



LEAD-BASED PAINT INVESTIGATION REPORT

S-86 (ROCK HOUSE RD.) RBO KINGS CREEK
CHEROKEE COUNTY, SOUTH CAROLINA

PREPARED FOR:



HDR
C/O Ms. Lila Leon, PE PhD
SC Geotechnical Lead
1201 Main St., Suite 800
Columbia, SC 29201

PREPARED BY:

FME Consultants
1825 Blanding Street
Columbia, South Carolina 29201

June 17, 2022

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

FME Project No.: G6655.005

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 – EPA LBP Inspector Certification

Appendix E – Site Photos



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.

FME Consultants Inc. (FME) has completed a Lead-Based Paint (LBP) on the S-11-86 (Rock House Rd.) Bridge over Kings Stream, in Cherokee County, SC, at the request of HDR (Client). The purpose of the investigation was to locate, identify and test components of the Bridge that are painted or coated with LBP. It is FME's understanding that the Bridge is to be demolished for the South Carolina Department of Transportation (SCDOT). Appendix A – Site Vicinity Map is provided to show the location of the Bridge. Appendix B – General Bridge Plan, is provided to show the layout 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/cm². 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: 09/17/20) with a limit of detection (LOD) of 0.1 mg/cm². This LBP investigation was carried out on June 7, 2022.

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 various bridge components indicate that **no lead is present in paint and/or coatings on bridge components in concentrations greater than or equal to (\geq) 0.7 mg/cm².**

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. Items in Blue text contain lead in concentrations that must be considered a potential for worker

exposure by OSHA. See 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



Tim Ross

SC Lead Based Paint Inspector

EPA Certification No. LBP-I-198705-1 (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^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, SCDHEC 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 SCDHEC lead disposal requirements were used as a threshold.

3. INTRODUCTION

The existing Bridge ($\sim 151.0' \text{L} \times 24.0' \text{W}$, inside curb to inside curb), is located on S-86 (Rock House Rd.) and crosses over Kings Creek in Cherokee County, South Carolina. The construction date of the Bridge is unknown. The existing Bridge is a precast five (5) span, two lane concrete Bridge supported by timber piles with an asphalt overlay. The concrete bridge decking and curb/gutter system is supported by four (4) poured-in-place interior concrete bent caps and two (2) concrete end bents. Each concrete bent cap is supported by five (5) timber piles. Concrete drainage scuppers were observed along each side of the Bridge. Galvanized metal guardrails with wooden posts are



Photo 1 – S-86 (Rock House Rd.) Bridge over Kings Creek, Cherokee County

attached to the concrete curb on each side of the Bridge. See Appendix A – Site Vicinity Map, for the location of the structure. See Appendix B –General Bridge Plan, for a layout of the Bridge.

4. INVESTIGATION PROCEDURES AND RESULTS

FME's LBP Investigation sampling protocol consisted of randomly Bridge components and scanning them with a Viken X-Ray Fluorescence (XRF) Portable Analyzer (Model # Pb200i, Serial #1888). Components scanned with the XRF include the following: Tie Rod Washers and Guardrails with metal substrates.

The investigation revealed that no Bridge components tested positive for lead in concentrations greater than or equal to (\geq) 0.7 mg/cm². 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 in [Blue](#) text contain lead in concentrations that must be considered a potential for worker exposure by OSHA. See Appendix E – Site Photos for bridge component locations. 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 the bridge components scanned indicate that there was no lead found to be present in paint and/or coatings in concentrations greater than or equal to (\geq) 0.7 mg/cm². Therefore, there are no specific recommendations for this Bridge.

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 30µg/cm³, 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 µg/m³) 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 (≥ 5 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 mg/l) lead is required to be disposed of in a Class 3 landfill.

We sincerely appreciate the opportunity to be of service to HDR 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

