

**LEAD-BASED PAINT  
INVESTIGATION REPORT**

**US-21 (SEA ISLAND PARKWAY)  
BRIDGE OVER HARBOR RIVER  
BEAUFORT COUNTY, SC  
SCDOT BRIDGE #072002100200  
SCDOT PROJECT #P026862**

**PREPARED FOR:**



**PREPARED BY:**

F&ME Consultants  
3112 Devine Street  
Columbia, South Carolina 29205  
(803) 254-4540

**February 14, 2017**

- Yes, lead-based paint was found.  
 No, lead-based paint was not found.

**G5396.000**

## TABLE OF CONTENTS

I. Executive Summary.....	1
II. LBP Background Information.....	2
III. Introduction.....	2
IV. Investigation Results.....	3
V. Recommendations.....	4

### APPENDIX A

- Site Vicinity Map (Figure 1)
- XRF Data (Table I)
- Photographs of Lead-Based Painted Items

### APPENDIX B

- Personnel Certification

## I. EXECUTIVE SUMMARY

As requested, F&ME Consultants has completed a Lead-Based Paint (LBP) investigation of the SC-21 (Sea Island Parkway) Bridge over Harbor River located in Beaufort County, South Carolina. This investigation was performed on January 4<sup>th</sup> and 5<sup>th</sup>, 2017, as a component of a proposed bridge replacement project.

It is our understanding that the proposed project will include the complete demolition/removal of the existing bridge structure and replacement with a new bridge on the existing horizontal alignment. Therefore, the scope of this investigation was to identify, analyze, and assess the condition of lead-based painted or coated components that are associated with the existing bridge. This scope 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<sup>2</sup>.

LBP is governed by multiple regulatory 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 SC Department of Health and Environmental Control (SCDHEC) requires some materials found to contain  $\geq 0.7$  mg/cm<sup>2</sup> lead to be disposed of at specialized waste facilities. In an effort to present the data in a user-friendly format, we have highlighted the XRF results depending upon which threshold is 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<sup>2</sup> and would therefore be a concern under OSHA's regulations.

The suspect painted bridge components that were identified during this investigation are the following: beams, beam to diaphragm angle iron brackets, beam bracing, beam pads and plates, catwalk framing, swing bridge framing and guardrails, pipes and pipe support brackets, scupper pipes, bridge traffic control arm framing, and the bridge control house components. The results from the XRF quantitative testing indicate that the following bridge components tested positive for lead in concentrations  $\geq 0.7$  mg/cm<sup>2</sup>: beams, beam to diaphragm angle iron brackets, beam pads and plates, scupper pipes, bridge traffic control arm frame, and the swing bridge framing and guardrail. The XRF test results are organized in Table I, which includes the location, description, and type of bridge component from which the readings were taken.

We sincerely appreciate the opportunity to assist you with this project. If you have any questions or require any additional information, please do not hesitate 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 Department Manager

## II. LBP BACKGROUND INFORMATION

Housing and Urban Development (HUD) defines “lead-based paint” 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 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 lead-based paint 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 the Occupational Safety and Health Administration (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 regulations, guidelines, and safety procedures should be followed.

Additionally, the South Carolina Department of Health and Environmental Control (SCDHEC) require the use of specialized waste disposal sites if materials contain lead concentrations at or exceeding 0.7 mg/cm<sup>2</sup> as determined by testing with an XRF analyzer or >0.06% (>600ppm) as determined by lab testing. It is imperative that these regulations be considered if any demolition activities will impact LBP-containing bridge components.

## III. INTRODUCTION

As requested, F&ME Consultants has completed a Lead-Based Paint (LBP) investigation of the SC-21 (Sea Island Parkway) Bridge over Harbor River located in Beaufort County, South Carolina. This investigation was performed on January 4<sup>th</sup> and 5<sup>th</sup>, 2017, as a component of a proposed bridge replacement project. On January 4<sup>th</sup>, F&ME personnel began the investigation utilizing a Trailer Mounted Hydra Platform to access and analyze bridge components that could be obtained from the underside of the bridge and portions of the topside requiring a lane closure. The field investigation continued with the lift through January 5<sup>th</sup> and concluded with investigation of the existing swing bridge and bridge control house. Traffic lane closures were utilized throughout the duration of the investigation.

