



Asbestos & Lead Based Paint Assessment

279 Ernest L. Collins Street
Spartanburg, South Carolina 29306

Prepared for:

The City of Spartanburg
440 South Church St., Suite B
Spartanburg, SC 29306

Prepared by:

Apex Environmental Management, Inc.
7 Winchester Court
Mauldin, South Carolina 29662

Project Number: 0118-14

August 14, 2017





7 Winchester Court
Mauldin, SC 29662
864.404.3210 office
864.404.3213 fax
www.apex-ehs.com

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Apex Project Number 0118-14

August 14, 2018

Mr. Jeff Tillerson
City of Spartanburg
440 South Church Street, Suite B
Spartanburg, SC 29306

Reference: Asbestos and Lead-Based Paint Assessment Services
279 Ernest L. Collins Street
Spartanburg, South Carolina 29306

Dear Mr. Tillerson:

Apex Environmental Management, Inc. (Apex) is pleased to provide the results of our assessment services for the referenced property.

This report and the associated attachments summarize our evaluation of the conditions observed at the project site. The findings presented by Apex are based upon sampling performed in the subject building. There is a chance that undetected ACM may exist in the building between walls or in other areas that would only be exposed during demolition or structural renovations. Should material be discovered that could potentially contain asbestos during the demolition process, additional samples of the material should be collected by a licensed asbestos inspector and submitted to an accredited laboratory for analytical interpretation. Our recommendations are based on the guidelines presented in EPA and/or OSHA regulations.

Please note that this document is not a specification for asbestos removal. It does not contain means and methods for abatement. Quantities are estimates and contractors must verify amounts prior to bidding or removal. If you are planning an abatement project, please contact Apex to discuss the requirements. Use of this document without the express written consent of Apex is at the sole risk of the user and or/abatement contractor.

The conclusions and/or recommendations contained in this report are based on our understanding of the applicable standards at the time this report was prepared. No warranty, expressed or implied, is made. If you have any questions please feel free to contact us at (864) 404-3210.

Respectfully submitted,
APEX ENVIRONMENTAL MANAGEMENT, INC.

Ted Shultz
Project Manager

Appendices

ASBESTOS AND LEAD BASED PAINT ASSESSMENT

**CITY OF SPARTANBURG
279 ERNEST L. COLLINS STREET
SPARTANBURG, SOUTH CAROLINA 29306**

APEX PROJECT NO. 0118-14

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SECTION I

Asbestos & Lead Evaluation Report

**ASBESTOS EVALUATION REPORT
APEX PROJECT NUMBER: 0118-14**

Date: 8/14/2018 Page Number: 1 of 4

Client: City of Spartanburg Client Contact: Mr. Jeff Tillerson
Client Address: 440 South Church Street Client Phone: (864) 596-2911
Suite B Number:
Spartanburg, SC 29306

Project: Asbestos Evaluation and Lead Based Paint Assessment
Property Address: Ernest L. Collins Street
Spartanburg, SC 29306

Assessor: Ted Shultz Date of Assessment: 7/9/2018
Company: Apex Environmental Management Phone Number: (864) 404-3210
7 Winchester Court
Mauldin, SC 29662

Purpose of Assessment: Demolition Age of Structure: Approximately 80 years

Building Type: Residential Number of Stories: 1

Foundation: CMU Block Crawlspace Approximate Square Footage: 1,800 SF

EXTERIOR BUILDING MATERIALS

- Wood siding.
- Wood windows.
- Shingled roof.
- Metal roof.
- Window glaze.
- Black mastic/tar on chimney.

INTERIOR BUILDING MATERIALS

- Plaster walls.
- Wood flooring.
- Wood ceiling.
- Vinyl flooring.

SCOPE OF THE SURVEY

The objectives of the asbestos and lead assessment included the following:

- Identification of suspect asbestos-containing material (ACM) and lead based paints (LBP) in readily observable locations. Limited demolition of building finishes was conducted.
- Asbestos survey with sample collection by a South Carolina accredited inspector.
- Suspect ACM analysis by polarized light microscopy (PLM) utilizing EMSL, Inc. as an NVLAP certified laboratory, their accreditation number is 200841-0.
- Transmission electron microscopy (TEM) analysis of non-friable organically bound materials suspected to contain asbestos and testing negatively by PLM analysis.
- Lead inspection by a lead inspector certified by the Environmental Protection Agency and licensed to conduct LBP surveys in South Carolina.
- In situ analysis of suspected lead based paints by X-ray fluorescence (XRF).
- Presenting the results in a report identifying confirmed ACMs and LBPs.

