



Asbestos & Lead Based Paint Assessment

City of Spartanburg
270 Arch Street
Spartanburg, South Carolina

Prepared for:

The City of Spartanburg
440 South Church St., Suite B
Spartanburg, SC 29306-5234

Prepared by:

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

Project Number: 0815-163

February 3, 2017





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- Environmental Site Assessments
- Hazard Communication

Apex Project Number 0815-163

February 3, 2017

Mr. Martin Livingston
City of Spartanburg
440 South Church Street, Suite B
Spartanburg, SC 29306-5234

Reference: Asbestos & Lead-Based Paint Assessment Services
270 Arch Street
Spartanburg, South Carolina

Dear Mr. Livingston:

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.

A handwritten signature in blue ink, appearing to read 'Ben Oliver'.

Ben Oliver
Project Manager

A handwritten signature in blue ink, appearing to read 'Tom Oliver'.

Tom Oliver
Director of Operations

ASBESTOS & LEAD-BASED PAINT ASSESSMENT

**CITY OF SPARTANBURG
270 ARCH STREET
SPARTANBURG, SOUTH CAROLINA**

APEX PROJECT NO. 0815-163

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SECTION I

Asbestos & Lead Evaluation Report

ASBESTOS/LEAD EVALUATION REPORT
APEX PROJECT NUMBER: 0815-163

Date:	2/3/2017	Page Number:	1 of 4
Client:	City of Spartanburg	Client Contact:	Mr. Martin Livingston
Client Address:	440 South Church St. Suite B Spartanburg, SC 29306	Client Phone Number:	(864) 580-5323
Project:	Asbestos and Lead Evaluation		
Property Address:	270 Arch Street Spartanburg, SC		
Assessor:	Tom Oliver	Date of Assessment:	1/17/2017
Company:	Apex Environmental Management 7 Winchester Court Mauldin, SC 29662	Phone Number:	(864) 404-3210
Purpose of Assessment:	Demolition	Age of Structure:	Approximately 65 years
Building Type:	Residential	Number of Stories:	1
Foundation:	CMU block crawlspace	Approximate Square Footage	1,100 SF

EXTERIOR BUILDING MATERIALS

- Pitched wooden roof with shingles & felt.
- Vinyl siding over cement board siding with felt beneath.
- Wooden doors with caulk.
- Vinyl and wooden windows with caulk.
- Wooden windows with glazing.
- Metal storm windows over wooden windows.

INTERIOR BUILDING MATERIALS

- Multiple types & layers of vinyl floor and floor tile with & without mastics.
- Wooden floors with felt throughout.
- Concrete floors.
- Wooden composite ceiling tiles on a drop-in grid system with texture.
- Drywall with joint compound & tape over plaster with finish.
- Plaster with finish.

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 CEI Labs (CEI) as an NVLAP certified laboratory, their accreditation number is 101768-0.
- 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. Forty-one (41) bulk samples were collected during the survey and submitted to CEI in Cary, 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 101768-0. 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). Seventeen (17) 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 Containing Materials

The EPA defines an asbestos-containing material (ACM) as a material containing more than 1% asbestos. OSHA defines ACM as a material containing any amount of asbestos. Materials were analyzed to contain less than 1% asbestos and it should be noted that OSHA asbestos regulations will apply. The *Asbestos PLM & TEM Data Table* is provided in Appendix II.

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

- Approximately 1,475 SF of cement board siding.
- Approximately 4 wooden windows with glazing.

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, $1.0 \text{ mg}/\text{cm}^3$. The laboratory analytical results and chain-of-custody are included in the Lead Analysis Reports in Appendix A. The approximate locations of the paint samples collected and analytical results are presented in the Tables included with this report .

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

Exterior

- Brown brick foundation.
- White wooden porch columns.
- White metal porch headers.
- White wooden window.

Interior

- Green bead board walls.
- White ceramic toilet.
- White cement board walls.

RECOMMENDATIONS AND DISCUSSION

Asbestos Containing Materials

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.

Lead Based Paint

Currently the South Carolina Department of Health and Environmental Control (SCDHEC) define LBP as paint containing greater than 1.0 milligrams 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 RESULTS**

Project Name: COS 270 Arch Street ACM

Sampled By: Tom Oliver

Project Location: 270 Arch Street., Spartanburg, SC

Project Manager: Tom Oliver

Project Number: 0815-163

Date: 1/17/2017

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
1	Roof	Roof shingles (2) & felt (2)	PLM - NAD	Non-Friable	Good	1,190 SF
2			TEM - NAD			
3						
4	Exterior siding	Cement board siding	PLM - 15% Chrysotile	Non-Friable	Good	1,475 SF
5						
6						
7	Exterior siding	Siding felt	PLM - NAD	Non-Friable	Good	1,475 SF
8			TEM - <1% Chrysotile			
9						
10	Exterior wooden windows	Window glazing	PLM - 3% Chrysotile	Non-Friable	Good	4 EA
11						
12						
13	Exterior wooden & vinyl windows	Window casing caulk	PLM - NAD	Non-Friable	Good	12 EA
14			TEM - NAD			
15						
16	Exterior doors	Door caulk	PLM - NAD	Non-Friable	Good	1 EA
17			TEM - NAD			
18						
19	Front room, kitchen, rear hallway, bathroom and hall closet	Ceiling texture over wooden composite ceiling tiles	PLM - NAD	Non-Friable	Good	415 SF
20						
21						

