

S-38 1302 Bridge Over I-26
Orangeburg County, South Carolina

Asbestos and Lead-Based Paint
Survey Report

Structure # 387130200100
ARM Project #16-318-22

October 14, 2022

Prepared For:

Civil Engineering Consulting Services, Inc.
2000 Park Street, Suite 201
Columbia, South Carolina, 29201

☒ Yes, Asbestos was found
☒ No, Asbestos was not found
☒ Yes, Lead-Based Paint was found
☒ No, Lead-Based Paint was not found

Report Compiled By:

Robbie Robertson

Robbie Robertson
ASBESTOS CONSULTANT/
BUILDING INSPECTOR
SCDHEC LICENSE #BI-01179

Report Reviewed By:

Sid Havird

Sid Havird
ASBESTOS CONSULTANT/
BUILDING INSPECTOR
SCDHEC LICENSE #BI-00258



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ASBESTOS AND LEAD-BASED PAINT SURVEY

On September 15, 2022, ARM Environmental Services, Inc. performed an asbestos and lead-based paint survey of the S-38 1302 bridge over I-26 in Orangeburg County, South Carolina. The S-38 1302 bridge is located over I-26 (eastbound and westbound lanes) as shown in Appendix A, Figure 1. The site consists of a highway bridge and can be identified by bridge structure number 387130200100. The asbestos survey has been conducted in accordance with the Asbestos Hazard Emergency Response Act (AHERA) guidelines, as required by the Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (DHEC) prior to renovation or demolition of public or commercial structures. The lead-based paint survey was performed to identify lead-based paint (LBP) on the bridge.

BRIDGE MATERIALS

No construction records were available to determine the building materials used in construction of the structure. All accessible structural components including columns, piers, pier caps, bridge decks, beams, bridge shoes, end bents, railings and buffer materials were examined. Photographs of the site are shown in Appendix E.

The bridge deck of the structure consists of pre-cast concrete deck sections supported by concrete pier caps. The concrete pier caps, which run perpendicular to the bridge deck, are supported by concrete piers. Concrete and galvanized metal guardrails are located on the bridge structure. The bridge structure is estimated to be 260 feet long and 20 feet wide.

ASBESTOS SURVEY

Samples of the suspect materials were collected and submitted for laboratory analysis for Polarized Light Microscopy (PLM). One sample of each material was also collected for transmission electron microscopy (TEM) confirmation analysis in the event that the PLM analysis indicated less than 1 percent asbestos. The sample locations are shown in Appendix A, Figure 2. The results of the laboratory analysis are presented in Table 1 on the following page.

Table 1: Asbestos Sample Analytical Data

Sample Number	Material Description	Material Locations	Friable / Non-friable	Material Condition	Analytical Results*	Approx. Quantity
01-S381302, 02-S381302, 03-S381302	Expansion Joint	Between Concrete Deck Sections (topside)	Non-friable	Good	No Asbestos Detected	150 Linear Feet
04-S381302, 05-S381302, 06-S381302	Buffer Material	Between Concrete Deck Sections	Non-friable	Good	No Asbestos Detected	500 Square Feet

Asbestos Content: USEPA and SCDHEC regulations (No. 61-86.1) define asbestos containing material as any material greater than one percent asbestos. OSHA recommends that a negative exposure assessment (NEA) be conducted to establish appropriate personal protection equipment needed (if any) for all persons that might disturb asbestos materials.

Friable: Describes a material which, when dry, can be crumbled, pulverized, or reduced to powder with hand pressure.

The laboratory results are included in Appendix C of this report.

ASBESTOS CONCLUSIONS / RECOMMENDATIONS

An asbestos inspection was performed for a structure, the S-38 1302 bridge over I-26 in Orangeburg County, South Carolina. **The results of the asbestos survey indicate that none of the sampled materials contain asbestos.**

The results of this asbestos survey are limited to the sampled materials, which are considered to be representative of the homogeneous areas from which the samples were collected. **In the event that any suspect asbestos containing materials that were not addressed in this survey are encountered, the materials should be presumed to contain asbestos until laboratory analysis can be conducted.**