METHODS

Asbestos Containing Materials

In order to determine if the suspect materials observed during the visual survey contained asbestos, representative bulk samples were collected and placed in sealed packages. Thirty-four (34) bulk samples were collected during the survey and submitted to EMSL in Pineville, North Carolina for analysis using the EPA recommended method of Polarized Light Microscopy (PLM) coupled with dispersion staining (Method No. EPA 600/M4-82-020, Dec. 1982). CEI participates in the National Voluntary Laboratory Accreditation Program (NVLAP). Their NVLAP accreditation number is 200841-0. EPA regulations require that multiple samples of each homogeneous material be collected for laboratory analysis. In accordance with South Carolina Regulation 61-86.1, non-friable organically bound materials that are reported to be non-asbestos containing by PLM analysis must also be analyzed by Transmission Electron Microscopy (TEM). Twenty two (22) samples were analyzed using TEM.

Lead-Based Paint

Lead painted surfaces were analyzed in place using X-ray fluorescence. Painted surfaces were selected based on color of topcoat, underlying layers and substrate on which it was painted

RESULTS

Asbestos Results

The EPA defines an asbestos-containing material (ACM) as a material containing more than 1% asbestos. OSHA defines ACM as a material containing detectable amounts of asbestos. It should be noted that materials were identified to contain less than 1% asbestos and OSHA Construction Industry Asbestos Standards (29 CFR 1926.1101) will apply if those materials are disturbed during renovation or demolition activities. A specific *PLM* and *TEM Data Table* is located in Appendix II of this report and identifies positive materials and designates approximate quantities.

Suspect asbestos containing materials that were identified to be asbestos containing include:

- Bathroom flooring – Tan - 15% Chrysotile – 60 SF
- Bathroom floor tile – Grey – 2% Chrysotile – 60 SF
- Bathroom floor mastic – Black – 4% Chrysotile – 60 SF
- Assumed chimney mastic

Lead Based Paint

OSHA does not recognize a threshold level of lead for definition purposes, only the presence or absence of lead. The current OSHA regulations recognize an airborne action level of thirty micrograms per cubic meter ($30 \mu\text{g}/\text{m}^3$) during an eight-hour workday and a permissible exposure level of fifty micrograms per cubic meter ($50 \mu\text{g}/\text{m}^3$) for employees.

Currently, SCDHEC defines LBP as paint containing in excess of, or equal to, $1.0 \text{ mg}/\text{cm}^2$. The laboratory analytical results and chain-of-custody are included in the Lead Analysis Reports in Appendix II. The approximate locations of the paint samples collected and analytical results are presented in the *LBP Data Table* included with this report.

The following surfaces in the building tested positive for lead in excess of the regulatory definition:

Exterior

- Front porch column – grey – wood – 5.00
- Front porch ceiling – light blue – wood – 4.52
- Siding – blue – wood – 5.00
- Window frame – blue – wood – 3.89

Interior

- Front bedroom wall – blue – plaster – 1.00
- Bathroom ceiling – white – wood – 1.30
- Kitchen door frame – blue – wood – 1.42

RECOMMENDATIONS AND DISCUSSION

If the above referenced asbestos materials are to be disturbed by renovations or demolition, the asbestos must be removed in accordance with EPA, State of South Carolina and OSHA asbestos regulations. The State of South Carolina, Department of Health and Environmental Control (DHEC) has specific regulations that must be adhered to during asbestos removal/abatement projects.

Apex recommends the following:

1. Abate the asbestos containing materials in the structure prior to renovation or demolition.
2. Follow applicable asbestos regulations during renovation or demolition of the structure. You should be aware that stringent requirements are imposed upon anyone renovating or

demolishing a structure in which ACM will be disturbed. This work must be performed in accordance with OSHA asbestos regulations, 29 CFR 1910 & 1926, and NESHAP asbestos regulations 40 CFR 61, subpart M. South Carolina regulations require the accreditation of personnel who work in the asbestos field and notification and permitting fees for asbestos removal projects. There is a 10 working day notification period required prior to abatement of asbestos in a facility. Failure to take proper precautions and actions to protect human health and the environment can result in penalties, danger to personnel, and construction delays.

Please note that this document is not a specification for asbestos removal. It does not contain means and methods for asbestos abatement. If you are planning an asbestos abatement project, please contact Apex to discuss the requirements. Use of this document without the express written consent of Apex is at the sole risk of the user and/or abatement contractor. Quantities provided in this report are estimated. Contractors must verify material amounts prior to bidding or removal.

This report summarizes our evaluation of the conditions observed at the site. The findings prepared by Apex are based upon testing performed in the building space. Additional ACM may exist (undetected) in other areas due to their inaccessibility or due to the limited nature of our testing. Our assessment procedures and recommendations are based on the guidelines presented in EPA, State of South Carolina or OSHA asbestos regulations.