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

Project Name: COS 270 Arch Street ACM

Sampled By: Tom Oliver

Project Location: 270 Arch Street., Spartanburg, SC

Project Manager: Tom Oliver

Project Number: 0815-163

Date: 1/17/2017

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
22	Throughout walls	Drywall with joint compound and tape	PLM - NAD	Friable	Good	1,230 SF
23						
24						
25						
26						
27	Throughout walls	Plaster with finish	PLM - NAD	Friable	Good	985 SF
28						
29						
30	Kitchen, bathroom, hallway, mud porch and bathroom closet	Slate square pattern vinyl floor with mastic (top layer)	PLM - NAD	Non-Friable	Good	335 SF
31			TEM - NAD			
32						
33	Hallway and bathroom	12"x12" tan speckled floor tile with mastic (2nd layer), yellow pattern vinyl floor with no mastic (3rd layer)	PLM - NAD	Non-Friable	Good	105 SF
34			TEM - NAD			
35						
36	Throughout floors under wood	Flooring paper	PLM - NAD	Non-Friable	Good	1,100 SF
37			TEM - NAD			
38						
39	Closet bathroom	Green streaked floor tile with mastic over cream vinyl floor with mastic	PLM - NAD	Non-Friable	Good	40 SF
40			TEM - NAD			
41						

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 270 Arch Street ACM/LBP

Sampled By: Tom Oliver

Project Location: 270 Arch Street Spartanburg SC

Project Manager: Tom Oliver

Project Number: 0815-163

Date: 1/20/2017

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m ³)
40	Exterior	Foundation	Brown	CMU Block	0.02
41	Exterior	Porch Floor	Brown	Concrete	0.06
42	Exterior	Foundation	Brown	Brick	2.18
43	Exterior	Hand Rail	White	Wood	0.00
44	Exterior	Window Frame	White	Metal	0.88
45	Exterior	Window	White	Vinyl	0.00
46	Exterior	Siding	Tan	Vinyl	0.00
47	Exterior	Porch Column	White	Wood	3.48
48	Exterior	Porch Header	White	Metal	2.42
49	Exterior	Soffit / Fascia	White	Vinyl	0.00
50	Exterior	Door Frame	White	Metal	0.04
51	Exterior	Door	White	Wood	0.00
52	Exterior	Siding	White	Cement Board	0.00
53	Exterior	Door	White	Metal	0.00
54	Interior	Wall	White	Drywall	0.00
55	Interior	Window Frame	White	Wood	0.10
56	Interior	Base Board	White	Wood	Insufficient Test Time
57	Interior	Base Board	White	Wood	0.05
58	Interior	Wall	White	Plaster	0.00
59	Interior	Fireplace Mantle	White	Wood	0.46
60	Interior	Door	White	Wood	0.00
61	Interior	Ceiling	White	Fiberglass	0.00
62	Interior	Wall	Turquoise	Plaster	0.00
63	Interior	Wall	White	Wood	0.00
64	Interior	Cabinets	White	Wood	0.00
65	Interior	Wall	Green	Bead Board	3.76
66	Interior	Vanity	White	Wood	0.00

**FIELD DATA SHEET
LBP ANALYSIS**

Project Name: COS 270 Arch Street ACM/LBP

Sampled By: Tom Oliver

Project Location: 270 Arch Street Spartanburg SC

Project Manager: Tom Oliver

Project Number: 0815-163

Date: 1/20/2017

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m ³)
67	Interior	Toilet	White	Ceramic	1.00
68	Interior	Ceiling	White	Drywall	0.00
69	Interior	Ceiling Tile	White	Wood	0.01
70	Interior	Wall	White	Cement Board	1.00
71	Interior	Door Frame	White	Wood	0.04
72	Interior	Floor	Brown	Wood	0.05
73	Void	Void	Void	Void	Void

Bold is Lead Based Paint

SECTION III

Laboratory Analytical Results



January 25, 2017

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 270 Arch St. ACM/LBP; 0815-163
CEI LAB CODE: A17-0866

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on January 19, 2017. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

A handwritten signature in black ink, appearing to read "Tianbao Bai".