LEAD-BASED PAINT SURVEY

ARM personnel conducted a lead-based paint survey of accessible painted bridge materials at the S-38 1302 bridge over I-26 on September 15, 2022. The LBP inspection was conducted using a Niton XLp-300A X-ray Fluorescence (XRF) Analyzer (Serial #110851) to measure the lead content of surface coatings on representative bridge building components. A homogenous bridge building component is a building material that is uniform in color, texture, and appears identical in every respect. EPA guidelines define lead-based paint as any paint

with equal to or greater than 1.0 milligram of lead per square centimeter of painted surface (mg/cm²) when measured by X-ray Fluorescence. SCDHEC, Health Division defines lead-based paint as a coating containing lead in quantities ≥ 0.7 mg/cm² (SCDHEC, Health Division definition #4-53-1320f). Any coated surfaces meeting or exceeding the SCDHEC limit of 0.7 mg/cm² were considered lead-based paint for the purpose of this assessment since the structure may be slated for renovation or demolition. All waste debris coated with lead-based paint equal to or greater than 0.7mg/cm² must be disposed of in an approved Class II (C&D) or Class III (MSWLF) landfill or approved metal recycler.

The bridge structure is primarily composed of concrete components. The only material sampled for lead-based paint was the concrete beams at the underside of the bridge. **The results of the XRF analyses indicate that the sampled material does not contain lead-based paint** as summarized in Table 2 below.

Table 2: Bridge Building Material XRF Summary

Sample Number	Material Description	Material Location	Color	Material Condition	LEAD Content mg/cm ²
Reading 91-95	Concrete Beams	At Bridge Underside	White	Good	Negative

Lead Content: EPA guidelines define lead-based paint as any paint with equal to or greater than 1.0 milligram of lead per square centimeter of painted surface (mg/cm²) when measured by X-ray Fluorescence. DHEC guidelines define lead-based paint as any paint with equal to or greater than 0.7 mg/cm² when measured by X-ray Fluorescence. The OSHA Lead in Construction Standard, 29 CFR 1926.62 is applied if any lead is present in the sample.

The XRF data results are presented in Appendix D. Photographs of the site are located in Appendix E.

LEAD-BASED PAINT CONCLUSIONS / RECOMMENDATIONS

A lead-based paint survey was performed for the S-38 1302 bridge over I-26 in Orangeburg County, South Carolina. **The results of the XRF analyses indicate that the concrete beams sampled from the underside of the bridge do not contain lead-based paint.**

In the event that any suspect painted materials not addressed in this survey are encountered, the materials should be presumed to be coated with lead paint until XRF or laboratory analysis can be conducted.

APPENDIX A

Figures



Project

Asbestos & Lead-Based Paint Survey
S-38 1302 Bridge Over I-26
Orangeburg County, South Carolina

Figure 1

Site Plan

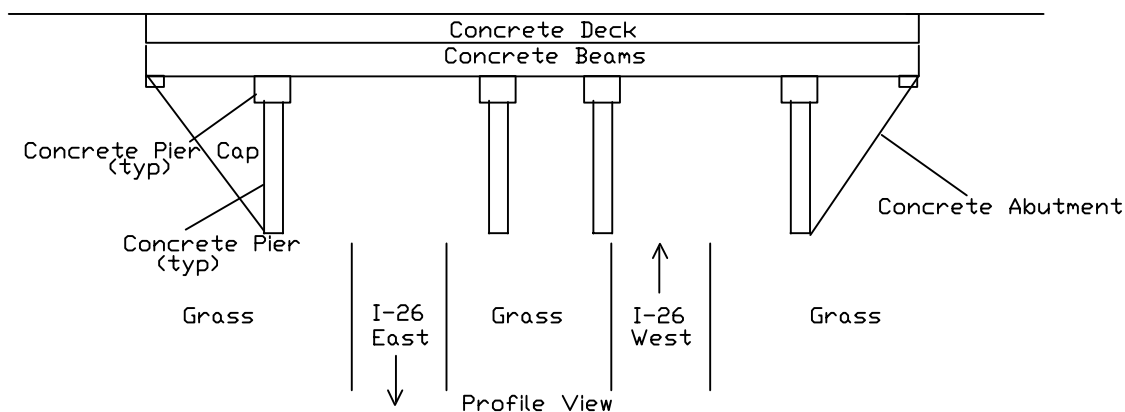
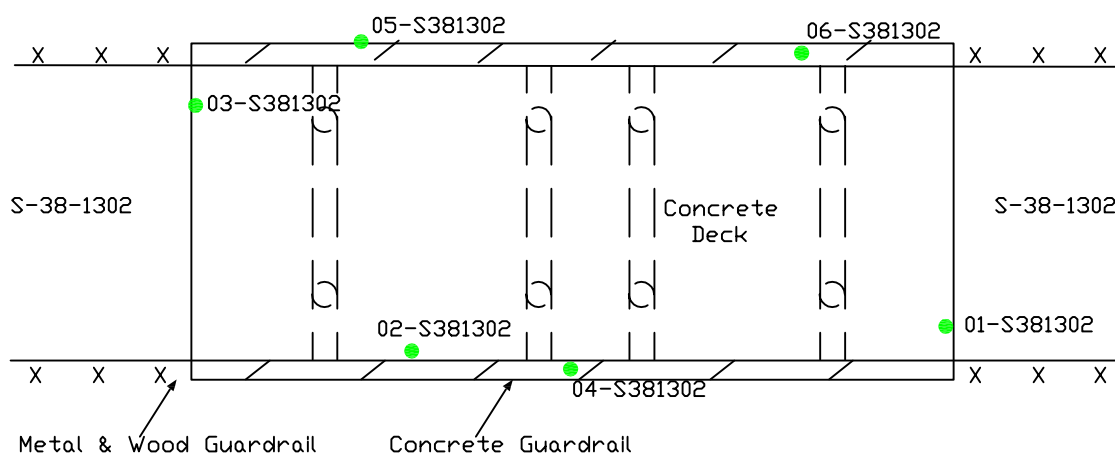
Scale