Lead-Based Paint

Currently the South Carolina Department of Health and Environmental Control (SCDHEC) define LBP as paint containing greater than 1.0 milligram per square centimeter (mg/cm^2) lead or in excess of, or equal to, 0.5 percent lead. Building materials identified as being painted with LBP should be segregated from the other building materials and recycled or disposed of in a municipal lined landfill. The removed wastes would need to be containerized and further tested by Toxic Characteristic Leaching procedures (TCLP) to determine if the waste is classified as hazardous. The remaining building materials that are not painted with LBP may be disposed of in a construction and demolition landfill. However, the landfills should be contacted to determine their specific disposal requirements.

Occupational Safety and Health Administration Lead Regulations apply to actions initiated on lead containing materials. This regulation applies to lead concentrations greater than the analytical limit of detection. This regulation sets exposure levels on airborne lead and does not reference the percent lead in paint. Therefore, initial personal air monitoring should be conducted on workers performing work on surfaces which have a lead concentration of $0.1 \text{ mg}/\text{cm}^2$ or above to satisfy the OSHA requirements. If a baseline exposure lower than the OSHA Action Level of 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) is established, personal air monitoring may be terminated. The full OSHA lead standard should be referenced for compliance.

A copy of this report must be submitted to SCDHEC at least ten (10) working days prior to demolition when applying for a demolition permit.

SECTION II

Asbestos & LBP Data Tables

**ASBESTOS SURVEY FIELD DATA SHEET
PLM & TEM ANALYSIS**

Project Name: COS 279 Ernest Collins Avenue ACM/LBP

Sampled By: Ted Shultz

Project Location: 279 Ernest Collins Avenue, Spartanburg, SC 29306

Project Manager: Ted Shultz

Project Number: 0118-14

Date: 7/9/2018

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
1	Foyer	Felt flooring	PLM - NAD	Non-Friable	Good	80 SF
2			TEM - NAD			
3						
4	Throughout	Plaster with finish	PLM - <1 % chrysotile	Friable	Damaged	3,600 SF
5						
6						
7						
8						
9						
10						
11	Back porch	Grey vinyl floor with no mastic	PLM - NAD	Non-Friable	Damaged	80 SF
12			TEM - NAD			
13						
14	Living room	Wooden pattern vinyl floor & mastic	PLM - NAD	Non-Friable	Good	300 SF
15			TEM - NAD			
16						
17	Kitchen	2 layers of vinyl floors & mastics	PLM - NAD	Non-Friable	Damaged	120 SF
18			TEM - NAD			
19						

ASBESTOS SURVEY FIELD DATA SHEET
PLM & TEM ANALYSIS

Project Name: COS 279 Ernest Collins Avenue ACM/LBP

Sampled By: Ted Shultz

Project Location: 279 Ernest Collins Avenue, Spartanburg, SC 29306

Project Manager: Ted Shultz

Project Number: 0118-14

Date: 7/9/2018

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
20	Bathroom	4 layers of vinyl floors	PLM- 2% to 15% chrysotile (vinyl floors); 4% chrysotile (bottom mastic)	Non-Friable	Good	60 SF
21						
22						

**ASBESTOS SURVEY FIELD DATA SHEET
PLM & TEM ANALYSIS**

Project Name: COS 279 Ernest Collins Avenue ACM/LBP

Sampled By: Ted Shultz

Project Location: 279 Ernest Collins Avenue, Spartanburg, SC 29306

Project Manager: Ted Shultz

Project Number: 0118-14

Date: 7/9/2018

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
23	Exterior windows	Window glazing	PLM - NAD	Friable	Damaged	9 EA
24			TEM - NAD			
25						
26	Porch roof	Roof shingles (5 layers) & felt (1 layer)	PLM - NAD	Friable	Damaged	1,000 SF
27			TEM - NAD			
28						
29	Main roof	Roof shingles (3 layers) & felt (1 layer)	PLM - NAD	Friable	Damaged	3,150 SF
30			TEM - NAD			
31						
32	Main roof	Metal roof sealant	PLM - NAD	Friable	Damaged	3,150 SF
33			TEM - NAD			
34						
Assumed	Roof/chimney	Mastic/tar on 1 chimneys	Assumed	Non-Friable	Good	6 LF