Tianbao Bai, Ph.D., CIH
Laboratory Director





ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS 270 Arch St. ACM/LBP; 0815-163

CEI LAB CODE: A17-0866

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

REPORT DATE: 01/25/17

TOTAL SAMPLES ANALYZED: 29

SAMPLES >1% ASBESTOS: 2

TEL: 866-481-1412

www.ceilabs.com



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 270 Arch St. ACM/LBP; 0815-163

CEI LAB CODE: A17-0866

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
1	Layer 1	A2304548A	Gray,Black	Roofing Shingle	None Detected
	Layer 2	A2304548A	Black	Felt Paper	None Detected
		A2304548B	Off-white,Black	Roofing Shingle	None Detected
		A2304548C	Black	Felt Paper	None Detected
2	Layer 1	A2304549A	Gray,Black	Roofing Shingle	None Detected
	Layer 2	A2304549A	Black	Felt Paper	None Detected
		A2304549B	Off-white,Black	Roofing Shingle	None Detected
		A2304549C	Black	Felt Paper	None Detected
3		A2304550		Sample Submitted for TEM Analysis	
4		A2304551	White,Gray	Cement Board Siding	Chrysotile 15%
5		A2304552		Sample Not Analyzed per COC	
6		A2304553		Sample Not Analyzed per COC	
7		A2304554	Black	Siding Felt Paper	None Detected
8		A2304555	Black	Siding Felt Paper	None Detected
9		A2304556		Sample Submitted for TEM Analysis	
10	Layer 1	A2304557	White	Window Glazing	None Detected
	Layer 2	A2304557	Gray	Window Glazing	Chrysotile 3%
11		A2304558		Sample Not Analyzed per COC	
12		A2304559		Sample Not Analyzed per COC	
13		A2304560	White	Window Casing Caulk	None Detected
14		A2304561	White	Window Casing Caulk	None Detected
15		A2304562		Sample Submitted for TEM Analysis	
16		A2304563	White	Door Caulk	None Detected
17		A2304564	White	Door Caulk	None Detected
18		A2304565		Sample Submitted for TEM Analysis	
19	Layer 1	A2304566	White,Off-white	Ceiling Texture	None Detected
	Layer 2	A2304566	Tan	Ceiling Tile	None Detected
20	Layer 1	A2304567	White,Off-white	Ceiling Texture	None Detected



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 270 Arch St. ACM/LBP; 0815-163

CEI LAB CODE: A17-0866

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
	Layer 2	A2304567	Tan	Ceiling Tile	None Detected
21	Layer 1	A2304568	White,Off-white	Ceiling Texture	None Detected
	Layer 2	A2304568	Tan	Ceiling Tile	None Detected
22	Layer 1	A2304569	White	Joint Compound	None Detected
	Layer 2	A2304569	White	Tape	None Detected
	Layer 3	A2304569	Tan,White	Drywall	None Detected
23	Layer 1	A2304570	White	Joint Compound	None Detected
	Layer 2	A2304570	White	Tape	None Detected
	Layer 3	A2304570	Tan,White	Drywall	None Detected
24	Layer 1	A2304571	White	Joint Compound	None Detected
	Layer 2	A2304571	White	Tape	None Detected
	Layer 3	A2304571	Tan,White	Drywall	None Detected
25	Layer 1	A2304572	White	Joint Compound	None Detected
	Layer 2	A2304572	White	Tape	None Detected
	Layer 3	A2304572	Tan,White	Drywall	None Detected
26	Layer 1	A2304573	White	Joint Compound	None Detected
	Layer 2	A2304573	White	Tape	None Detected
	Layer 3	A2304573	Tan,White	Drywall	None Detected
27	Layer 1	A2304574	White	Surface Material (joint Compound)	None Detected
	Layer 2	A2304574	Beige	Plaster Skim Coat	None Detected
	Layer 3	A2304574	Gray	Plaster Base Coat	None Detected
28	Layer 1	A2304575	Beige	Plaster Skim Coat	None Detected
	Layer 2	A2304575	Gray	Plaster Base Coat	None Detected
29	Layer 1	A2304576	Beige	Plaster Skim Coat	None Detected
	Layer 2	A2304576	Gray	Plaster Base Coat	None Detected
30	Layer 1	A2304577	Tan,Beige	Vinyl Flooring	None Detected
	Layer 2	A2304577	Yellow	Mastic	None Detected
31	Layer 1	A2304578	Tan,Beige	Vinyl Flooring	None Detected
	Layer 2	A2304578	Yellow	Mastic	None Detected
32		A2304579		Sample Submitted for TEM Analysis	



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 270 Arch St. ACM/LBP; 0815-163

CEI LAB CODE: A17-0866

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
33		A2304580A	Tan,Beige	Floor Tile	None Detected
		A2304580B	Yellow	Mastic	None Detected
		A2304580C	Yellow,Tan	Vinyl Flooring	None Detected
34		A2304581A	Tan,Beige	Floor Tile	None Detected
		A2304581B	Yellow	Mastic	None Detected
		A2304581C	Yellow,Tan	Vinyl Flooring	None Detected
35		A2304582		Sample Submitted for TEM Analysis	
36		A2304583	Brown,Black	Flooring Paper	None Detected
37		A2304584	Brown,Black	Flooring Paper	None Detected
38		A2304585		Sample Submitted for TEM Analysis	
39		A2304586A	Green	Floor Tile	None Detected
		A2304586B	Yellow	Mastic	None Detected
	Layer 1	A2304586C	Beige,Off-white	Vinyl Flooring	None Detected
	Layer 2	A2304586C	Tan	Mastic	None Detected
40		A2304587A	Green	Floor Tile	None Detected
		A2304587B	Yellow	Mastic	None Detected
	Layer 1	A2304587C	Beige,Off-white	Vinyl Flooring	None Detected
	Layer 2	A2304587C	Tan	Mastic	None Detected
41		A2304588		Sample Submitted for TEM Analysis	