It is our understanding that the proposed project will include the complete demolition/removal of the existing bridge structure and replacement with a new bridge on the existing horizontal alignment. Therefore, the scope of this investigation was to identify, analyze, and assess the condition of lead-based painted or coated components that are associated with the existing bridge.

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 were addressed in this report.

#### IV. INVESTIGATION RESULTS

The existing bridge structure (SCDOT Bridge #072002100200) crosses over the Harbor River. The bridge is part of US-21(Sea Island Parkway) located in Beaufort County. The actual date of construction for the bridge is unknown, but it is believed to have been constructed in the late 1930's. The bridge is a two-lane concrete deck bridge (~2,851.2'L x ~21.0'W, measured from outside edge to outside edge) on precast concrete piles and is constructed with concrete curb and gutters as well as concrete guardrails and post. Galvanized guardrails and post are attached at the ends of the bridge. The bridge has two (2) end bents and sixty-seven (67) interior bents. Bent caps for the fixed stationary portions of the bridge are poured in place concrete supported by four (4) precast concrete piles per bent. Deck supports between the interior bents have concrete beams and diaphragms with the same support structure as the steel beams. The end bents have concrete bent caps, but the bent cap supports are covered with soil and rip-rap. The existing swing bridge (170' swing span) is a riveted through truss swing bridge on a single center concrete pier foundation. The all metal swing bridge portion of the bridge contains a bridge control house affixed to the top of the swing bridge for its operation.



Photo 1 – Top view of SC-21 Bridge over Harbor River.



Photo 2 – Side view of SC-21 Bridge over Harbor River.

The LBP sampling protocol for this investigation consisted of randomly selecting bridge components associated with the existing bridge structure 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). The XRF analyzer scans all layers of paint on a component and is unable to distinguish which layer and or layers are positive. The limit of detection (LOD) for the XRF analyzer is 0.01 mg/cm<sup>2</sup>.

The suspect painted bridge components that were identified during this investigation are the following: beams, beam to diaphragm angle iron brackets, beam bracing, beam pads and plates, catwalk framing, swing bridge framing and guardrails, pipes and pipe support brackets, scupper pipes, bridge traffic control arm framing, and the bridge control house components. The results from the XRF quantitative testing indicate that the following bridge components tested positive for lead in concentrations  $\geq 0.7$  mg/cm<sup>2</sup>: beams, beam to diaphragm angle iron brackets, bent cap pads and plates, scupper pipes, bridge traffic control arm frame, and the swing bridge framing and guardrail. Several bridge components had concentrations of lead less than 0.7 mg/cm<sup>2</sup>. For more information regarding the specific descriptions and locations of the items that were tested, refer to the XRF Data (Table I) located in Appendix A. The appendices include a Site Vicinity Map (Figure 1), the XRF Data (Table I), Photographs of Lead-Based Painted Items, and Personnel Certification.

## V. RECOMMENDATIONS

As reported herein, lead-based paint was identified in concentrations above both the SCDHEC and OSHA limits on the steel beams, beam plates and pads, scupper pipes, swing bridge framing and gaurd rail, and the bridge traffic control arm framing. It is important to ensure that the debris generated from the demolition activities are handled and disposed of appropriately. The proper handling and disposal procedures depend on the type of substrate (i.e., metal, wood, masonry block, etc.). Intact removal is recommended in order to reduce and/ or eliminate the generation of lead-containing dust and *residue*. Metal components painted with and/ or containing lead, such as the beams, beam to diaphragm angle iron brackets, beam plates, scupper pipes, etc. may be recycled if they are taken to a recycling facility that accepts lead painted and/or lead-containing material.