NAD = No Asbestos Detected

LF = Linear Feet

EA = Each

Amos = Amosite

Bold = Positive For Asbestos

SF = Square Feet

Chry = Chrysotile

FIELD DATA SHEET LBP ANALYSIS

Project Name: COS 279 Ernest Collins Avenue ACM/LBP

Sampled By: Ted Shultz

Project Location: 279 Ernest Collins Avenue, Spartanburg, SC 29306

Project Manager: Ted Shultz

Project Number: 0118-14

Date: 7/9/2018

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m ³)
11		Calibration			Insufficient Time
12		Calibration			1.24
13		Calibration			1.13
14		Calibration			1.17
15	Handicap ramp rail	Ramp rail	Grey	Wood	1.00
16	Front porch	Porch column	Grey	Wood	5.00
17	Front porch	Porch ceiling	Light blue	Wood	Insufficient Time
18	Front porch	Porch ceiling	Light blue	Wood	4.52
19	Exterior	Siding	Blue	Wood	5.00
20	Exterior	Window frame	Blue	Wood	3.89
21	Exterior	Screen door	Black	Wood	0.05
22	Foyer	Front door frame	White	Wood	0.30
23	Foyer	Wall	Pink	Plaster	0.17
24	Foyer	Wainscoting	White	Wood	0.62
25	Front left room	Wall	Blue	Plaster	1.00
26	Front left room	Fireplace surround	White	Wood	Insufficient Time
27	Front left room	Fireplace surround	White	Wood	0.63
28	Front left room	Base board	White	Wood	0.55
29	Right rear bedroom	Wall	Blue	Wood	0.08
30	Bathroom	Ceiling	White	Wood	1.30
31	Kitchen	Wall	White	Wood	Insufficient Time
32	Kitchen	Door frame	Blue	Wood	1.00
33	Kitchen	Door frame	Blue	Wood	1.42

Bold = LBP

SECTION III

Laboratory Analytical Results



EMSL Analytical, Inc.

10801 Southern Loop Blvd Pineville, NC 28134

Tel/Fax: (704) 525-2205 / (704) 525-2382

<http://www.EMSL.com> / charlottelab@emsl.com

EMSL Order: 411806011

Customer ID: AXEM25

Customer PO:

Project ID:

Attention: Ted Shultz
Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

Phone: (803) 348-4921

Fax:

Received Date: 07/26/2018 8:45 AM

Analysis Date: 08/01/2018

Collected Date: 07/09/2018

Project: COS 279 Earnest Collins

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
1 411806011-0001	Foyer - Felt Flooring	Various/Black Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
2 411806011-0002	Foyer - Felt Flooring	Various/Black Fibrous Homogeneous	35% Cellulose	65% Non-fibrous (Other)	None Detected
4-Skim Coat 411806011-0003	Throughout Int. - Plaster	White Non-Fibrous Homogeneous		8% Quartz 92% Non-fibrous (Other)	None Detected
4-Rough Coat 411806011-0003A	Throughout Int. - Plaster	Brown Fibrous Homogeneous	2% Synthetic	35% Quartz 63% Non-fibrous (Other)	<1% Chrysotile
5-Skim Coat 411806011-0004	Throughout Int. - Plaster	White Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
5-Rough Coat 411806011-0004A	Throughout Int. - Plaster	Brown Fibrous Homogeneous	2% Synthetic	35% Quartz 63% Non-fibrous (Other)	<1% Chrysotile
6-Skim Coat 411806011-0005	Throughout Int. - Plaster	White Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
6-Rough Coat 411806011-0005A	Throughout Int. - Plaster	Brown Fibrous Homogeneous	2% Synthetic	35% Quartz 63% Non-fibrous (Other)	<1% Chrysotile
7-Skim Coat 411806011-0006	Throughout Int. - Plaster	White Non-Fibrous Homogeneous		8% Quartz 92% Non-fibrous (Other)	None Detected
7-Rough Coat 411806011-0006A	Throughout Int. - Plaster	Brown Fibrous Homogeneous	2% Synthetic	35% Quartz 63% Non-fibrous (Other)	<1% Chrysotile
8-Skim Coat 411806011-0007	Throughout Int. - Plaster	White Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
8-Rough Coat 411806011-0007A	Throughout Int. - Plaster	Brown Fibrous Homogeneous	2% Synthetic	35% Quartz 63% Non-fibrous (Other)	<1% Chrysotile
9-Skim Coat 411806011-0008	Throughout Int. - Plaster	White Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
9-Rough Coat 411806011-0008A	Throughout Int. - Plaster	Gray Non-Fibrous Homogeneous	1% Synthetic	30% Quartz 69% Non-fibrous (Other)	<1% Chrysotile
10-Skim Coat 411806011-0009	Throughout Int. - Plaster	White Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
10-Rough Coat 411806011-0009A	Throughout Int. - Plaster	Gray Non-Fibrous Homogeneous	1% Synthetic	35% Quartz 64% Non-fibrous (Other)	<1% Chrysotile

Initial report from: 08/01/2018 14:14:18



EMSL Analytical, Inc.

