

LEAD-BASED PAINT INVESTIGATION REPORT

**US-176 BRIDGE OVER I-26
SCDOT #402017600300
RICHLAND COUNTY, SOUTH CAROLINA**

REPORT PREPARED FOR:



**SOUTH CAROLINA DEPARTMENT OF
TRANSPORTATION
C/O Mark Hunter
955 Park Street
Columbia, SC 29202**

BY:

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

March 21, 2013

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

E5350.02

March 21, 2013

Mr. Mark Hunter
South Carolina Department of Transportation
955 Park Street
Columbia, South Carolina 29202

Re.: Lead-Based Paint Investigation Report
US-176 Bridge over I-26
SCDOT #402017600300
Richland County, South Carolina
F&ME Project No.: E5350.02


Dear Mr. Hunter:

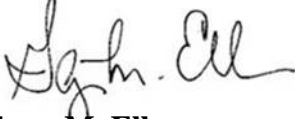
As requested, F&ME Consultants has completed a Lead-Based Paint (LBP) Investigation for the above-referenced bridge structure. During the field investigation, the following four (4) paints/coatings were identified as suspect materials: silver and gray paints on support I-beam sections, gray paint on bridge beams, diaphragms, and beam seat plates, and white paint on bridge beams. However, all of these bridge components tested negative for lead-based paint with the action level set at 0.7 mg/cm^2 . Photographs of the bridge structure and components are included in the appendix of the attached report.

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
Environmental Professional
EPA Certified S.C. Lead-Based Paint Inspector
EPA Certification No. SC-I-18721-1
Expiration Date 07/29/2015


Glynn M. Ellen
Senior Environmental Professional

JSL/jls

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I. INTRODUCTION

As authorized, F&ME Consultants has completed a Lead-Based Paint (LBP) investigation of the US-176 Bridge over I-26 (SCDOT #402017600300) located in Richland County, South Carolina. The purpose of this investigation was to locate and identify lead-based painted or coated bridge components in anticipation of planned demolition and/or renovation activities. The field investigation was performed on March 19, 2013.

The scope of the investigation included identifying structural and non-structural components (i.e. structural beams, girders, and railings) of the subject bridge that may be coated with lead-based paint utilizing our Thermo Scientific Niton X-Ray Fluorescence (XRF) Portable Analyzer (Model XLp300A, Serial #18185, Isotope 1: Cd109, 40mCi, source date 11/15/2011); assessing the condition of those surfaces (i.e. flaking, peeling, intact etc.); and providing the proper handling methods that would be necessary to stay within regulatory compliance should lead be identified. Measurements were recorded in mg/cm^2 . The XRF scans all paint layers including the primer coat, although it is unable to differentiate which paint layer or coating is positive for lead content. The XRF's threshold was set to $0.7 \text{ mg}/\text{cm}^2$ in accordance with SCDHEC's rules and regulations regarding the disposal of LBP-coated materials.

II. LBP BACKGROUND

HUD defines "lead-based paint" as any coating that has a lead concentration of 1.0 milligram of lead per square centimeter ($1.0 \text{ mg}/\text{cm}^2$) 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. By 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.

This report has been prepared exclusively for the South Carolina Department of Transportation and shall not be disseminated in whole or part to other parties without prior consent from the South Carolina Department of Transportation or F&ME Consultants, Inc. No other environmental issues are addressed in this report. The results, conclusions, and recommendations of 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.

III. EXISTING BRIDGE STRUCTURE

The subject bridge is a two (2) lane SCDOT bridge structure (~330'L x 28.5'W, measured from inside curb edge to inside curb edge). According to the stamped date on the bridge's guardrail, it was originally built in 1958. The bridge deck is concrete with an asphalt overlay. Galvanized metal guardrails are located in front of the original concrete guardrail and post. Additionally, four (4) PVC pipes running north/south along the underside of the bridge are supported by galvanized metal brackets.

The structural components of the subject bridge are concrete (i.e. deck sections/spans, curbing, guardrails, drilled shafts, and beams and diaphragms) and steel (beams, diaphragms, and beam seat plates). The two (2) center spans are supported by steel beams and diaphragms, while the rest of the spans have concrete beams and diaphragms with no beam seat plates. There are five (5) steel beams for each center span. The bridge has a total of seven (7) bents, with two (2) end bents and five (5) interior bents. Each bent has a concrete cap, and each interior bent cap is supported by three (3) concrete drilled shafts. The end bent cap supports are covered with soil.

IV. INVESTIGATION RESULTS

During the field investigation, multiple suspect paints/ coatings were identified and analyzed. The investigation revealed that the three (3) center steel beams, diaphragms and beam seat plates have a gray paint, while the two (2) outside steel beams are painted with a white paint/coating. It was also noted that sections of both gray- and silver-painted/ coated I-beams were anchored to some of the bent caps in an effort to provide additional support for the bridge beams. Based on XRF analysis, none of these items tested positive for lead with the action level set at 0.7 mg/cm². See Appendix A for photographs of the subject bridge and bridge components that were tested.