No Scale

Date

October 2022

ARM ENVIRONMENTAL
SERVICES, INC.



PROJECT:

Asbestos & Lead Based Paint Survey
S-38-1302 Bridge over I-26
Orangeburg County, South Carolina
ARM Project # 16-318-22

DESCRIPTION:

Site Plan Showing
Sample Locations

(Map Not To Scale)

FIGURE 2

DATE:

October 2022

ARM ENVIRONMENTAL
SERVICES, INC.

REFERENCE:

Field Notes

LEGEND:

Negative
Asbestos Sample = ●
Positive
Asbestos Sample = ▲

APPENDIX B

Licenses / Certifications

SCDHEC ISSUED

Asbestos ID Card

Robbie Robertson



CONSULTBI
SUPERAHERA

BI-01179
SA-01861

Expiration Date:
10/19/22
10/18/22

ABS

ENVIRONMENTAL

1416 Chapin Road, Chapin, South Carolina 29036

803-345-3833

Robbie Robertson

SSN xxx-xx-3715

This is to certify that the above named student has completed the requisite training for asbestos accreditation under TSCA Title II and has met the requirements of and passed the examination for an EPA approved:

AHERA Asbestos Inspector Refresher

Course Location: Chapin SC

Certificate Number: 20211020Ab301-03

Start Date October 20, 2021

End Date October 20, 2021

Exam Date: October 20, 2021

Expiration Date October 19, 2022

Principal Instructor / Training Administrator - Lee Capell

10/20/2021

Date

ABS ENVIRONMENTAL

1416 Chapin Road, Chapin, South Carolina 29036 803-345-3833

Sid Havird

SSN xxx-xx-4506

This is to certify that the above named student has completed the requisite training for asbestos accreditation under TSCA Title II and has met the requirements of and passed the examination for an EPA approved:

AHERA Asbestos Inspector Refresher

Course Location: Chapin SC

Certificate Number: 20211020Ab301-02

Start Date October 20, 2021

End Date October 20, 2021

Exam Date: October 20, 2021

Expiration Date October 19, 2022



Principal Instructor / Training Administrator - Lee Capell

10/20/2021

Date

SCDHEC ISSUED

Asbestos ID Card

Cyril O Havird Jr



CONSULTBI
SUPERAHERA

BI-00258
SA-02162

Expiration Date:
10/19/22
10/18/22

APPENDIX C

Lab Results

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: ARM Environmental Services
1210 1st Street South Ext.
Columbia, SC 29209

Lab Code: B2212171
Date Received: 09-20-22
Date Analyzed: 09-21-22
Date Reported: 09-21-22

Project: S38 - 1302 Bridge Over I-26, Orangeburg Cty.