10801 Southern Loop Blvd Pineville, NC 28134

Tel/Fax: (704) 525-2205 / (704) 525-2382

<http://www.EMSL.com> / charlottelab@emsl.com

EMSL Order: 411806011
Customer ID: AXEM25
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
11 <i>411806011-0010</i>	Back Porch - Grey Vinyl Flooring	Gray Fibrous Homogeneous	4% Glass	15% Ca Carbonate 81% Non-fibrous (Other)	None Detected
12 <i>411806011-0011</i>	Back Porch - Grey Vinyl Flooring	Brown/Gray Non-Fibrous Homogeneous	5% Cellulose	10% Ca Carbonate 85% Non-fibrous (Other)	None Detected
14-Flooring <i>411806011-0012</i>	Living Room - Woodgrain Vinyl Flooring	Brown Non-Fibrous Homogeneous	1% Cellulose	35% Ca Carbonate 64% Non-fibrous (Other)	None Detected
14-Mastic <i>411806011-0012A</i>	Living Room - Woodgrain Vinyl Flooring	Clear Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
15-Flooring <i>411806011-0013</i>	Living Room - Woodgrain Vinyl Flooring	Brown Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
15-Mastic <i>411806011-0013A</i>	Living Room - Woodgrain Vinyl Flooring	Clear Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
17-Flooring 1 <i>411806011-0014</i> <i>Only 2 layers of flooring present</i>	Kitchen - 3 Layers Vinyl Flooring	Beige Fibrous Homogeneous	15% Cellulose 1% Glass	84% Non-fibrous (Other)	None Detected
17-Mastic <i>411806011-0014A</i>	Kitchen - 3 Layers Vinyl Flooring	Tan Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
17-Flooring 2 <i>411806011-0014B</i>	Kitchen - 3 Layers Vinyl Flooring	Tan/Green Fibrous Homogeneous	35% Cellulose	65% Non-fibrous (Other)	None Detected
17-Mastic <i>411806011-0014C</i>	Kitchen - 3 Layers Vinyl Flooring	Brown Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
18-Flooring 1 <i>411806011-0015</i> <i>Only 2 layers of flooring present</i>	Kitchen - 3 Layers Vinyl Flooring	Beige Non-Fibrous Homogeneous	10% Cellulose	5% Ca Carbonate 85% Non-fibrous (Other)	None Detected
18-Mastic <i>411806011-0015A</i>	Kitchen - 3 Layers Vinyl Flooring	Tan Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
18-Flooring 2 <i>411806011-0015B</i>	Kitchen - 3 Layers Vinyl Flooring	Tan/Green Fibrous Homogeneous	35% Cellulose	65% Non-fibrous (Other)	None Detected
18-Mastic <i>411806011-0015C</i>	Kitchen - 3 Layers Vinyl Flooring	Brown Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
20-Flooring 1 <i>411806011-0016</i> <i>Only 3 layers of flooring present, no mastic present</i>	Bathroom - 4 Layers Flooring & Mastic	Tan Non-Fibrous Homogeneous		85% Non-fibrous (Other)	15% Chrysotile
20-Flooring 2 <i>411806011-0016A</i>	Bathroom - 4 Layers Flooring & Mastic	Brown Fibrous Homogeneous	5% Cellulose 2% Glass	93% Non-fibrous (Other)	None Detected
20-Floor Tile <i>411806011-0016B</i>	Bathroom - 4 Layers Flooring & Mastic	Gray Non-Fibrous Homogeneous	8% Fibrous (Other)	90% Non-fibrous (Other)	2% Chrysotile
20-Mastic <i>411806011-0016C</i>	Bathroom - 4 Layers Flooring & Mastic	Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile

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EMSL Analytical, Inc.

