F&ME CONSULTANTS

LEAD-BASED PAINT (LBP) INVESTIGATION REPORT

S-32-36 (ST. ANDREWS RD.) BRIDGE OVER I-26 (EAST & WEST BOUND LANES) SCDOT BRIDGE #327003600200 LEXINGTON COUNTY, SOUTH CAROLINA

PREPARED FOR:

Mr. David Kinard, P.E.
Project Manager
3955 Faber Place Drive, Suite 300
North Charleston, South Carolina 29405

PREPARED BY:

F&ME Consultants
1825 Blanding Street
Columbia, South Carolina 29205

March 20, 2018

_____ Yes, lead was found.
__X__ No, lead was not found.

F&ME Project No.: G5662.010

TABLE OF CONTENTS

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 has completed a Lead-Based Paint (LBP) Investigation on the S-32-36 (St. Andrews Rd.) Bridge Over I-26 in Lexington County, South Carolina, for HDR, Inc (David Kinard, P.E. - Project Manager), on March 2, 2018. Appendix A – Site Vicinity Map is provided to show the location of the bridge. Appendix B – Bridge Plan, is provided to show the bridge lay-out and locations of XRF scans taken on the bridge.

Per an agreed upon scope of work, this LBP Investigation was conducted to identify, analyze, and assess the condition of any LBP or coated bridge components which may be affected by the planned demolition activities. Additionally, F&ME agreed to make recommendations regarding proper handling and/or disposal methods if any LBP or coatings were identified. This investigation includes both a visual evaluation of the physical condition of painted materials as well as quantitative testing of random surfaces using a Thermo Scientific Niton X-Ray Fluorescence (XRF) Portable Analyzer. The XRF documents the concentration of lead, if any, in the overall paint or coating. Bridge components were scanned with a Niton XRF analyzer (Model #XLp 300A, Serial #18185) with a limit of detection (LOD) of 0.01 mg/cm^2.

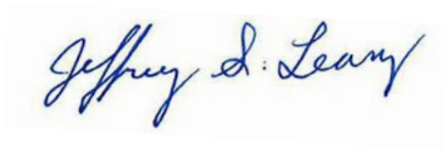
LBP is regulated by multiple government agencies, and each requires different response actions when the concentration of lead exceeds specified thresholds. The Occupational Safety and Health Administration (OSHA) regulates worker exposure to lead dust, and as a result considers materials with any lead content to be a potential hazard. Furthermore, the South Carolina Department of Health and Environmental Control (SCDHEC) requires some materials found to contain greater than or equal to (≥) 0.7 mg/cm^2 lead to be disposed of at specialized waste facilities. Appendix C – XRF Data, is provided to present the data in a user-friendly format. The XRF results have been highlighted to show which threshold has been exceeded. Items in red text exceed the SCDHEC threshold, while items in blue text contain lead in concentrations between 0.01 to <0.7 mg/cm^2 and would therefore be subject to OSHA's regulations.

The results from the XRF quantitative testing indicate that no lead was found in concentrations greater than or equal to (≥) 0.7 mg/cm^2 in paint and/or coatings on the bridge components scanned during this investigation of the subject bridge structure. However, some bridge components tested positive for lead that would be a concern under OSHA regulations. Therefore, the OSHA regulations and procedures concerning lead should be followed when handling these bridge items. As mentioned above, the items are highlighted in blue on the XRF Data summary table located in Appendix C.

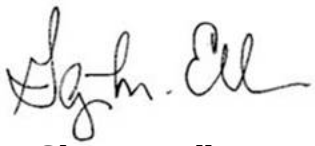
We appreciate the opportunity to assist you in this matter. If you have any questions or require additional information, please feel free to contact our office at (803) 254-4540.

Sincerely,

F&ME CONSULTANTS



Jeffrey S. Leary
S.C. Lead-Based Paint Inspector
EPA Certification No. SC-I-18721-3 (Exp. 07/29/18)



Glynn M. Ellen
Environmental Manager

2. LBP 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 the residential setting.

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 (> 0.01 mg/cm2) 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/m3) averaged over an 8-hour period.

Additionally, the SCDHEC require the use of specialized waste disposal sites if materials contain lead concentrations greater than or equal to (≥) 0.7 mg/cm^2. It is imperative that these regulations be considered if any present or future repairs and/or demolition activities will impact LBP-containing bridge components.