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
1 Layer 1 A2304548A	Roofing Shingle	Heterogeneous	2%	Cellulose	25%	Gravel	None Detected
		Gray,Black Fibrous Bound	48%	Fiberglass	25%	Tar	
Layer 2 A2304548A	Felt Paper	Heterogeneous	90%	Cellulose	10%	Tar	None Detected
		Black Fibrous Bound					
A2304548B	Roofing Shingle	Heterogeneous	2%	Cellulose	25%	Gravel	None Detected
		Off-white,Black Fibrous Bound	48%	Fiberglass	25%	Tar	
A2304548C	Felt Paper	Heterogeneous	90%	Cellulose	10%	Tar	None Detected
		Black Fibrous Bound					
2 Layer 1 A2304549A	Roofing Shingle	Heterogeneous	2%	Cellulose	25%	Gravel	None Detected
		Gray,Black Fibrous Bound	48%	Fiberglass	25%	Tar	
Layer 2 A2304549A	Felt Paper	Heterogeneous	90%	Cellulose	10%	Tar	None Detected
		Black Fibrous Bound					
A2304549B	Roofing Shingle	Heterogeneous	2%	Cellulose	25%	Gravel	None Detected
		Off-white,Black Fibrous Bound	48%	Fiberglass	25%	Tar	



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
A2304549C	Felt Paper	Heterogeneous Black Fibrous Bound	90%	Cellulose	10%	Tar	None Detected
3 A2304550	Sample Submitted for TEM Analysis						
4 A2304551	Cement Board Siding	Heterogeneous White, Gray Fibrous Bound			5%	Paint	15% Chrysotile
					30%	Binder	
					50%	Silicates	
5 A2304552	Sample Not Analyzed per COC						
6 A2304553	Sample Not Analyzed per COC						
7 A2304554	Siding Felt Paper	Heterogeneous Black Fibrous Bound	90%	Cellulose	10%	Tar	None Detected
8 A2304555	Siding Felt Paper	Heterogeneous Black Fibrous Bound	90%	Cellulose	10%	Tar	None Detected
9 A2304556	Sample Submitted for TEM Analysis						
10 Layer 1 A2304557	Window Glazing	Heterogeneous White Fibrous Bound	2%	Cellulose	45%	Binder	None Detected
			3%	Talc	50%	Calc Carb	



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 2 A2304557	Window Glazing	Heterogeneous Gray Fibrous Bound	2%	Cellulose	45%	Binder	3% Chrysotile
11 A2304558	Sample Not Analyzed per COC						
12 A2304559	Sample Not Analyzed per COC						
13 A2304560	Window Casing Caulk	Heterogeneous White Fibrous Bound	<1%	Cellulose	50%	Calc Carb Binder	None Detected
14 A2304561	Window Casing Caulk	Heterogeneous White Fibrous Bound	<1%	Cellulose	50%	Calc Carb Binder	None Detected
15 A2304562	Sample Submitted for TEM Analysis						
16 A2304563	Door Caulk	Heterogeneous White Fibrous Bound	2%	Cellulose	50%	Calc Carb Binder	None Detected
17 A2304564	Door Caulk	Heterogeneous White Fibrous Bound	2%	Cellulose	50%	Calc Carb Binder	None Detected
18 A2304565	Sample Submitted for TEM Analysis						



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
19 Layer 1 A2304566	Ceiling Texture	Heterogeneous White,Off-white Fibrous Bound	2%	Cellulose	5%	Paint	None Detected
					20%	Silicates	
					73%	Calc Carb	
Layer 2 A2304566	Ceiling Tile	Heterogeneous Tan Fibrous Bound	95%	Cellulose	5%	Binder	None Detected
20 Layer 1 A2304567	Ceiling Texture	Heterogeneous White,Off-white Fibrous Bound	2%	Cellulose	5%	Paint	None Detected
					20%	Silicates	
					73%	Calc Carb	
Layer 2 A2304567	Ceiling Tile	Heterogeneous Tan Fibrous Bound	95%	Cellulose	5%	Binder	None Detected
21 Layer 1 A2304568	Ceiling Texture	Heterogeneous White,Off-white Fibrous Bound	2%	Cellulose	5%	Paint	None Detected
					20%	Silicates	
					73%	Calc Carb	
Layer 2 A2304568	Ceiling Tile	Heterogeneous Tan Fibrous Bound	95%	Cellulose	5%	Binder	None Detected
22 Layer 1 A2304569	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	5%	Paint	None Detected
					18%	Silicates	
					75%	Calc Carb	