Components found to contain lead should be handled appropriately. It is recommended that work tasks which require grinding, sanding, torch cutting or other disturbance of the lead-based painted surfaces identified herein be performed in accordance with federal regulations pertaining to worker protection from exposure to LBP. When lead containing items are disturbed or begin to decay they become a concern with regard to human and environmental health. The typical routes of exposure to lead are through the inhalation or ingestion of lead-contaminated materials. In cases where the lead-containing paint/ coating is intact (i.e. has not been aerosolized and free of chipping or flaking), there is minimal risk to people.

As stated previously, OSHA regulates **any** measurable level of worker exposure to lead, as it may pose a substantial exposure hazard during construction work. These items are highlighted in blue on the XRF data table. Therefore, when handling any of the blue highlighted items along with the red highlighted components, OSHA regulations and safety procedures should be followed. These regulations list the proper personal protective equipment to be used by the workers disturbing the lead-based paint 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).

As previously mentioned the SCDHEC is primarily concerned with the proper disposal of LBP and associated debris. The following is a synopsis of the concerns associated with the disposal of these materials:

The SCDHEC defines two types of lead-based paint debris. The first is lead-based paint *waste*, which is defined as material such as wood, brick and metal that is painted with lead-based paint. The other is lead-based paint *residue* which is defined as residue that is generated from the removal (e.g., scraped, chipped, sandblasted or chemical) of lead-based paint from a structure. Lead-based paint *waste* that comes from a commercial or residential facility may be disposed of in either a class 2 or 3 landfill, while lead-based paint *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 leach ability and is expressed in mg/l;  $\geq 5.0$  mg/l is considered hazardous waste under the SC Hazardous Waste Management Regulation. Lead-based paint *residue* from a commercial facility with a TCLP analysis result less than 5 mg/l lead must be disposed of in a class 3 landfill. Lead-based paint *residue* with a TCLP analysis result greater than or equal to 5 mg/l lead must be disposed of in a Subtitle C landfill (Hazardous Waste).

Should any hidden and/or inaccessible components suspected to have LBP be encountered during demolition activities, the contractor performing the work is advised to stop work, follow proper procedures and precautions relating to LBP, and contact F&ME Consultants at (803) 254-4540 for an immediate response action.