3. INTRODUCTION

F&ME Consultants has completed an LBP Investigation for HDR, Inc. on the S-32-36 (St. Andrews Rd.) Bridge over I-26 in Lexington County, South Carolina. This investigation was performed on March 2, 2018.

It is our understanding that the existing bridge structure is scheduled for demolition as part of the Carolina Crossroads project. Therefore, the scope of this LBP Investigation was to identify, analyze, and assess the condition of LBP or coated bridge components that may be affected by the demolition activities.

The results, conclusions and recommendations from this investigation are representative of the conditions observed at the site on the date of the field inspection. F&ME does not assume responsibility for any changes in conditions or circumstances that occur after the inspection. Use of this document for bidding purposes is not recommended without prior consultation with F&ME. No other environmental issues are addressed in this report.

4. INVESTIGATION RESULTS

Photo 1 – View of the subject bridge, S-32-36 (St. Andrews Rd.) Bridge over I-26 looking up-station (Westward).

The existing bridge structure (~352.0'L x 78.5'W, inside curb to inside curb), is located on S-32-36 (St. Andrews Rd.) and crosses over I-26 in Lexington County, South Carolina. The bridge (SCDOT Bridge #327003600200) was constructed in 1981 according to the date stamped on the bridge's concrete guardrail. The bridge is a five-lane, four (4) span bridge constructed with poured-in-place concrete bridge deck spans, concrete curb and gutters with steel galvanized guardrails and concrete sidewalks on both sides of the bridge. Each span is supported by twelve (12) structural steel beams with steel diaphragms. The bridge beams are supported by two (2) end bents and three (3) interior bents. According to the SCDOT bridge drawings provided, and through onsite observations made in the field, the beam supports for both the end bents and interior bents are constructed with a concrete bent caps that are supported by six (6) concrete columns on each interior bent. The middle interior bent is supported by seven (7) concrete columns. The end bents have soil and concrete covering the piles with only the top of the concrete bent caps exposed. The bridge approaches on each end of the bridge consist of a five-lane asphalt paved roadway.

Our LBP Investigation sampling protocol consisted of randomly selecting bridge components on the subject bridge and scanning them with our Thermo Scientific Niton X-Ray Fluorescence (XRF) Portable Analyzer (Model XLp300A, Serial #18185, Isotope 1: Cd109, 40mCi, source date 09/01/2015) using the threshold of 0.7 mg/cm^2. The components that were tested with the XRF include the following: horizontal support beams, diaphragms, diaphragm X-bracing, beam plates, and guardrails.

The results from the XRF quantitative testing indicate that no lead was found in concentrations greater than or equal to (≥) 0.7 mg/cm^2 in paint and/or coatings on the bridge components scanned during this investigation of the subject bridge structure. However, some bridge components tested positive for lead that would be a concern under OSHA regulations. For more information regarding the specific descriptions and locations of the items that were scanned, refer to the Appendix C – XRF Data. Also, Appendix D – Site Photographs, shows top and underside views of the bridge. Appendix E - Personnel Certification, is included to show F&ME qualifications with regards to LBP Investigations.

5. RECOMMENDATIONS

The results from the XRF quantitative testing indicate that no lead was found in concentrations greater than or equal to (≥) 0.7 mg/cm^2 in paint and/or coatings on the bridge components scanned during this investigation of the subject bridge structure. However, some bridge components tested positive for lead that would be a concern under OSHA regulations. Therefore, the OSHA regulations and procedures concerning lead should be followed when handling these bridge components. Refer to the blue

highlighted components listed on the XRF Data Summary Table found in Appendix C for a list of these items. During the bridge demolition activities, some painted surfaces may become exposed. If paint is exposed and it is determined to contain levels of lead ≥ 0.7 mg/cm^2, the coated/painted components will need to be handled and disposed of properly. Proper handling includes the avoidance of creating lead dust, as well as the creation of lead-contaminated soil hazards. Activities that would generate lead dust include abrasion, scraping, or sanding. As previously stated, 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. In these cases, OSHA regulations and procedures should be followed to protect the personnel carrying out the work on a bridge component containing any amount of lead.