10801 Southern Loop Blvd Pineville, NC 28134

Tel/Fax: (704) 525-2205 / (704) 525-2382

<http://www.EMSL.com> / charlottelab@emsl.com

EMSL Order: 411806011
Customer ID: AXEM25
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
21-Flooring 1 <i>411806011-0017</i>	Bathroom - 4 Layers Flooring & Mastic				Positive Stop (Not Analyzed)
21-Flooring 2 <i>411806011-0017A</i>	Bathroom - 4 Layers Flooring & Mastic	Beige Non-Fibrous Homogeneous	5% Cellulose 1% Glass	10% Ca Carbonate 84% Non-fibrous (Other)	None Detected
21-Floor Tile <i>411806011-0017B</i>	Bathroom - 4 Layers Flooring & Mastic				Positive Stop (Not Analyzed)
21-Mastic <i>411806011-0017C</i>	Bathroom - 4 Layers Flooring & Mastic				Positive Stop (Not Analyzed)
21-Flooring 3 <i>411806011-0017D</i>	Bathroom - 4 Layers Flooring & Mastic	Brown/Green Fibrous Homogeneous	40% Cellulose	60% Non-fibrous (Other)	None Detected
23 <i>411806011-0018</i>	Windows - Window Glazing	White Non-Fibrous Homogeneous	4% Fibrous (Other)	15% Ca Carbonate 81% Non-fibrous (Other)	None Detected
24 <i>411806011-0019</i>	Windows - Window Glazing	Tan/White Non-Fibrous Homogeneous	2% Fibrous (Other)	15% Ca Carbonate 83% Non-fibrous (Other)	None Detected
26-Shingle 1 <i>411806011-0020</i>	Porch Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	8% Glass	5% Quartz 8% Ca Carbonate 79% Non-fibrous (Other)	None Detected
26-Shingle 2 <i>411806011-0020A</i>	Porch Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	8% Glass	8% Quartz 8% Ca Carbonate 76% Non-fibrous (Other)	None Detected
26-Shingle 3 <i>411806011-0020B</i>	Porch Roof - Multi-Layer Shingle & Felt	Black/Beige Fibrous Homogeneous	8% Cellulose 3% Glass	10% Quartz 8% Ca Carbonate 71% Non-fibrous (Other)	None Detected
26-Shingle 4 <i>411806011-0020C</i>	Porch Roof - Multi-Layer Shingle & Felt	Gray/Black Fibrous Homogeneous	10% Glass	10% Quartz 10% Ca Carbonate 70% Non-fibrous (Other)	None Detected
26-Shingle 5 <i>411806011-0020D</i>	Porch Roof - Multi-Layer Shingle & Felt	Gray/Black Fibrous Homogeneous	5% Cellulose	10% Quartz 5% Ca Carbonate 80% Non-fibrous (Other)	None Detected
26-Felt <i>411806011-0020E</i>	Porch Roof - Multi-Layer Shingle & Felt	Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
27-Shingle 1 <i>411806011-0021</i>	Porch Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	5% Glass	8% Quartz 10% Ca Carbonate 77% Non-fibrous (Other)	None Detected
27-Shingle 2 <i>411806011-0021A</i>	Porch Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	5% Glass	5% Quartz 10% Ca Carbonate 80% Non-fibrous (Other)	None Detected
27-Shingle 3 <i>411806011-0021B</i>	Porch Roof - Multi-Layer Shingle & Felt	Black/Beige Fibrous Homogeneous	8% Cellulose 5% Glass	8% Quartz 10% Ca Carbonate 69% Non-fibrous (Other)	None Detected
27-Shingle 4 <i>411806011-0021C</i>	Porch Roof - Multi-Layer Shingle & Felt	Gray/Black Fibrous Homogeneous	5% Glass	8% Quartz 8% Ca Carbonate 79% Non-fibrous (Other)	None Detected
27-Shingle 5 <i>411806011-0021D</i>	Porch Roof - Multi-Layer Shingle & Felt	Gray/Black Fibrous Homogeneous	5% Glass	8% Quartz 10% Ca Carbonate 77% Non-fibrous (Other)	None Detected
27-Felt <i>411806011-0021E</i>	Porch Roof - Multi-Layer Shingle & Felt	Black Non-Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected

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Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
29-Shingle 1 <i>411806011-0022</i>	Main Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	25% Cellulose	5% Quartz 70% Non-fibrous (Other)	None Detected
29-Shingle 2 <i>411806011-0022A</i>	Main Roof - Multi-Layer Shingle & Felt	Gray/Black Fibrous Homogeneous	12% Glass	8% Quartz 10% Ca Carbonate 70% Non-fibrous (Other)	None Detected
29-Shingle 3 <i>411806011-0022B</i>	Main Roof - Multi-Layer Shingle & Felt	White/Black Fibrous Homogeneous	3% Cellulose	5% Quartz 15% Ca Carbonate 77% Non-fibrous (Other)	None Detected
29-Felt <i>411806011-0022C</i>	Main Roof - Multi-Layer Shingle & Felt	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
30-Shingle 1 <i>411806011-0023</i>	Main Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	30% Cellulose	5% Quartz 5% Ca Carbonate 60% Non-fibrous (Other)	None Detected
30-Shingle 2 <i>411806011-0023A</i>	Main Roof - Multi-Layer Shingle & Felt	Gray/Black Non-Fibrous Homogeneous	5% Glass	8% Quartz 10% Ca Carbonate 77% Non-fibrous (Other)	None Detected
30-Shingle 3 <i>411806011-0023B</i>	Main Roof - Multi-Layer Shingle & Felt	White/Black Fibrous Homogeneous	5% Glass	8% Quartz 10% Ca Carbonate 77% Non-fibrous (Other)	None Detected
30-Felt <i>411806011-0023C</i>	Main Roof - Multi-Layer Shingle & Felt	Black Non-Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
32 <i>411806011-0024</i>	Main Roof - Metal Roof Sealant	Black/Rust Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
33 <i>411806011-0025</i>	Main Roof - Metal Roof Sealant	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected

Analyst(s) _____

Aaron Hartley (34)

Lacy Searcy (26)

Lee Plumley, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC NVLAP Lab Code 200841-0, VA 3333 00312

Initial report from: 08/01/2018 14:14:18



EMSL Analytical, Inc.