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 2 A2304569	Tape	Heterogeneous White Fibrous Bound	95%	Fiberglass	5%	Binder	None Detected
Layer 3 A2304569	Drywall	Heterogeneous Tan,White Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
23 Layer 1 A2304570	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	5%	Paint Silicates Calc Carb	None Detected
Layer 2 A2304570	Tape	Heterogeneous White Fibrous Bound	95%	Fiberglass	5%	Binder	None Detected
Layer 3 A2304570	Drywall	Heterogeneous Tan,White Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
24 Layer 1 A2304571	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	5%	Paint Silicates Calc Carb	None Detected
Layer 2 A2304571	Tape	Heterogeneous White Fibrous Bound	95%	Fiberglass	5%	Binder	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 3 A2304571	Drywall	Heterogeneous Tan,White Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
25 Layer 1 A2304572	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	5%	Paint	None Detected
					18%	Silicates	
					75%	Calc Carb	
Layer 2 A2304572	Tape	Heterogeneous White Fibrous Bound	95%	Fiberglass	5%	Binder	None Detected
Layer 3 A2304572	Drywall	Heterogeneous Tan,White Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
26 Layer 1 A2304573	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	5%	Paint	None Detected
					18%	Silicates	
					75%	Calc Carb	
Layer 2 A2304573	Tape	Heterogeneous White Fibrous Bound	95%	Fiberglass	5%	Binder	None Detected
Layer 3 A2304573	Drywall	Heterogeneous Tan,White Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
27 Layer 1 A2304574	Surface Material (joint Compound)	Heterogeneous	2%	Cellulose	5%	Paint	None Detected
		White			20%	Silicates	
		Fibrous			73%	Calc Carb	
		Bound					
Layer 2 A2304574	Plaster Skim Coat	Heterogeneous	2%	Cellulose	5%	Paint	None Detected
		Beige			23%	Silicates	
		Fibrous			70%	Calc Carb	
		Bound					
Layer 3 A2304574	Plaster Base Coat	Heterogeneous	2%	Cellulose	50%	Silicates	None Detected
		Gray	3%	Hair	45%	Binder	
		Fibrous					
		Bound					
28 Layer 1 A2304575	Plaster Skim Coat	Heterogeneous	2%	Cellulose	5%	Paint	None Detected
		Beige			23%	Silicates	
		Fibrous			70%	Calc Carb	
		Bound					
Layer 2 A2304575	Plaster Base Coat	Heterogeneous	2%	Cellulose	50%	Silicates	None Detected
		Gray	3%	Hair	45%	Binder	
		Fibrous					
		Bound					
29 Layer 1 A2304576	Plaster Skim Coat	Heterogeneous	2%	Cellulose	5%	Paint	None Detected
		Beige			23%	Silicates	
		Fibrous			70%	Calc Carb	
		Bound					
Layer 2 A2304576	Plaster Base Coat	Heterogeneous	2%	Cellulose	50%	Silicates	None Detected
		Gray	3%	Hair	45%	Binder	
		Fibrous					
		Bound					



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
30 Layer 1 A2304577	Vinyl Flooring	Heterogeneous	30%	Cellulose	50%	Vinyl	None Detected
		Tan,Beige Fibrous Bound	10%	Fiberglass	10%	Binder	
Layer 2 A2304577	Mastic	Heterogeneous Yellow Fibrous Bound	2%	Cellulose	98%	Mastic	None Detected
31 Layer 1 A2304578	Vinyl Flooring	Heterogeneous	30%	Cellulose	50%	Vinyl	None Detected
		Tan,Beige Fibrous Bound	10%	Fiberglass	10%	Binder	
Layer 2 A2304578	Mastic	Heterogeneous Yellow Fibrous Bound	2%	Cellulose	98%	Mastic	None Detected
32 A2304579	Sample Submitted for TEM Analysis						
33 A2304580A	Floor Tile	Heterogeneous	2%	Cellulose	50%	Vinyl	None Detected
		Tan,Beige Fibrous Bound			48%	Binder	
A2304580B	Mastic	Heterogeneous Yellow Fibrous Bound	2%	Cellulose	98%	Mastic	None Detected
A2304580C	Vinyl Flooring	Heterogeneous	35%	Cellulose	50%	Vinyl	None Detected
		Yellow,Tan Fibrous Bound	10%	Fiberglass	5%	Binder	



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
34 A2304581A	Floor Tile	Heterogeneous Tan,Beige Fibrous Bound	2%	Cellulose	50%	Vinyl	None Detected
					48%	Binder	
A2304581B	Mastic	Heterogeneous Yellow Fibrous Bound	2%	Cellulose	98%	Mastic	None Detected
A2304581C	Vinyl Flooring	Heterogeneous Yellow,Tan Fibrous Bound	35%	Cellulose	50%	Vinyl	None Detected
			10%	Fiberglass	5%	Binder	
35 A2304582	Sample Submitted for TEM Analysis						
36 A2304583	Flooring Paper	Heterogeneous Brown,Black Fibrous Bound	95%	Cellulose	5%	Tar	None Detected
37 A2304584	Flooring Paper	Heterogeneous Brown,Black Fibrous Bound	95%	Cellulose	5%	Tar	None Detected
38 A2304585	Sample Submitted for TEM Analysis						
39 A2304586A	Floor Tile	Heterogeneous Green Fibrous Bound	2%	Cellulose	50%	Vinyl	None Detected
					48%	Binder	