If any hidden and/or inaccessible materials suspected or known to contain lead-based paint are encountered during any bridge demolition activities, the persons involved are advised to stop work, follow proper regulatory precautions and procedures, and notify F&ME Consultants for an immediate response action. If you have any questions or require additional information concerning this report, please do not hesitate to contact our office at (803)254-4540. We appreciate the opportunity to be of service in this matter.

This report has been prepared exclusively for HDR, Inc. by F&ME Consultants and shall not be disseminated in whole or part to other parties without prior consent from HDR, Inc. or F&ME Consultants, Inc. Use of this document for bidding purposes is not recommended without prior consultation with F&ME.

APPENDICES

Appendix A – Site Vicinity Map

Appendix B – Bridge Plan

Appendix C – XRF Data

Appendix D – Site Photographs

Appendix E – Personnel Certification

Appendix A

Site Vicinity Map

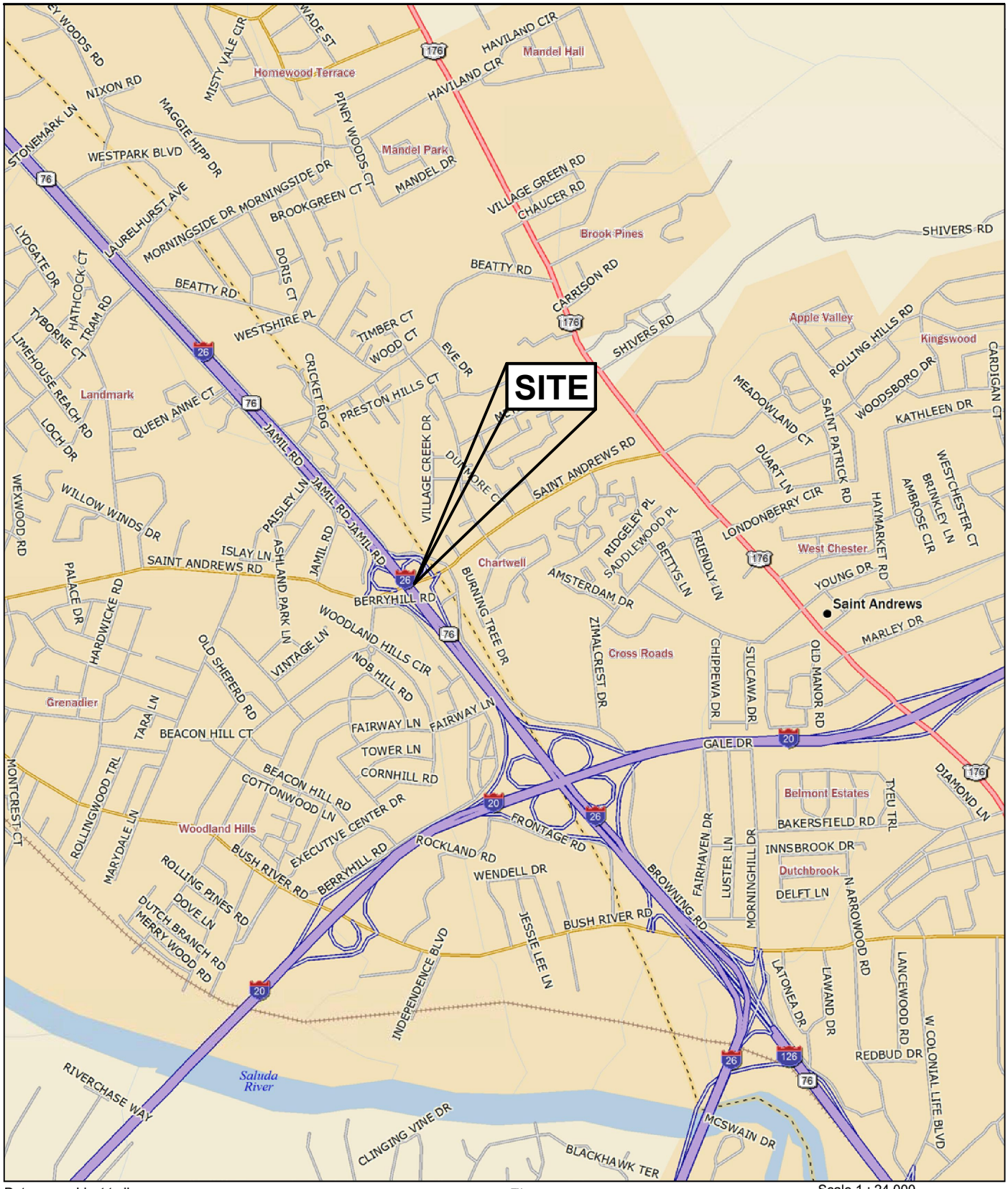


FIGURE NUMBER:	F&ME CONSULTANTS PROJECT NUMBER:	LEAD-BASED PAINT INVESTIGATION S-32-36 (St. Andrews Rd.) OVER I-26 Lexington County, SC **Site Vicinity Map** Prepared for: HDR, Inc. 3955 Faber Place Drive, Suite 300 North Charleston, SC 29405	F&ME CONSULTANTS 1825 Blanding Street Columbia ,SC 29201	ORIGINAL: April 10, 2018 REVISIONS: 1 2 3 SCALE: AS SHOWN	DRWN. BY: CTC CHKD. BY: JSL APPR. BY: GME NOTES:
1	G5662.01				