10801 Southern Loop Blvd Pineville, NC 28134

Tel/Fax: (704) 525-2205 / (704) 525-2382

<http://www.EMSL.com> / charlottelab@emsl.com

EMSL Order: 411806011

Customer ID: AXEM25

Customer PO:

Project ID:

Attention: Ted Shultz
Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

Phone: (803) 348-4921
Fax:
Received Date: 07/26/2018 8:45 AM
Analysis Date: 08/03/2018
Collected Date: 07/09/2018

Project: COS 279 Earnest Collins

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
3 411806011-0026	Foyer - Felt Flooring	Black Fibrous Homogeneous	100	None	No Asbestos Detected
13 411806011-0027	Back Porch - Grey Vinyl Flooring	Gray Fibrous Homogeneous	100	None	No Asbestos Detected
16-Flooring 411806011-0028	Living Room - Woodgrain Vinyl Flooring	Brown Non-Fibrous Homogeneous	100	None	No Asbestos Detected
16-Mastic 411806011-0029	Living Room - Woodgrain Vinyl Flooring	Clear Non-Fibrous Homogeneous	100	None	No Asbestos Detected
19-Flooring 1 411806011-0030	Kitchen - 3 Layers Vinyl Flooring	Beige Fibrous Homogeneous	100	None	No Asbestos Detected
19-Mastic 411806011-0031	Kitchen - 3 Layers Vinyl Flooring	Tan Non-Fibrous Homogeneous	100	None	No Asbestos Detected
19-Flooring 2 411806011-0032	Kitchen - 3 Layers Vinyl Flooring	Tan/Green Fibrous Homogeneous	100	None	No Asbestos Detected
19-Mastic 411806011-0033	Kitchen - 3 Layers Vinyl Flooring	Brown Non-Fibrous Homogeneous	100	None	No Asbestos Detected
22-Flooring 2 411806011-0034	Bathroom - 4 Layers Flooring & Mastic	Beige Fibrous Homogeneous	100	None	No Asbestos Detected
22-Flooring 3 411806011-0035	Bathroom - 4 Layers Flooring & Mastic	Brown Fibrous Homogeneous	100	None	No Asbestos Detected
25 411806011-0036	Windows - Window Glazing	Beige Non-Fibrous Homogeneous	99.3	0.74 Fibrous_Other	No Asbestos Detected
28-Shingle 1 411806011-0037	Porch Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	100	None	No Asbestos Detected
28-Shingle 2 411806011-0038	Porch Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	100	None	No Asbestos Detected

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 08/03/2018 14:54:27



EMSL Analytical, Inc.

10801 Southern Loop Blvd Pineville, NC 28134

Tel/Fax: (704) 525-2205 / (704) 525-2382

<http://www.EMSL.com> / charlottelab@emsl.com

EMSL Order: 411806011

Customer ID: AXEM25

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Project ID:

Attention: Ted Shultz
Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

Phone: (803) 348-4921

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Received Date: 07/26/2018 8:45 AM

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Collected Date: 07/09/2018

Project: COS 279 Earnest Collins

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
28-Shingle 3 411806011-0039	Porch Roof - Multi-Layer Shingle & Felt	Black/Beige Fibrous Homogeneous	100	None	No Asbestos Detected
28-Shingle 4 411806011-0040	Porch Roof - Multi-Layer Shingle & Felt	Gray/Black Fibrous Homogeneous	100	None	No Asbestos Detected
28-Shingle 5 411806011-0041	Porch Roof - Multi-Layer Shingle & Felt	Gray/Black Fibrous Homogeneous	100	None	No Asbestos Detected
28-Felt 411806011-0042	Porch Roof - Multi-Layer Shingle & Felt	Black Fibrous Homogeneous	100	None	No Asbestos Detected
31-Shingle 1 411806011-0043	Main Roof - Multi-Layer Shingle & Felt	Black/Green Fibrous Homogeneous	100	None	No Asbestos Detected
31-Shingle 2 411806011-0044	Main Roof - Multi-Layer Shingle & Felt	Gray/Black Fibrous Homogeneous	100	None	No Asbestos Detected
31-Shingle 3 411806011-0045	Main Roof - Multi-Layer Shingle & Felt	White/Black Fibrous Homogeneous	100	None	No Asbestos Detected
31-Felt 411806011-0046	Main Roof - Multi-Layer Shingle & Felt	Black Fibrous Homogeneous	100	None	No Asbestos Detected
34 411806011-0047	Main Roof - Metal Roof Sealant	Black Non-Fibrous Homogeneous	100	None	No Asbestos Detected