V. RECOMMENDATIONS

The results of this LBP investigation determined that there are no lead-based paints or coatings associated with the subject bridge structure. During demolition and/or renovation activities, some painted surfaces may be exposed. If paint is exposed and it is determined to contain levels of lead ≥ 0.7 mg/cm², 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 in order 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 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.

APPENDIX A

Site Vicinity Map (Figure 1)

XRF Data (Table I)

Photographs of Bridge Components



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F&ME
CONSULTANTS

SITE VICINITY MAP

SCDOT Bridge #402017600300 (US-176 over I-26)
Richland County, South Carolina

SC DEPARTMENT OF TRANSPORTATION

Prepared By: JSL
Checked By: JLS
Approved By: GME

Scale: N.T.S.
Project: E5350.02
Figure: 1

Table I. XRF Data
SCDOT Bridge #402017600300
US -176 Bridge over I-26
Date Analyzed: 03/19/2013

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	SITE	RESULTS	ACTION LEVEL	PbC mg/cm ²
1		Shutter Calibrate						mg/cm ²	N/A
2			Calibrate				Positive	0.7	0.7
3			Calibrate				Positive	0.7	0.7
4			Calibrate				Positive	0.7	0.7
5	I-beam bracing	Metal	D	INTACT	Silver	Bridge #402017600300	Negative	0.7	< LOD
6	I-beam bracing	Metal	D	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
7	I-beam bracing	Metal	D	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
8	I-beam bracing	Metal	D	INTACT	Silver	Bridge #402017600300	Negative	0.7	< LOD
9	I-beam bracing	Metal	D	INTACT	Silver	Bridge #402017600300	Negative	0.7	< LOD
10	I-beam bracing	Metal	B	INTACT	Silver	Bridge #402017600300	Negative	0.7	< LOD
11	I-beam bracing	Metal	B	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
12	I-beam bracing	Metal	B	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
13	Beam	Metal	Center	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
14	Beam	Metal	Center	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
15	Diaphragm	Metal	Center	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
16	Diaphragm	Metal	Center	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
17	Diaphragm	Metal	Center	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
18	Beam seat plate	Metal	Center	PEELING	Grey	Bridge #402017600300	Negative	0.7	< LOD
19	Beam seat plate	Metal	Center	PEELING	Grey	Bridge #402017600300	Negative	0.7	< LOD
20	Beam seat plate	Metal	Center	PEELING	Grey	Bridge #402017600300	Negative	0.7	< LOD
21	Beam	Metal	Center	INTACT	Grey	Bridge #402017600300	Negative	0.7	< LOD
22	Beam	Metal	B	INTACT	White	Bridge #402017600300	Negative	0.7	< LOD
23	Beam	Metal	B	INTACT	White	Bridge #402017600300	Negative	0.7	< LOD
24	Beam	Metal	B	INTACT	White	Bridge #402017600300	Negative	0.7	< LOD
25		Shutter Calibrate							N/A
26			Calibrate				Positive	0.7	0.7
27			Calibrate				Positive	0.7	0.7
28			Calibrate				Positive	0.7	0.7



Bridge Identification Number



Top of Bridge



Underside of bridge span with steel beams and diaphragms



Underside of bridge with concrete beams and diaphragms



Interior bent cap with silver-painted I-beam sections



Interior bent cap with gray-painted I-beam sections

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 a:

Inspector

In the Jurisdiction of:

South Carolina

This certification is valid from the date of issuance and expires

July 29, 2015

SC-I-18721-2

Certification #

JUN - 6 2012

Issued On



Jeanne M. Gettle, Chief

Pesticides and Toxic Substances Branch

APPENDIX C

SCDHEC Lead-Based Paint Disposal Fact Sheets

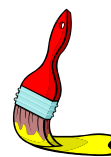


Lead-based Paint Disposal Fact Sheet

Terms You Should Know:

- ≡ **LEAD-BASED PAINT** - paint containing $>0.06\%$ (>600 ppm) **total lead**; or ≥ 0.7 mg/cm² **XRF**.
- ≡ **MUNICIPAL SOLID WASTE LANDFILL (MSWLF)** - A lined landfill with a leachate collection system & ground water monitoring that accepts municipal solid waste (garbage.) These landfills can accept waste painted with lead-based paint.
- ≡ **CONSTRUCTION, DEMOLITION, & LAND-CLEARING DEBRIS LANDFILL, a.k.a., "C&D Landfill"** - A landfill that accepts certain construction & demolition debris and land-clearing debris & yard trash. These landfills can NOT accept waste painted with lead-based paint.
- ≡ **"Total lead" analysis** - reveals the total amount of lead contained in the media being tested and is expressed in "ppm for Total lead"; used to determine acceptability of lead-based painted C&D waste for disposal at C&D landfills; when the total lead level on painted waste exceeds 0.06% by weight (>600 ppm) - the waste is NOT acceptable for disposal at a C&D landfill.
- ≡ **"TCLP" analysis** - (Toxicity characteristic leaching procedure) is used to determine whether or not a waste is a characteristic hazardous waste due to leachability and is expressed in mg/l; ≥ 5.0 mg/l is considered hazardous under the SC Hazardous Waste Management Regulation.
- ≡ **"XRF" analysis** - (X-ray Fluorescence Spectrum Analyzer) is used in-situ to determine the presence of lead-based paint; a reading of ≥ 0.7 mg/cm² means lead-based paint is present and, therefore, the painted waste is NOT acceptable at a C&D landfill. (The XRF analyzer must be licensed with DHEC.)