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: A17-0866
Date Received: 01-19-17
Date Analyzed: 01-25-17
Date Reported: 01-25-17

Project: COS 270 Arch St. ACM/LBP; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
A2304586B	Mastic	Heterogeneous Yellow Fibrous Bound	2%	Cellulose	98%	Mastic	None Detected
Layer 1 A2304586C	Vinyl Flooring	Heterogeneous Beige,Off-white Fibrous Bound	35%	Cellulose	50%	Vinyl	None Detected
			10%	Fiberglass	5%	Binder	
Layer 2 A2304586C	Mastic	Heterogeneous Tan Fibrous Bound	3%	Cellulose	97%	Mastic	None Detected
40 A2304587A	Floor Tile	Heterogeneous Green Fibrous Bound	2%	Cellulose	50%	Vinyl	None Detected
					48%	Binder	
A2304587B	Mastic	Heterogeneous Yellow Fibrous Bound	2%	Cellulose	98%	Mastic	None Detected
Layer 1 A2304587C	Vinyl Flooring	Heterogeneous Beige,Off-white Fibrous Bound	35%	Cellulose	50%	Vinyl	None Detected
			10%	Fiberglass	5%	Binder	
Layer 2 A2304587C	Mastic	Heterogeneous Tan Fibrous Bound	3%	Cellulose	97%	Mastic	None Detected
41 A2304588	Sample Submitted for TEM Analysis						



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

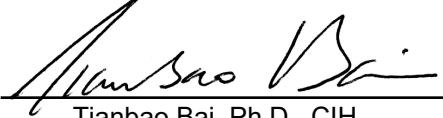
REPORTING LIMIT: <1% by visual estimation

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.

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs 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. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

ANALYST: 
Ryan Williams

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





107 New Edilion Court, Cary, NC 27511
 Tel: 866-481-1412; Fax: 919-481-1442

ASBESTOS CHAIN OF CUSTODY

(41) A17-0866
 A2304548-
 12304588

LAB USE ONLY:
CEI Lab Code:
CEI Lab I.D. Range:

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: Ben Oliver
Company: Apex Environmental Management, Inc.	Email / Tel: boliver@apex-ehs.com
Address: 7 Winchester Court	Project Name: COS 270 Arch St. ACM/LBP
Mauldin, South Carolina 29662	Project ID# 0815-163
Email: boliver@apex-ehs.com	PO #:
Tel: 864-404-3210 Fax: 864-404-3213	STATE SAMPLES COLLECTED IN: South Carolina

GENERAL INSTRUCTIONS		
POSITIVE STOP ANALYSIS	<input checked="" type="checkbox"/>	PLM DUE DATE: / /
ANALYZE NOB'S BY TEM	<input type="checkbox"/>	TEM DUE DATE: / /

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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PLM POINT COUNT (400)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (1000)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAV w POINT COUNT	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCM AIR	NIOSH 7400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR AHERA	EPA AHERA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR NIOSH	NIOSH 7402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM BULK	CHATFIELD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TEM DUST WIPE	ASTM D6480-05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM DUST MICROVAC	ASTM D5755-09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM SOIL	ASTM D7521-13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM VERMICULITE	CINCINNATI METHOD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REMARKS: Utilize Positive Stop During Analysis			<input checked="" type="checkbox"/> Accept Samples
			<input type="checkbox"/> Reject Samples
Relinquished By:	Date/Time	Received By:	Date/Time
Ben Oliver	1-18-2017	A	1/19/17 9:10
GAB			

Samples will be disposed of 30 days after analysis

ASBESTOS SAMPLING FORM



COMPANY CONTACT INFORMATION	
Company: Apex Environmental Management, Inc.	Job Contact: Ben Oliver
Project Name: COS 270 Arch St. ACM/LBP	
Project ID #: 0815-163	Tel: 864-640-1147

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
			PLM	TEM
1	Roof shingles (2 layers) and felt (2 layers)		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2			<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Cement board siding		<input type="checkbox"/>	<input checked="" type="checkbox"/>
4			<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Siding felt		<input checked="" type="checkbox"/>	<input type="checkbox"/>
6			<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Window glazing		<input checked="" type="checkbox"/>	<input type="checkbox"/>
8			<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	Window casing caulk		<input type="checkbox"/>	<input checked="" type="checkbox"/>
10			<input checked="" type="checkbox"/>	<input type="checkbox"/>
11	Door caulk		<input type="checkbox"/>	<input checked="" type="checkbox"/>
12			<input checked="" type="checkbox"/>	<input type="checkbox"/>
13	Ceiling texture over wooden composite ceiling tiles		<input checked="" type="checkbox"/>	<input type="checkbox"/>
14			<input checked="" type="checkbox"/>	<input type="checkbox"/>
15	Drywall with joint compound and tape		<input type="checkbox"/>	<input checked="" type="checkbox"/>
16			<input checked="" type="checkbox"/>	<input type="checkbox"/>
17	Plaster with finish		<input checked="" type="checkbox"/>	<input type="checkbox"/>
18			<input checked="" type="checkbox"/>	<input type="checkbox"/>
19	Slate square pattern		<input checked="" type="checkbox"/>	<input type="checkbox"/>
20			<input checked="" type="checkbox"/>	<input type="checkbox"/>
21			<input checked="" type="checkbox"/>	<input type="checkbox"/>
22			<input checked="" type="checkbox"/>	<input type="checkbox"/>
23			<input checked="" type="checkbox"/>	<input type="checkbox"/>
24			<input checked="" type="checkbox"/>	<input type="checkbox"/>
25			<input checked="" type="checkbox"/>	<input type="checkbox"/>
26			<input checked="" type="checkbox"/>	<input type="checkbox"/>
27			<input checked="" type="checkbox"/>	<input type="checkbox"/>
28			<input checked="" type="checkbox"/>	<input type="checkbox"/>
29			<input checked="" type="checkbox"/>	<input type="checkbox"/>
30			<input checked="" type="checkbox"/>	<input type="checkbox"/>