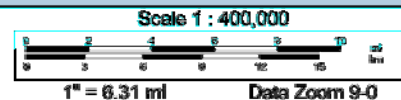
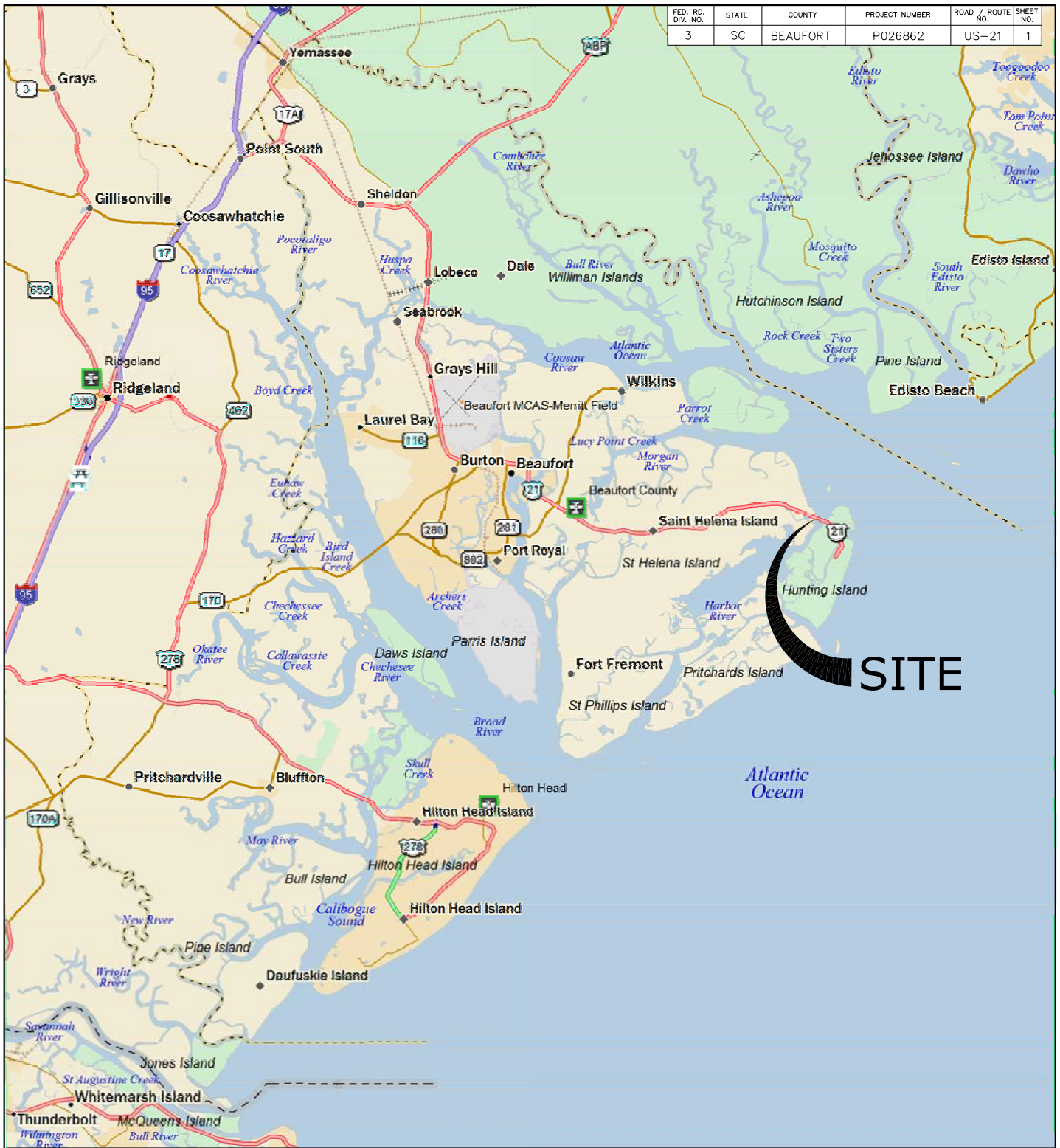
This report has been prepared exclusively for the HDR Engineering, Inc. of the Carolinas and F&ME Consultants and shall not be disseminated in whole or part to other parties without prior consent from the HDR Engineering, Inc. of the Carolinas or F&ME Consultants, Inc. Use of this document for bidding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

## **APPENDIX A**

Site Vicinity Map (Figure 1)  
XRF Data (Table I)  
Photographs of Lead-Based Painted Items



FED. RD. DIV. NO.	STATE	COUNTY	PROJECT NUMBER	ROAD / ROUTE NO.	SHEET NO.
3	SC	BEAUFORT	P026862	US-21	1



**F&ME** CONSULTANTS  
 3112 Devine Street | Columbia, SC 29205  
 P 803.254.4540 | F 803.254.4542  
 www.fmeol.com  
*Geotechnical • Environmental • Materials*

US-21 (SEA ISLAND PKWY)  
 BRIDGE REPLACEMENT OVER HARBOR RIVER  
 FIGURE 1 - SITE PLAN

4				
3				
2				
1				
REV. NO.	BY	DATE	DESCRIPTION OF REVISION	
TOPO.		DATE		
DWG.	CTC	DATE 9/15/2014	GROUP -- --	
R/W		DATE		