Facts You Should Know:



- ≡ C&D Landfills **CAN NOT** accept wastes painted with lead-based paint.
- ≡ All wastes painted with lead-based paint may be disposed in a Municipal Solid Waste Landfill.
- ≡ When determining proper disposal (C&D vs. MSWLF) for painted waste, one of the following methods must be used to test for the presence of lead-based paint. Analyze paint:
 - γ For total lead, *not* TCLP (All chemical analyses must be done by a laboratory certified by either DHEC or EPA's NLLAP (National Lead Laboratory Accreditation Program.); **OR**,
 - γ Using a X-ray Fluorescence (XRF) Spectrum Analyzer (S.C. licensed.)

≡ When paint is chemically removed, scraped, or sandblasted from a structure, the paint residue - after removal from the substrate - must ALWAYS be tested for lead using **TCLP** to determine if it is a “hazardous waste.” This requirement does NOT apply to paint residue removed from a home or residence. (Paint residue generated from a home or residence is considered household hazardous waste.)

≡ Generators that meet the requirements of a “conditionally exempt small quantity generator” pursuant to R.61-79.261.5, may dispose of hazardous waste in a Subtitle D landfill with approval from the landfill in lieu of disposal in a Subtitle C landfill.

≡ With regard to disposal, all non-hazardous wastes painted with “lead-based paint” are still considered “solid waste” NOT “hazardous wastes.”

TYPES OF LANDFILLS	DESCRIPTION OF LANDFILL	ACCEPTABLE WASTE	DETERMINATION OF LEAD LEVEL
C&D	Construction, Demolition, & Land-Clearing Debris Landfill; Least protected type landfill; no liners, & no groundwater monitoring	See Regulation 61-107.11, Appendix I (NO waste painted with lead-based paint)	Analyze paint using <i>Total Lead analysis, or XRF analyzer</i> . [Total Pb levels >600 ppm & XRF levels ≥ 0.7 mg/cm ² are NOT acceptable for disposal.]
MSWLF (Subtitle D)	Municipal Solid Waste Landfill; Synthetic liner & leachate collection system	- Can accept C&D waste painted with lead-based paint. - May accept hazardous wastes from “conditionally exempt small quantity generators” if acceptable under their Special Waste Plan.	- No testing required by DHEC - TCLP
Subtitle C §	Hazardous waste landfill	Paint residue with >5.0 mg/l lead	TCLP

§ Disposal in a Subtitle C landfill does NOT apply to waste generated by construction or demolition activities conducted on a household or residence.

Recycling C&D Waste Paint with Lead-based Paint:



≡ Metals painted with lead-based paint **CAN** be recycled - without removing the paint.

≡ Unless otherwise approved by the Department, C&D debris painted with lead-based paint can **NOT** be used as:

- γ mulch,
- γ fill material, or
- γ roadbed

Ω EXCEPTION: Crushed brick and block can be used for road bed **IF** it will be encapsulated in asphalt or cement.

Best Management Practices Recommended by EPA:

EPA encourages residents and contractors managing waste painted with lead-based paint from households to take common sense measures to minimize the generation of lead dust, limit access to stored wastes painted with lead-based paint and maintain the integrity of waste packaging material during transfer of the waste. The following actions are recommended:

- Collect paint chips and dust, and dirt and rubble in plastic trash bags for disposal;
- Store larger lead-base painted architectural debris pieces in containers until ready for disposal;
- Consider using a covered mobile dumpster (such as a roll-off container for storage of debris until the job is done;
- Follow the guide lines contained in this Fact Sheet for proper disposal of waste painted with lead-based paint.

NOTE:

Contractors working in residential dwellings are subject to either one or both of the following:

— The HUD Guidance for contractors doing publicly funded rehabilitation/renovation projects in public housing can be accessed via the Internet at <http://www.hud.gov/lea/learules.html>.

— TSCA 402/404 training and certification requirements. (See 40 CFR Part 745; 61 FR 45778, August 29, 1996) and the proposed TSCA onsite management standards (See 40 CFR Part 745, Subpart P; 63 FR 70227 -70230, Dec. 18, 1998.)

[The above-mentioned BMPs for households are similar to those included in the HUD Guidelines for individuals controlling lead-based paint (LBP) hazards in housing. HUD requires that contractors using HUD funding adhere to LBP hazard control guidelines. Non-adherence to these guidelines can potentially result in the loss of funding.]