Page 2 of 3



February 1, 2017

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 270 Arch St. ACM'LBP; 0815-163
CEI LAB CODE: T17-0177

Dear Customer:

Enclosed are asbestos analysis results for TEM bulk samples received at our laboratory on January 26, 2017. The samples were analyzed for asbestos using transmission electron microscopy (TEM) per Chatfield Method.

Sample results containing > 1% asbestos are considered asbestos-containing materials (ACMs) per the EPA regulatory requirements. The detection limit for the TEM Chatfield 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. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

A handwritten signature in black ink, appearing to read 'Tianbao Bai', is written in a cursive style.

Tianbao Bai, Ph.D., CIH
Laboratory Director



ASBESTOS ANALYTICAL REPORT
By: Transmission Electron Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS 270 Arch St. ACM'LBP; 0815-163

CEI LAB CODE: T17-0177

TEST METHOD: Bulk Chatfield
EPA 600 / R93 / 116

REPORT DATE: 02/01/17

TEL: 866-481-1412

www.ceilabs.com



ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

Client: Apex Environmental Management
 7 Winchester Court
 Mauldin, SC 29662

CEI Lab Code: T17-0177
Date Received: 01-26-17
Date Analyzed: 02-01-17
Date Reported: 02-01-17

Project: COS 270 Arch St. ACM'LBP; 0815-163

TEM BULK CHATFIELD / EPA 600 / R93 / 116

Client ID Lab ID	Material Description	Sample Weight (g)	Organic Material %	Acid Soluble Material %	Acid Insoluble Material %	Asbestos %
3 T58014	Gray, Black Roofing Shingle	0.44	26.8	38.9	34.3	None Detected
3 T58015	Black Felt Paper	0.219	97.3	2.3	.4	None Detected
3 T58016	Off-white, Black Roofing Shingle	0.401	25.4	39.7	34.9	None Detected
3 T58017	Black Felt Paper	0.227	96.5	2.6	.9	None Detected
9 T58018	Siding Felt Paper	0.207	95.7	2.9	1.4	<1% Chrysotile
15 T58019	Window Casing Caulk	0.208	25.5	72.6	1.9	None Detected
18 T58020	Door Caulk	0.217	30.4	63.6	6	None Detected
32 T58021	Vinyl Flooring	0.159	67.9	31.4	.7	None Detected
32 T58022	Yellow Mastic	0.056	1.8	91.1	7.1	None Detected
35 T58023	Tan, Beige Floor Tile	0.51	25.7	71.6	2.7	None Detected
35 T58024	Yellow Mastic	0.101	80.2	16.8	3	None Detected
35 T58025	Yellow, Tan Vinyl Flooring	0.318	71.4	24.8	3.8	None Detected



ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

Client: Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CEI Lab Code: T17-0177
Date Received: 01-26-17
Date Analyzed: 02-01-17
Date Reported: 02-01-17

Project: COS 270 Arch St. ACM'LBP; 0815-163

TEM BULK CHATFIELD / EPA 600 / R93 / 116

Client ID Lab ID	Material Description	Sample Weight (g)	Organic Material %	Acid Soluble Material %	Acid Insoluble Material %	Asbestos %
38 T58026	Flooring Paper	0.203	73.9	25.6	.5	None Detected
41 T58027	Green Floor Tile	0.43	14.9	83.3	1.8	None Detected
41 T58028	Yellow Mastic	0.107	43.9	54.2	1.9	None Detected
41 T58029	Beige, Off-white Vinyl Flooring	0.253	57.3	2.4	40.3	None Detected
41 T58030	Tan Mastic	0.103	84.5	13.6	1.9	None Detected



LEGEND: None

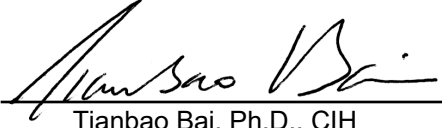
METHOD: CHATFIELD & EPA/600/R-93/116

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 CEI Labs, Inc. CEI Labs 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.