Appendix B

Bridge Plan

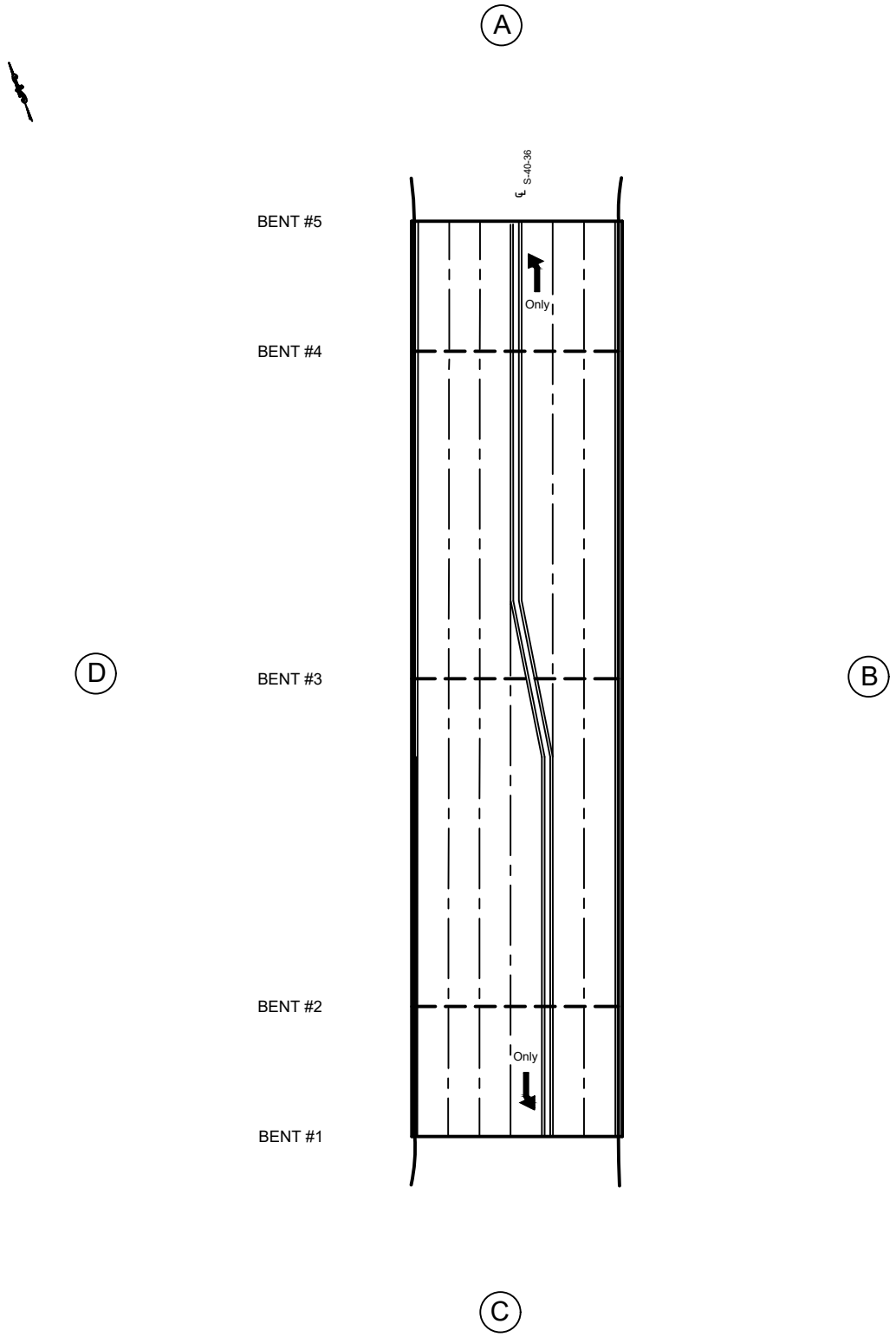


FIGURE NUMBER:	F&ME CONSULTANTS PROJECT NUMBER:	**LEAD-BASED PAINT INVESTIGATION** **S-32-36 (St. Andrews Rd.) OVER I-26** Lexington County, SC **Sample Location Plan** Prepared for: HDR, Inc. 3955 Faber Place Drive, Suite 300 North Charleston, SC 29405	F&ME CONSULTANTS 1825 Blanding Street Columbia ,SC 29201	ORIGINAL: April 13, 2018 REVISIONS: 1 2 3 SCALE: N.T.S.	DRWN. BY: MSM CHKD. BY: JSL APPR. BY: GME NOTES:
2	G5662.010				

Appendix C

XRF Data

Appendix C – XRF Data
Date Scanned: 03/02/2018

Scan No.	Component	Substrate	Side	Condition	Color	Pbc (mg/cm^2)
1	Shutter Calibrate					NA
2	Calibrate					0.70
3	Calibrate					1.00
4	Calibrate					1.00
5	Calibrate					0.70
6	Beam Plate	Metal	C	Intact	Green	< LOD
7	Beam Plate	Metal	C	Intact	Green	< LOD
8	Beam Plate	Metal	C	Intact	Green	< LOD
9	Beam Plate	Metal	C	Intact	Green	0.3
10	Beam	Metal	C	Intact	Green	0.23
11	Beam	Metal	D	Intact	Green	0.23
12	Barrier Bottom	Concrete	D	Peeling	Tan	< LOD
13	Beam Plate	Metal	A	Intact	Green	< LOD
14	Beam	Metal	A	Intact	Green	< LOD
15	Beam	Metal	A	Intact	Green	0.15
16	Guardrail	Metal	B	Intact	Galvanized	< LOD
17	Guardrail	Metal	B	Intact	Galvanized	< LOD