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**US-21 (Sea Island Parkway) Bridge over Harbor River**  
**SCDOT Bridge #072002100200**  
**Date Analyzed: 01/04,05/2017**  
**F&ME Project No.: G5396.000**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	PbC (mg/cm <sup>2</sup> )
1			Shutter Calibrate			NA
2			Calibrate			0.6
3			Calibrate			0.5
4			Calibrate			0.9
5			Calibrate			0.6
6	beam	Metal	A	PEELING	Grey	0.22
7	beam	Metal	C	PEELING	Grey	< LOD
8	beam brace	Metal	C	INTACT	Grey	< LOD
9	beam	Metal	Center	PEELING	Grey	< LOD
10	beam	Metal	Center	PEELING	Grey	< LOD
11	beam	Metal	Center	PEELING	Grey	< LOD
12	catwalk brace	Metal	C	INTACT	Grey	< LOD
13	catwalk	Metal	C	INTACT	Silver	< LOD
14	catwalk handrail	Metal	C	INTACT	Silver	< LOD
15	pipe bracket	Metal	A	INTACT	White	< LOD
16	pipe	Metal	A	INTACT	White	0.12
17	scupper pipe	Metal	A	INTACT	Grey	< LOD
18	pipe bracket	Metal	A	INTACT	Grey	0.4
19	beam pad	Metal	A	PEELING	Grey	< LOD
20	beam pad	Metal	A	PEELING	Grey	< LOD
21	beam	Metal	C	PEELING	Grey	< LOD
22	catwalk brace	Metal	C	INTACT	Grey	< LOD
23	catwalk beam	Metal	C	INTACT	Grey	< LOD
24	pipe	Metal	C	INTACT	White	< LOD
25	scupper pipe	Metal	A	INTACT	Grey	0.24
26	beam	Metal	A	INTACT	Grey	< LOD
27	beam to diaphragm angle iron bracket	Metal	A	INTACT	Grey	1.2
28	beam	Metal	Center	PEELING	Grey	< LOD

Side A = North, then go clockwise

LOD ( Limit of Detection) = 0.01 mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)

Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**US-21 (Sea Island Parkway) Bridge over Harbor River**  
**SCDOT Bridge #072002100200**  
**Date Analyzed: 01/04,05/2017**  
**F&ME Project No.: G5396.000**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	PbC (mg/cm <sup>2</sup> )
29	beam	Metal	Center	PEELING	Grey	< LOD
30	pile	Concrete	Center	PEELING	Black	< LOD
31	pipe bracket	Metal	A	INTACT	Grey	< LOD
32	pipe	Metal	C	INTACT	Red	< LOD
33	bent cap pad	Metal	C	INTACT	Grey	4.1
34	beam	Metal	C	INTACT	Grey	< LOD
35	catwalk beam	Metal	C	INTACT	Grey	< LOD
36	traffic control arm handrail	Metal	A	INTACT	Silver	< LOD
37	traffic control arm frame	Metal	A	INTACT	Grey	< LOD
38	traffic control arm frame	Metal	A	INTACT	Grey	0.8
39	traffic control arm frame	Metal	A	INTACT	Grey	1.3
40	traffic control arm frame	Metal	A	INTACT	Grey	< LOD
41	traffic control arm motorbox	Metal	A	INTACT	Grey	< LOD
42	traffic control arm motorbox	Metal	A	INTACT	Grey	< LOD
43	traffic control arm frame	Metal	A	INTACT	Grey	< LOD
44	traffic control arm frame	Metal	A	INTACT	Grey	< LOD
45	scupper pipe	Metal	C	PEELING	Grey	11.8
46	scupper pipe	Metal	C	PEELING	Grey	11.5
47	beam	Metal	C	PEELING	Grey	10
48	beam	Metal	Center	PEELING	Grey	13.7
49	catwalk beam	Metal	Center	PEELING	Grey	< LOD
50	catwalk beam	Metal	A	INTACT	Grey	< LOD
51	catwalk handrail	Metal	C	INTACT	Silver	< LOD
52	catwalk grate	Metal	C	INTACT	Silver	< LOD
53	swing bridge frame	Metal	A	INTACT	Blue	0.9
54	swing bridge gaurdrail	Metal	A	INTACT	Blue	0.8
55	beam to diaphragm angle iron bracket	Metal	Center	POOR	Grey	0.18
56	beam to diaphragm angle iron bracket	Metal	Center	POOR	Grey	< LOD