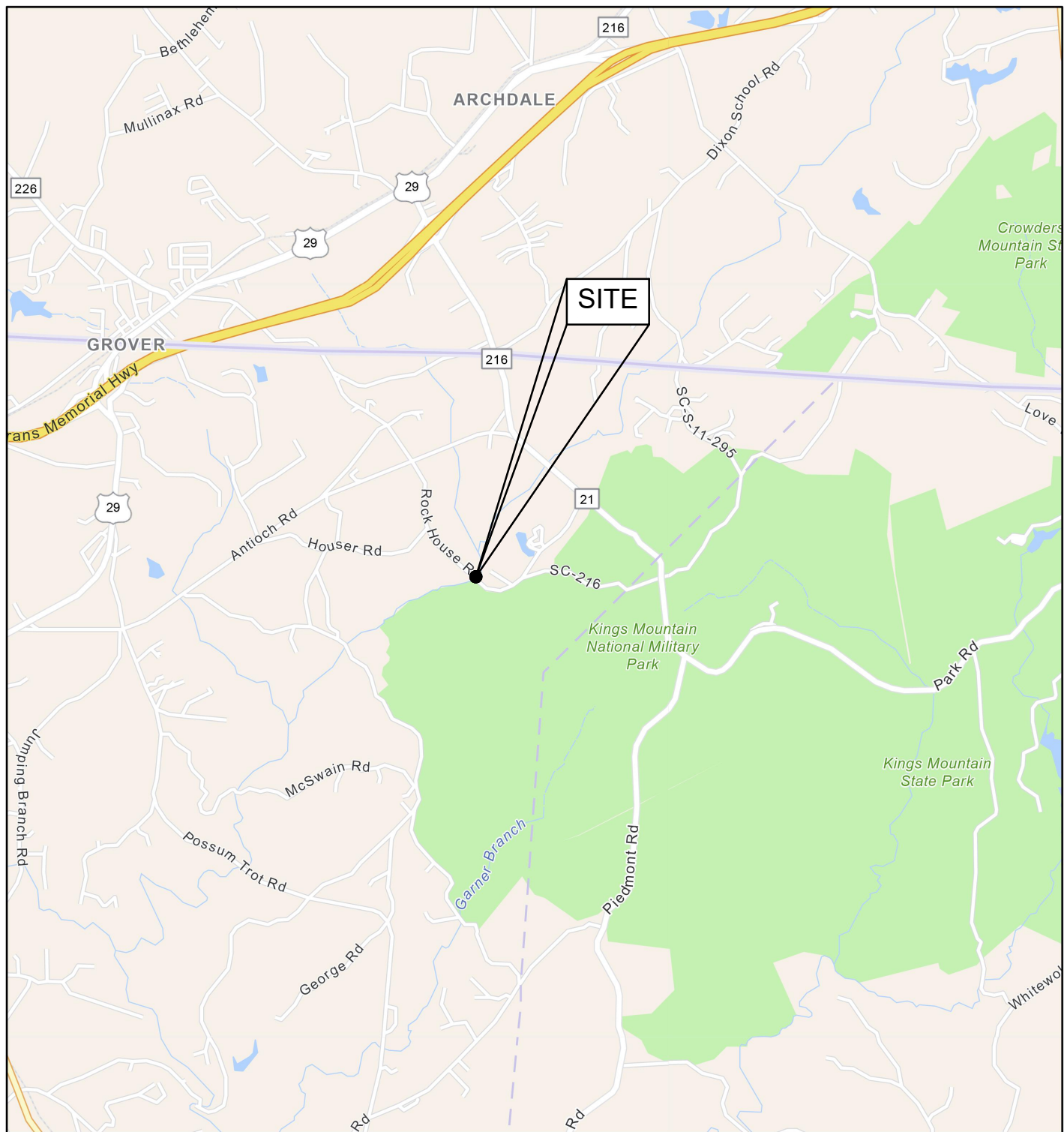
Appendix C – Summary of XRF Data Table

Appendix D – EPA LBP Inspector Certification

Appendix E – Site Photos

Appendix A

Site Vicinity Map



1:72,000

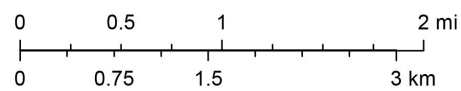


FIGURE
NUMBER:

1

F&ME CONSULTANTS
PROJECT NUMBER:

G6655.005

LEAD-BASED PAINT INVESTIGATION
S-86 RBO Kings Creek
Cherokee County, SC
SITE VICINITY MAP
Prepared for:
HDR
1201 Main Street, Suite 800
Columbia, SC 29201

F&ME
CONSULTANTS

1825 BLANDING STREET
COLUMBIA, SC 29201

ORIGINAL:
June 7, 2022

REVISIONS:

1
2
3

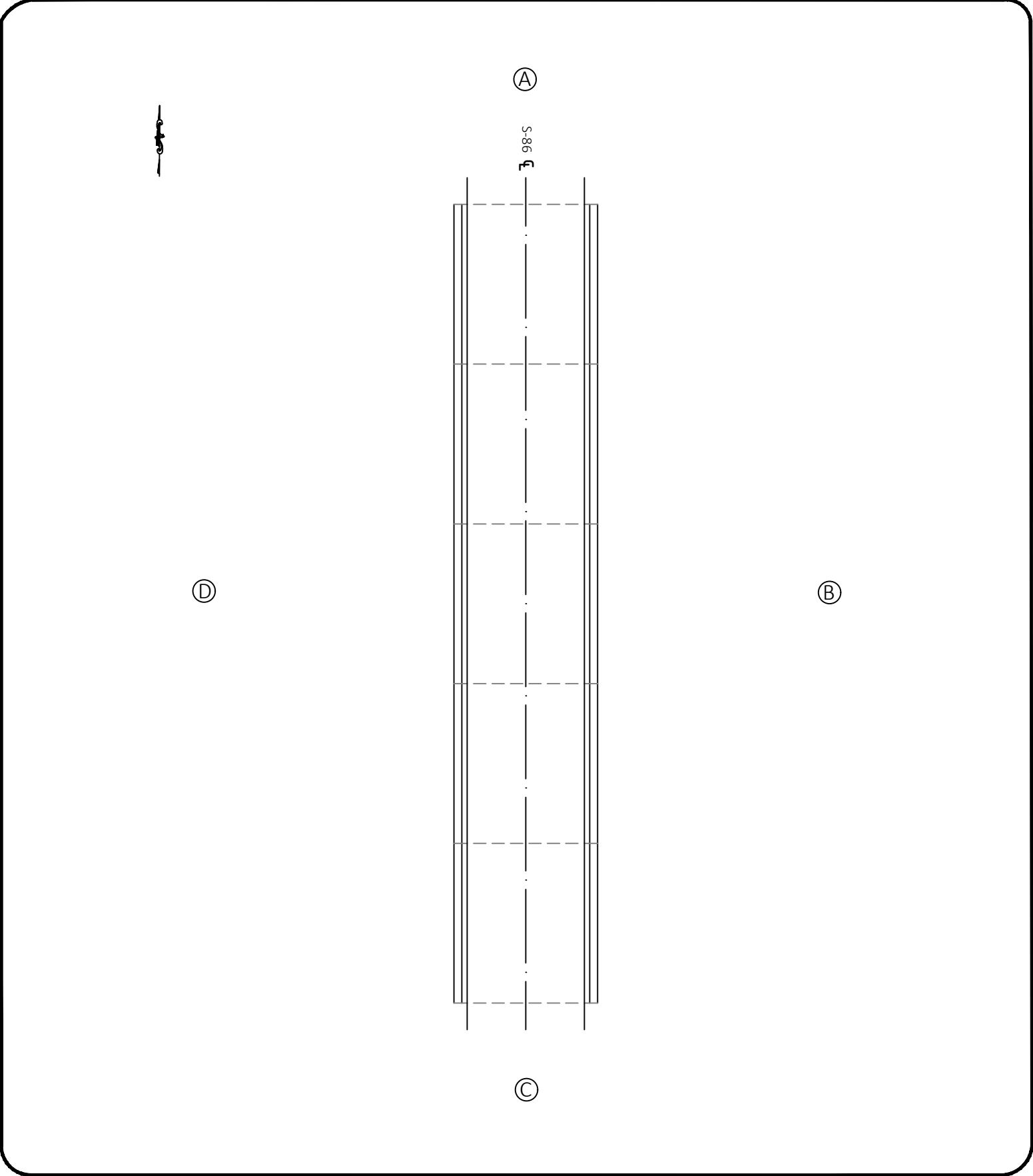
SCALE:
Shown

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

NOTES:

Appendix B

General Bridge Plans



<p>FIGURE NUMBER:</p> <p>2</p>	<p>F&ME CONSULTANTS PROJECT NUMBER:</p> <p>G6655.005</p>	<p>LEAD-BASED PAINT INVESTIGATION</p> <p>S-86 RBO Kings Creek Cherokee County, SC <u>General Bridge Plan</u> Prepared for: HDR 1201 Main Street, Suite 800 Columbia, SC 29201</p>	<div data-bbox="982 1843 1193 1953"> </div> <p>1825 BLANDING STREET COLUMBIA, SC 29201</p>	<p>ORIGINAL: June 7, 2022</p> <p>REVISIONS:</p> <p>1 _____</p> <p>2 _____</p> <p>3 _____</p> <p>SCALE: Shown</p>	<p>DRWN. BY: MSM</p> <p>CHKD. BY: TOR</p> <p>APPR. BY: GME</p> <p>NOTES:</p>
--------------------------------	--	---	--	--	--

Appendix C

Summary of XRF Data Table

XRF Data
S-86 (Rock House Rd) Bridge over Kings Creek
Date Analyzed: 6/7/2022
F&ME Project No.: G6655.005

Reading No.	Pb (mg/cm ²)	Location	Component	Substrate	Side	Condition	Color
1	0.94	Calibrate					
2	0.98	Calibrate					
3	0.91	Calibrate					
4	0.17		Tie Rod Washer	Metal	B	Peeling	Orange
5	0.30		Tie Rod Washer	Metal	B	Peeling	Orange
6	0.27		Guardrail	Metal	D	Peeling	Orange
7	0.26		Tie Rod Washer	Metal	D	Peeling	Orange
8	1.03	Calibrate					
9	1.05	Calibrate					
10	1.00	Calibrate					

Red (≥ 0.7 mg/cm²)

LOD (Limit of Detection) = 0.1 mg/cm²

Side A = North, then go clockwise
Blue (< 0.7 mg/cm² for OSHA considerations)

Appendix D

EPA LBP Inspector Certification

United States Environmental Protection Agency

This is to certify that



Timothy O Ross

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-1198705-2

Certification #

January 05, 2022

Issued On



Adrienne Priselac, Manager, Toxics Office

Land Division

Appendix E

Site Photos



Photo 1. Top View of Bridge.



Photo 2. West Side View of Bridge.



Photo 3. East Side View of Bridge.



Photo 4. South End of Underside of Bridge.



Photo 5. Underside of Bridge.



Photo 6 North End of Underside of Bridge.