18	Beam	Metal	D	Intact	Green	< LOD
19	Beam	Metal	D	Intact	Hunter Green	0.4
20	Diaphragm	Metal	D	Intact	Green	< LOD
21	Diaphragm X-Brace	Metal	D	Intact	Green	< LOD
22	Beam Plate	Metal	Center	Intact	Green	< LOD
23	Shutter Calibrate					NA
24	Calibrate					1.10
25	Calibrate					0.70
26	Calibrate					1.00
27	Calibrate					0.70

LOD (Limit of Detection) = 0.01 mg/cm^2
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.

Appendix D

Site Photographs

Photograph 1

West side view of bridge.

Photograph 2

View of the top of bridge deck looking north.

Photograph 3

Underside view of bridge beams, diaphragms, bent caps and columns.

Photograph 4

Underside view of bent #2 looking south west.

Photograph 5

View of sidewalk on top deck of bridge looking north.

Photograph 6

View of mechanically affixed road signs on the west side of the bridge.

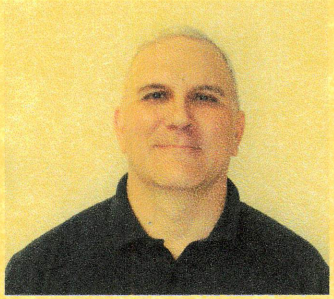
Appendix E

Personnel Certification

F&ME CONSULTANTS

United States Environmental Protection Agency

This is to certify that



Jeffrey S Leary

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 July 29, 2021

LBP-I-18721-1

Certification #

April 17, 2018

Issued On

Adrienne Priselac, Manager, Toxics Office

Land Division