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
01-S381302 Layer 1 B2212171.1	Expansion Joint Material	Homogeneous Light Gray Non-fibrous Bound			100%	Binder	None Detected
Layer 2 B2212171.1	Expansion Joint Material	Homogeneous Dark Gray Non-fibrous Bound			100%	Binder	None Detected
02-S381302 B2212171.2	Expansion Joint Material	Homogeneous Light Gray Non-fibrous Bound			100%	Binder	None Detected
03-S381302 B2212171.3	Expansion Joint Material	Homogeneous Light Gray Non-fibrous Bound			100%	Binder	None Detected
04-S381302 B2212171.4	Buffer Material	Homogeneous Black Fibrous Bound	2%	Cellulose	85% 13%	Tar Binder	None Detected
05-S381302 B2212171.5	Buffer Material	Homogeneous Black Fibrous Bound	2%	Cellulose	85% 13%	Tar Binder	None Detected
06-S381302 B2212171.6	Buffer Material	Homogeneous Black Fibrous Bound	2%	Cellulose	85% 13%	Tar Binder	None Detected

LEGEND: Non-Anth = Non-Asbestiform Anthophyllite
 Non-Trem = Non-Asbestiform Tremolite
 Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORTING LIMIT: <1% by visual estimation

REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. *Estimated measurement of uncertainty is available on request.*

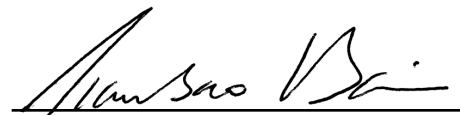
This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

ANALYST:


Shilpa Ladekar

APPROVED BY:


Tianbao Bai, Ph.D., CIH
Laboratory Director

September 22, 2022

ARM Environmental Services
1210 1st Street South Ext.
Columbia, SC 29209

CLIENT PROJECT: S38 - 1302 Bridge Over I-26, Orangeburg Cty.
LAB CODE: T222493

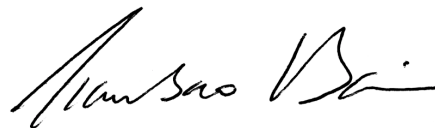
Dear Customer:

Enclosed are asbestos analysis results for TEM bulk samples received at our laboratory on September 21, 2022. The samples were analyzed for asbestos using transmission electron microscopy (TEM) per Chatfield/EPA 600/R-93/116 Sec. 2.5.5.1 method.

Sample results containing > 1% asbestos are considered asbestos-containing materials (ACMs) per the EPA regulatory requirements. The detection limit for the TEM Chatfield/EPA 600/R-93/116 Sec. 2.5.5.1 method is <1% depending on the processed weight and constituents of the sample.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,



Tianbao Bai, Ph.D., CIH
Laboratory Director

ASBESTOS ANALYTICAL REPORT

By: Transmission Electron Microscopy

Prepared for

ARM Environmental Services

CLIENT PROJECT: S38 - 1302 Bridge Over I-26, Orangeburg Cty.

LAB CODE: T222493

TEST METHOD: Bulk Chatfield
EPA 600 / R93 / 116 Sec. 2.5.5.1

REPORT DATE: 09/22/22



CEI

ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

Client: ARM Environmental Services
1210 1st Street South Ext.
Columbia, SC 29209

Lab Code: T222493
Date Received: 09-21-22
Date Analyzed: 09-22-22
Date Reported: 09-22-22

Project: S38 - 1302 Bridge Over I-26, Orangeburg Cty.

TEM BULK CHATFIELD / EPA 600 / R93 / 116 Sec. 2.5.5.1

Client ID Lab ID	Material Description	Sample Weight (g)	Organic Material %	Acid Soluble Material %	Acid Insoluble Material %	Asbestos %
01-S381302 T48631	Light Gray Expansion Material	0.4011	26	54.6	19.4	None Detected
01-S381302 T48632	Dark Gray Expansion Material	0.4219	25.3	51.2	23.5	None Detected
02-S381302 T48633	Light Gray Expansion Material	0.3959	35.6	60.9	3.5	None Detected
03-S381302 T48634	Light Gray Expansion Material	0.4719	37.5	57.4	5.1	None Detected
04-S381302 T48635	Buffer Material	0.3887	95.1	2.6	2.3	None Detected
05-S381302 T48636	Buffer Material	0.2621	92	3.4	4.6	None Detected
06-S381302 T48637	Buffer Material	0.2823	96.8	1.1	2.1	None Detected

LEGEND: None

METHOD: CHATFIELD & EPA/600/R-93/116 Sec. 2.5.5.1

LIMIT OF DETECTION: Varies with the weight and constituents of the sample (<1%)

REGULATORY LIMIT: >1% by weight

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. *Estimated measurement of uncertainty is available on request.* Samples were received in acceptable condition unless otherwise noted.