Side A = North, then go clockwise

LOD ( Limit of Detection) = 0.01 mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)

Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**US-21 (Sea Island Parkway) Bridge over Harbor River**  
**SCDOT Bridge #072002100200**  
**Date Analyzed: 01/04,05/2017**  
**F&ME Project No.: G5396.000**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	PbC (mg/cm <sup>2</sup> )
57	beam to diaphragm angle iron bracket	Metal	Center	POOR	Grey	< LOD
58	beam plate	Metal	Center	POOR	Grey	< LOD
59	beam plate	Metal	Center	POOR	Grey	10.6
60	beam plate	Metal	Center	POOR	Grey	< LOD
61	beam plate	Metal	Center	POOR	Grey	2.2
62	beam pad	Concrete	Center	POOR	Grey	6
63	beam	Metal	Center	POOR	Grey	< LOD
64	beam	Metal	A	POOR	Grey	< LOD
65	scupper pipe	Metal	A	INTACT	Grey	8.7
66	beam pad	Concrete	Center	INTACT	Grey	0.3
67	beam	Metal	Center	PEELING	Grey	0.28
68	beam	Metal	Center	PEELING	Grey	< LOD
69	beam	Metal	Center	PEELING	Grey	< LOD
70	pipe	Metal	A	POOR	Silver	< LOD
71	pipe	Metal	A	POOR	Silver	0.6
72	pipe bracket	Metal	A	POOR	Silver	< LOD
73	pipe	Metal	A	POOR	rust	< LOD
74	catwalk frame	Metal	C	INTACT	Silver	< LOD
75	beam	Metal	C	PEELING	Grey	< LOD
76	scupper pipe	Metal	A	INTACT	Grey	< LOD
77	scupper pipe	Metal	A	INTACT	Grey	0.4
78	pipe bracket	Metal	A	INTACT	Silver	< LOD
79	catwalk handrail	Metal	C	INTACT	Blue	< LOD
80	catwalk handrail	Metal	C	INTACT	Blue	< LOD
81	swing bridge ladder	Metal	C	INTACT	Blue	< LOD
82	swing bridge gaurdrail	Metal	C	INTACT	Blue	< LOD
83	swing bridge frame	Metal	C	INTACT	Blue	0.27
84	swing bridge frame	Metal	C	INTACT	Blue	< LOD

Side A = North, then go clockwise

LOD ( Limit of Detection) = 0.01 mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)

Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**US-21 (Sea Island Parkway) Bridge over Harbor River**  
**SCDOT Bridge #072002100200**  
**Date Analyzed: 01/04,05/2017**  
**F&ME Project No.: G5396.000**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	PbC (mg/cm <sup>2</sup> )
85	swing bridge steps	Metal	C	INTACT	Blue	< LOD
86			Shutter Calibrate			NA
87			Calibrate			1
88			Calibrate			0.5
89			Calibrate			1.5
90			Calibrate			0.7
91			Shutter Calibrate			NA
92			Calibrate			1.1
93			Calibrate			0.7
94			Calibrate			1.1
95			Calibrate			0.7
96	Bridge angle iron bracing	Metal	A	PEELING	Silver	0.5
97	beam	Metal	Center	PEELING	Grey	0.6
98	beam pad	Concrete	Center	INTACT	Grey	0.28
99	beam	Metal	Center	PEELING	Grey	< LOD
100	beam	Metal	C	PEELING	Grey	< LOD
101	Catwalk angle iron bracing	Metal	C	PEELING	Grey	< LOD
102	Catwalk angle iron bracing	Metal	C	PEELING	Grey	< LOD
103	Catwalk angle iron bracing	Metal	C	PEELING	Grey	< LOD
104	catwalk handrail	Metal	A	INTACT	Grey	< LOD
105	catwalk handrail	Metal	C	INTACT	Silver	< LOD
106	traffic control arm frame	Metal	C	INTACT	Grey	< LOD
107	traffic control arm motor	Metal	C	PEELING	Orange	< LOD
108	scupper pipe	Metal	A	INTACT	Grey	< LOD
109	scupper pipe	Metal	A	INTACT	Grey	< LOD
110	beam	Metal	A	INTACT	Grey	0.3
111	beam pad	Concrete	C	INTACT	Grey	0.16
112	beam plate	Metal	C	POOR	Grey	< LOD

