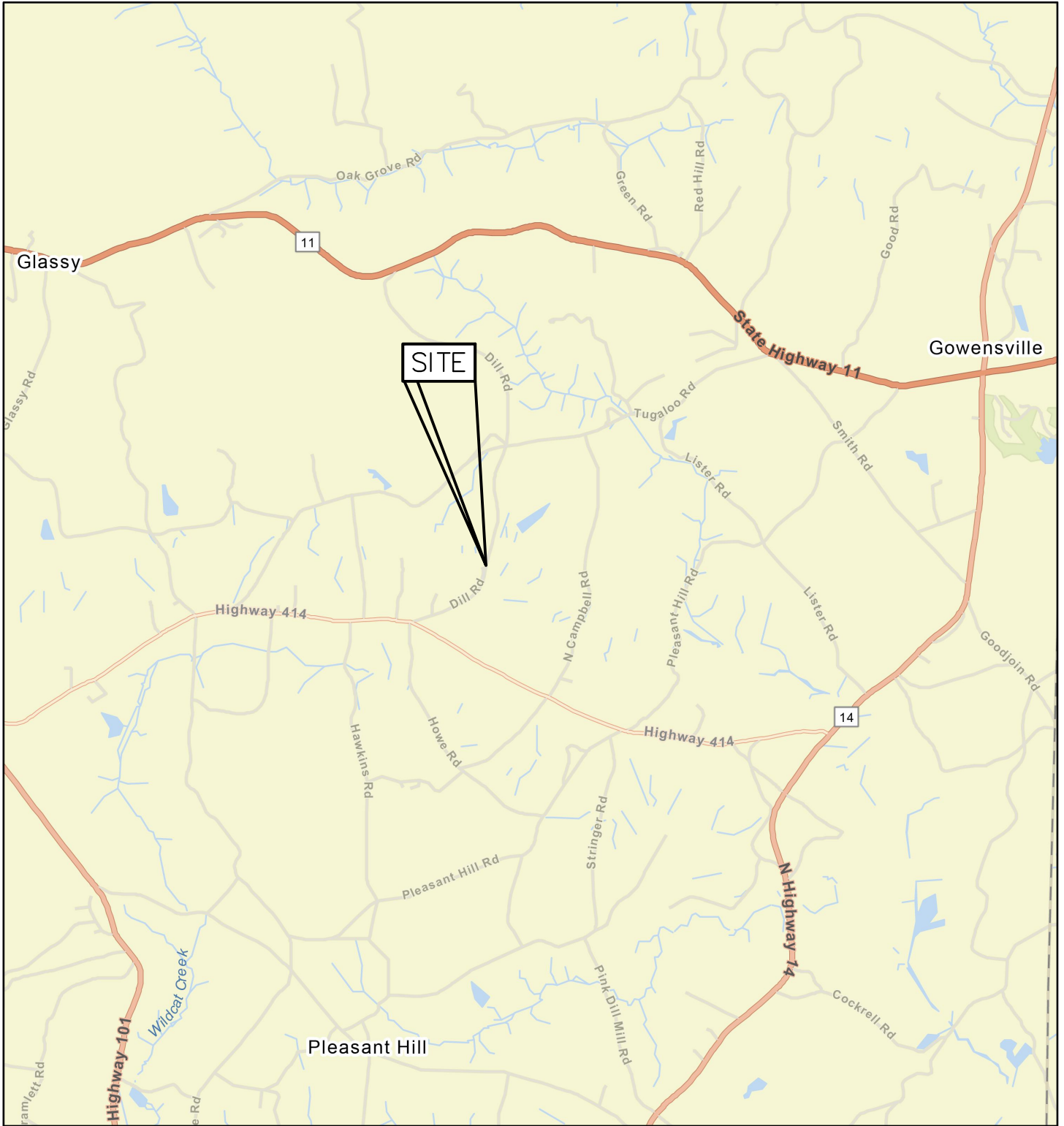
Appendix D – Site Photos

Appendix E – EPA LBP Inspector Certification



Appendix A

Site Vicinity Map



City of Greenville, State of North Carolina DOT, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS

1:58,000

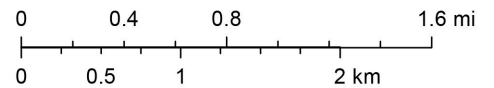


FIGURE
NUMBER:

1

F&ME CONSULTANTS
PROJECT NUMBER:

G67100.007

LEAD-BASED PAINT INVESTIGATION
S-23-115 Bridge over Middle Tyger River
Greenville County, SC
Site Vicinity Map
Prepared for: SCDOT
955 Park Street
Columbia, SC 29201



211 BUSINESS PARK BLVD.
COLUMBIA, SC 29203

ORIGINAL:
November 6, 2024

REVISIONS:

1
2
3

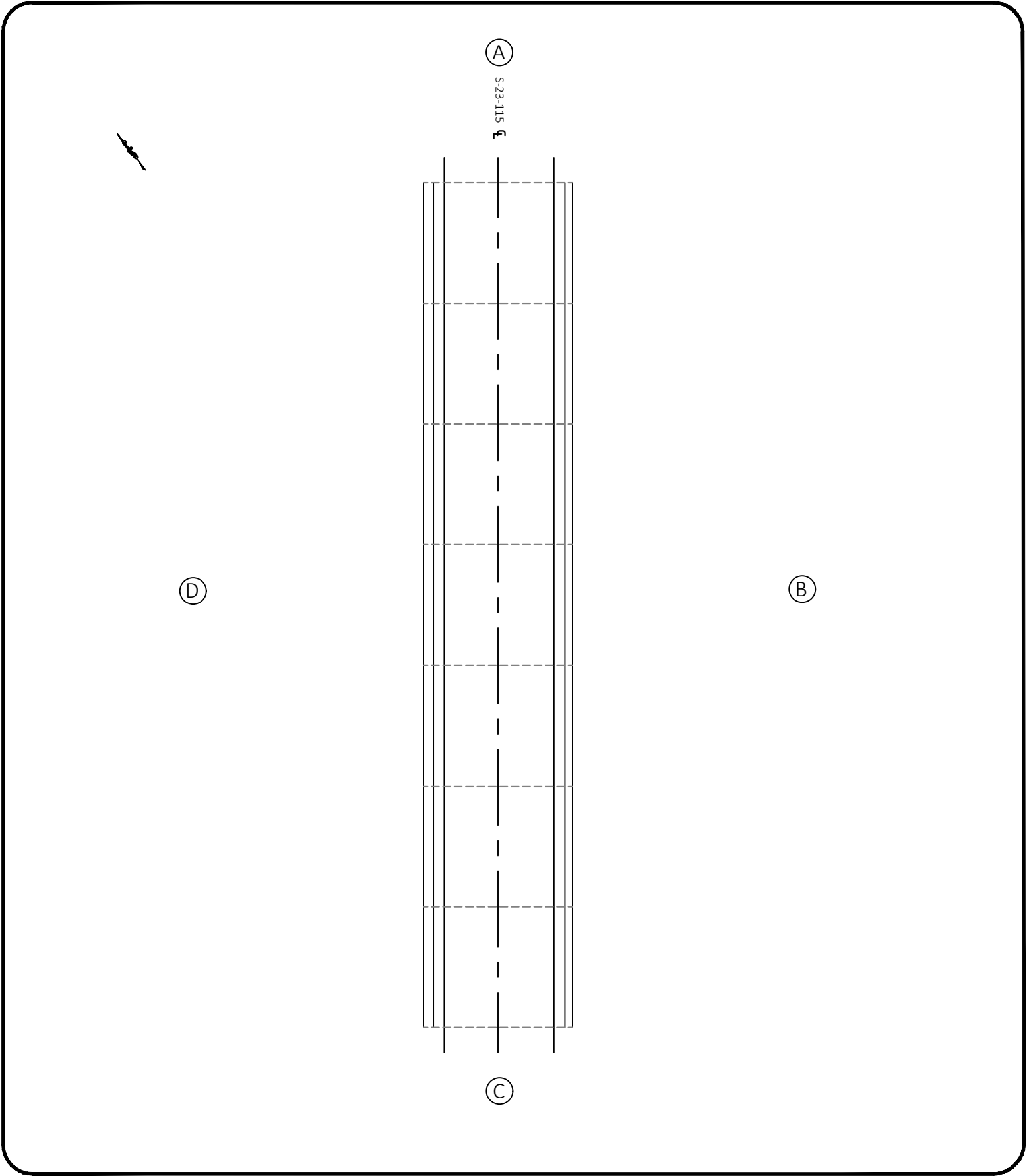
SCALE:
AS SHOWN

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

NOTES:

Appendix B

General Bridge Plan



Appendix C

Summary of XRF Data Table

Appendix C – XRF Data
Date Scanned: 11/1/2024
S-23-115 (Dill Rd.) RBO Middle Tyger River

Scan No.	Pbc (mg/cm ²)	Component	Substrate	Side	Condition	Color
1	0.93	Calibrate				
2	1	Calibrate				
3	1.1	Calibrate				
4	1.1	Calibrate				
5	0	Utility line	Metal		Intact	Black
6	0.03	Utility line	Metal		Intact	Black
7	0.04	Utility line	Metal		Intact	Black
8	0.75	Tie rod washer	Metal	B	Deteriorated	Orange
9	7.25	Lbracket	Metal	B	Deteriorated	Orange
10	7.2	Lbracket	Metal	B	Deteriorated	Orange
11	2.59	Steel beam	Metal	B	Peeling	Silver
12	0.5	Tie rod washer	Metal	B	Deteriorated	Orange
13	1.1	Calibrate				
14	1.05	Calibrate				
15	1.09	Calibrate				

LOD (Limit of Detection) = 0.1 mg/cm²

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 SCDES.



Appendix D

Site Photos



Photo 1. Top View of Bridge.



Photo 2. Northeast Side View of Bridge.



Photo 3. Underside View of Bridge and Silver LBP on Steel Structural Support.



Photo 4. LBP on Orange Tie Rod Washer.



Photo 5. LBP on Orange L-Bracket.



Photo 6 SCDOT Bridge Asset # Placard Attached to Concrete Curb of Bridge.

Appendix E

EPA LBP Inspector Certification

United States Environmental Protection Agency

This is to certify that



Brianna M Bailey

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 August 21, 2027

LBP-I-I267501-1

Certification #

August 07, 2024

Issued On



Adrienne Priselac, Deputy Director

Land, Chemicals & Redevelopment Division