Information provided by customer includes customer sample ID, location, volume and area as well as date and time of sampling.

Eurofins CEI recommends between 0.500 and 0.200 grams of sample material. *Any weight below 0.100 grams is considered below protocol guidelines.*

ANALYST: Brunilda Gjoka
Brunilda Gjoka

APPROVED BY: Tianbao Bai
Tianbao Bai, Ph.D., CIH
Laboratory Director



CEI

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

ASBESTOS CHAIN OF CUSTODY

6

LAB USE ONLY:

CEI Lab Code:

B2212171 / T222493

CEI Lab I.D Range:

Company Information	Project Information
CEI Client #	Job Contact: Sid Havird, Robbie Robertson
Company: ARM Environmental Services	Email: shavird@armenv.com, rrobertson@armenv.com csmith@armenv.com
Address: 1210 First Street South Extension Columbia, SC 29209	Project Name: S38 – 1302 Bridge over I-26, Orangeburg Cty. Project ID#:
Email: armenv.com	PO #:
Tel: 803-783-3314 Fax: 803-783-2587	State Samples Collected In: SC

IF TAT IS NOT MARKED, STANDARD 3 DAY TAT APPLIES

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600			X			
TEM BULK	CHATFIELD			X			

Remarks/Special Instructions: Use positive stop. Run PLM first & if less than 1% run TEM confirmation on all NOB materials.

* Only Run Tem if makeup of material requires it.

Positive Stop Needed: Yes / No

Date Sample: 9-15-22



Accept Samples



Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Robbie Robertson	9-15-22	<i>[Signature]</i>	9-20-22 9:50

Samples will be disposed of 30 days after analysis

SAMPLE ID#	DESCRIPTION	LOCATION	TEST	
			PLM	TEM
01-S381302	Expansion Joint Material	Bridge at S38 – 1302	X	X
02-S381302	Expansion Joint Material	Bridge at S38 – 1302	X	X
03-S381302	Expansion Joint Material	Bridge at S38 – 1302	X	X
04-S381302	Buffer Material at bridge sections	Bridge at S38 – 1302	X	X
05-S381302	Buffer Material at bridge sections	Bridge at S38 – 1302	X	X
06-S381302	Buffer Material at bridge sections	Bridge at S38 – 1302	X	X

APPENDIX D

XRF Data

Index	Time	Type	Sequence	Component	Substrate	Side	Condition	Color	Site	Room	Results	PbC
88	2022-09-15 11:22	PAINT	Final			CALIBRATE					Positive	1.00 ± 0.30
89	2022-09-15 11:22	PAINT	Final			CALIBRATE					Positive	1.00 ± 0.30
90	2022-09-15 11:22	PAINT	Final			CALIBRATE					Positive	1.00 ± 0.30
91	2022-09-15 11:25	PAINT	Final	beams	CONCRETE	LEFT	INTACT	WHITE	S38 -1302 bridge over I26	OUTSIDE	Negative	0.00 ± 0.02
92	2022-09-15 11:25	PAINT	Final	beams	CONCRETE	LEFT	INTACT	WHITE	S38 -1302 bridge over I26	OUTSIDE	Negative	0.00 ± 0.02
93	2022-09-15 11:26	PAINT	Final	beams	CONCRETE	LEFT	INTACT	WHITE	S38 -1302 bridge over I26	OUTSIDE	Negative	0.00 ± 0.02
94	2022-09-15 11:27	PAINT	Final	beams	CONCRETE	LEFT	INTACT	WHITE	S38 -1302 bridge over I26	OUTSIDE	Negative	0.00 ± 0.02
95	2022-09-15 11:27	PAINT	Final	beams	CONCRETE	LEFT	INTACT	WHITE	S38 -1302 bridge over I26	OUTSIDE	Negative	0.00 ± 0.02
96	2022-09-15 11:28	PAINT	Final			CALIBRATE					Positive	1.00 ± 0.30
97	2022-09-15 11:28	PAINT	Final			CALIBRATE					Positive	1.20 ± 0.40
98	2022-09-15 11:28	PAINT	Final			CALIBRATE					Positive	1.10 ± 0.40

APPENDIX E

Photos



Photograph 1

A view of the S-38 1302 bridge over I-26 in Orangeburg County where an Asbestos and Lead-Based Paint Survey was performed by ARM Environmental.



Photograph 2

Another view of the S-38 1302 bridge. There were no asbestos containing materials or lead-based paint detected on the bridge materials tested.