Analyst(s)

Aaron Hartley (22)

Lee Plumley, Laboratory Manager
or other approved signatory

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 08/03/2018 14:54:27



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

411806011

Pineville, NC 28134
PHONE: (704) 525-2205
FAX: (704) 525-2382

Company : Apex Environmental Management		EMSL-Bill to: <input type="checkbox"/> Same <input checked="" type="checkbox"/> Different <small>If Bill to is Different note instructions in Comments**</small>	
Street: 7 Winchester Court		<i>Third Party Billing requires written authorization from third party</i>	
City: Mauldin	State/Province: SC	Zip/Postal Code: 29662	Country: US
Report To (Name): Ted Shultz		Telephone #: 864-404-3210	
Email Address: tshultz@apex-ehs.com		Fax #:	Purchase Order:
Project Name/Number: <u>COS 279 Earnest Collins</u>		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail	
U.S. State Samples Taken: SC		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	

Turnaround Time (TAT) Options* – Please Check

3 Hour
 6 Hour
 24 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PLM - Bulk (reporting limit)	TEM - Bulk
<input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%)	<input checked="" type="checkbox"/> TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
<input type="checkbox"/> PLM EPA NOB (<1%)	<input type="checkbox"/> NY ELAP Method 198.4 (TEM)
Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
<input type="checkbox"/> NIOSH 9002 (<1%)	<input type="checkbox"/> TEM Qualitative via Filtration Prep Technique
<input type="checkbox"/> NY ELAP Method 198.1 (friable in NY)	<input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique
<input type="checkbox"/> NY ELAP Method 198.6 NOB (non-friable-NY)	Other
<input type="checkbox"/> OSHA ID-191 Modified	<input type="checkbox"/>
<input type="checkbox"/> Standard Addition Method	

Check For Positive Stop – Clearly Identify Homogenous Group Date Sampled: 7/9/18

Samplers Name: _____ Samplers Signature: _____

Sample #	HA #	Sample Location	Material Description
1		Foyer	Felt Flooring
2			
3			
4		Throughout Int.	Plaster
5			
6			
7			
8			
9			
10			

Client Sample # (s): -	Total # of Samples: <u>34</u>
Relinquished (Client):	Date: <u>7/24/18</u> Time: <u>3:00pm</u>
Received (Lab):	Date: <u>7/26/18</u> Time: <u>8:45am Fk</u>
Comments/Special Instructions: Bill To: Apex Environmental Management, 7 Winchester Court, Mauldin, SC, 29662, US Attention: Rebecca Shultz Phone: 864-404-3210 Email: rshultz@apex-ehs.com Purchase Order: <u>7955 2904 4295</u>	



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

411806011

Pineville, NC 28134

PHONE: (704) 525-2205

FAX: (704) 525-2382

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
11		Back Porch	Grey Vinyl Flooring
12			
13			
14		Living Room	Woodgrain Vinyl Flooring
15			
16			
17		Kitchen	3 Layers Vinyl Flooring
18			
19			
20		Bath Room	4 layers Flooring Master
21			
22			
23		Windows	Window Glazing
24			
25			
26		Porch Roof	Multilayer Shingle & Felt
27			
28			
29		Main Roof	
30			
31			
32			Metal Roof Sealant
33			
34			

***Comments/Special Instructions:**

Bill To: Apex Environmental Management, 7 Winchester Court, Mauldin, SC, 29662, US
Attention: Rebecca Shultz Phone: 864-404-3210 Email: rshultz@apex-ehs.com Purchase Order:

SECTION IV
Photographic Log

Asbestos & Lead Assessment
City of Spartanburg
279 Earnest L. Collins Street
Spartanburg, South Carolina



Photo 1 – 279 Earnest L. Collins Street in Spartanburg, South Carolina.



Photo 2 – Felt flooring in foyer.



Photo 3 – Plaster wall.



Photo 4 – Wood pattern flooring in living room.



Photo 5 – Back porch grey flooring.



Photo 6 – Bathroom flooring.



Photo 7 – Kitchen flooring.



Photo 8 – Window glaze.



Photo 9 – Main and porch roofs.

SECTION V

SC DHEC Asbestos Inspector License

SCDHEC ISSUED

Asbestos ID Card

Tedman K Shultz



**CONSULTBI
AIRSAMPLER**

**BI-00971
AS-00355**

Expiration Date:

**01/17/19
02/23/19**