Side A = North, then go clockwise

LOD ( Limit of Detection) = 0.01 mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)  
Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**US-21 (Sea Island Parkway) Bridge over Harbor River**  
**SCDOT Bridge #072002100200**  
**Date Analyzed: 01/04,05/2017**  
**F&ME Project No.: G5396.000**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	PbC (mg/cm <sup>2</sup> )
113	beam	Metal	C	PEELING	Grey	< LOD
114	beam	Metal	C	PEELING	Grey	< LOD
115	beam to diaphragm angle iron bracket	Metal	Center	PEELING	Grey	0.27
116	beam to diaphragm angle iron bracket	Metal	Center	PEELING	Grey	< LOD
117	beam to diaphragm angle iron bracket	Metal	Center	PEELING	Grey	< LOD
118	beam to diaphragm angle iron bracket	Metal	Center	PEELING	Grey	0.15
119	beam to diaphragm angle iron bracket	Metal	Center	PEELING	Grey	< LOD
120	beam bolt	Metal	Center	PEELING	Grey	0.27
121	beam bolt	Metal	Center	PEELING	Grey	0.4
122	beam bolt	Metal	C	PEELING	Grey	0.19
123	beam plate	Metal	C	PEELING	Grey	< LOD
124	beam pad	Concrete	C	FAIR	Grey	5.7
125	beam pad	Concrete	Center	FAIR	Grey	< LOD
126	beam pad	Concrete	Center	FAIR	Grey	< LOD
127	beam pad	Concrete	Center	FAIR	Grey	< LOD
128	beam	Metal	Center	PEELING	Grey	< LOD
129	beam	Metal	C	PEELING	Grey	< LOD
130	pipe bracket	Metal	A	INTACT	Silver	0.5
131	pipe bracket	Metal	A	INTACT	White	< LOD
132	beam	Metal	A	PEELING	Grey	0.4
133	swing bridge beam	Metal	A	INTACT	Blue	0.5
134	swing bridge beam	Metal	A	INTACT	Grey	< LOD
135	swing bridge beam	Metal	A	INTACT	Grey	< LOD
136	swing bridge beam	Metal	A	INTACT	Grey	< LOD
137	swing bridge brake motor	Metal	D	INTACT	Grey	< LOD
138	swing bridge ladder	Metal	C	INTACT	Blue	< LOD
139	swing bridge column	Metal	C	PEELING	Blue	< LOD
140	beam pad	Metal	D	INTACT	Blue	< LOD

Side A = North, then go clockwise

LOD ( Limit of Detection) = 0.01 mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)

Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**US-21 (Sea Island Parkway) Bridge over Harbor River**  
**SCDOT Bridge #072002100200**  
**Date Analyzed: 01/04,05/2017**  
**F&ME Project No.: G5396.000**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	PbC (mg/cm <sup>2</sup> )
141	swing bridge beam	Metal	A	INTACT	Blue	< LOD
142	swing bridge beam	Metal	Center	INTACT	Grey	< LOD
143	catwalk frame	Metal	C	INTACT	Silver	< LOD
144	swing bridge brace	Metal	C	INTACT	Blue	1.3
145	swing bridge brace	Metal	C	INTACT	Blue	0.22
146	swing bridge brace	Metal	C	INTACT	Blue	0.28
147	swing bridge brace	Metal	C	INTACT	Blue	< LOD
148	swing bridge brace	Metal	C	INTACT	Blue	< LOD
149	swing bridge brace	Metal	C	INTACT	Blue	0.14
150	swing bridge brace	Metal	C	INTACT	Blue	< LOD
151	swing bridge column	Metal	C	INTACT	Blue	0.13
152	swing bridge beam pad	Metal	C	INTACT	Blue	0.13
153	swing bridge bolt	Metal	C	PEELING	Red	< LOD
154	swing bridge frame	Metal	C	INTACT	Grey	< LOD
155	swing bridge frame	Metal	C	INTACT	Grey	< LOD
156	swing bridge beam	Metal	C	INTACT	Blue	< LOD
157	catwalk handrail	Metal	C	INTACT	Silver	< LOD
158	catwalk handrail	Metal	C	INTACT	Blue	< LOD
159	swing bridge frame	Metal	C	INTACT	Blue	< LOD
160	swing bridge stairs	Metal	C	INTACT	Blue	< LOD
161	swing bridge column	Metal	C	INTACT	Blue	< LOD
162	swing bridge brace	Metal	C	INTACT	Blue	< LOD
163	swing bridge ladder	Metal	C	INTACT	Blue	< LOD
164	swing bridge ladder	Metal	C	INTACT	Blue	< LOD
165	swing bridge gaurdrail	Metal	C	INTACT	Blue	< LOD
166	swing bridge gaurdrail	Metal	C	INTACT	Blue	< LOD
167	bridge control house ceiling	Wood	Center	INTACT	Varnish	< LOD
168	bridge control house wall	Wood	C	INTACT	Varnish	< LOD

Side A = North, then go clockwise

LOD ( Limit of Detection) = 0.01 mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)

Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**US-21 (Sea Island Parkway) Bridge over Harbor River**  
**SCDOT Bridge #072002100200**  
**Date Analyzed: 01/04,05/2017**  
**F&ME Project No.: G5396.000**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	PbC (mg/cm <sup>2</sup> )
169	bridge control house exterior wall	Metal	C	INTACT	Green	< LOD
170	bridge control house exterior wall	Metal	A	INTACT	Green	< LOD
171	bridge control house exterior window	Metal	C	INTACT	Green	< LOD
172	bridge control house door	Metal	C	INTACT	Black	< LOD
173	bridge control house door	Metal	C	INTACT	Black	< LOD
174	bridge control house door casing	Metal	C	INTACT	Black	< LOD
175	guardrail	Metal	C	INTACT	Blue	< LOD
176	swing bridge column	Metal	C	INTACT	Blue	0.22
177	bridge control house door	Metal	B	INTACT	Black	< LOD
178	bridge control house generator	Metal	B	INTACT	Beige	< LOD
179	bridge control house roof	Metal	A	INTACT	Green	< LOD
180	swing bridge beam	Metal	A	INTACT	Blue	0.3
181	pipe bracket	Metal	C	INTACT	White	< LOD
182	beam	Metal	C	INTACT	Grey	< LOD
183	beam	Metal	Center	INTACT	Grey	0.3
184			Shutter Calibrate			NA
185			Calibrate			1.2
186			Calibrate			0.7
187			Calibrate			0.7
188			Calibrate			1.1

Side A = North, then go clockwise

LOD ( Limit of Detection) = 0.01 mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)  
Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)





Bridge beams





Beam plates and pads





Bridge beam to diaphragm angle iron brackets





Bridge scupper pipes





Swing bridge framing and guardrail





Bridge traffic control arm frame



## **APPENDIX B**

Personnel Certification

# United States Environmental Protection Agency

This is to certify that

Jeffrey Steve 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:**

South Carolina

This certification is valid from the date of issuance and expires July 29, 2018

SC-I-18721-3

Certification #

April 24, 2015

Issued On



Adrienne Priselac, Manager, Toxics Office

Land Division