ANALYST: 
Daniel Liguori

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



107 New Edition Court, Cary, NC 27511
 Tel: 866-481-1412; Fax: 919-481-1442

ASBESTOS CHAIN OF CUSTODY

(41) A17-0866
 A2304548-
 12304588

LAB USE ONLY:
 CEI Lab Code: T17-0174 (17)
 CEI Lab I.D. Range: T58014-030

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: Ben Oliver
Company: Apex Environmental Management, Inc.	Email / Tel: boliver@apex-ehs.com
Address: 7 Winchester Court Mauldin, South Carolina 29662	Project Name: COS 270 Arch St. ACM/LBP
Email: boliver@apex-ehs.com	Project ID# 0815-163
Tel: 864-404-3210 Fax: 864-404-3213	PO #:
	STATE SAMPLES COLLECTED IN: South Carolina

GENERAL INSTRUCTIONS		
POSITIVE STOP ANALYSIS	<input checked="" type="checkbox"/>	PLM DUE DATE: / /
ANALYZE NOB'S BY TEM	<input type="checkbox"/>	TEM DUE DATE: / /

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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PLM POINT COUNT (400)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (1000)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAV w POINT COUNT	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCM AIR	NIOSH 7400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR AHERA	EPA AHERA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR NIOSH	NIOSH 7402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM BULK	CHATFIELD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TEM DUST WIPE	ASTM D6480-05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM DUST MICROVAC	ASTM D5755-09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM SOIL	ASTM D7521-13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM VERMICULITE	CINCINNATI METHOD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REMARKS: Utilize Positive Stop During Analysis

Accept Samples
 Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Ben Oliver	1-18-2017	A	1/19/17 9:10
G.M.	1/25/17 1525		

Samples will be disposed of 30 days after analysis

ASBESTOS SAMPLING FORM



COMPANY CONTACT INFORMATION:	
Company: Apex Environmental Management, Inc.	Job Contact: Ben Oliver
Project Name: COS 270 Arch St. ACM/LBP	
Project ID #: 0815-163	Tel: 864-640-1147

SAMPLE ID#	DESCRIPTION/LOCATION	VOLUME/ AREA	TEST	
			PLM	TEM
1	Roof shingles (2 layers) and felt (2 layers)		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2			<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Cement board siding		<input type="checkbox"/>	<input checked="" type="checkbox"/>
4			<input checked="" type="checkbox"/>	<input type="checkbox"/>
5			<input checked="" type="checkbox"/>	<input type="checkbox"/>
6			<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Siding felt		<input checked="" type="checkbox"/>	<input type="checkbox"/>
8			<input checked="" type="checkbox"/>	<input type="checkbox"/>
9			<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Window glazing		<input checked="" type="checkbox"/>	<input type="checkbox"/>
11			<input checked="" type="checkbox"/>	<input type="checkbox"/>
12			<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	Window casing caulk		<input checked="" type="checkbox"/>	<input type="checkbox"/>
14			<input checked="" type="checkbox"/>	<input type="checkbox"/>
15			<input type="checkbox"/>	<input checked="" type="checkbox"/>
16	Door caulk		<input checked="" type="checkbox"/>	<input type="checkbox"/>
17			<input checked="" type="checkbox"/>	<input type="checkbox"/>
18			<input type="checkbox"/>	<input checked="" type="checkbox"/>
19	Ceiling texture over		<input checked="" type="checkbox"/>	<input type="checkbox"/>
20	wooden composite ceiling tiles		<input checked="" type="checkbox"/>	<input type="checkbox"/>
21			<input checked="" type="checkbox"/>	<input type="checkbox"/>
22	Drywall north joint		<input checked="" type="checkbox"/>	<input type="checkbox"/>
23	compound and tape		<input checked="" type="checkbox"/>	<input type="checkbox"/>
24			<input checked="" type="checkbox"/>	<input type="checkbox"/>
25			<input checked="" type="checkbox"/>	<input type="checkbox"/>
26			<input checked="" type="checkbox"/>	<input type="checkbox"/>
27	Plaster with finish		<input checked="" type="checkbox"/>	<input type="checkbox"/>
28			<input checked="" type="checkbox"/>	<input type="checkbox"/>
29			<input checked="" type="checkbox"/>	<input type="checkbox"/>
30	Slate square pattern		<input checked="" type="checkbox"/>	<input type="checkbox"/>

SECTION IV
Photographic Log

*Asbestos & Lead-Based Paint Assessment
City of Spartanburg
270 Arch Street
Spartanburg, South Carolina*



Photo 1 -- 270 Arch Street in Spartanburg, SC.



Photo 2 – Roll shingle roof (2) & felt (2).



Photo 3 – Cement board siding and felt.



Photo 4 – Window glazing.



Photo 5 – Window casing caulk.



Photo 6 – Door caulk.



Photo 7 – Ceiling texture over wooden composite ceiling tiles.



Photo 8 – Drywall with joint compound and tape.



Photo 9 – Plaster with finish.



Photo 10 – Slate square pattern vinyl floor with mastic (top layer).



Photo 11 – 12"x12" tan speckled floor tile with mastic (2nd layer).



Photo 12 – Yellow pattern vinyl floor with no mastic (3rd layer).



Photo 13 – Flooring paper throughout under wood.



Photo 14 – Green streaked floor tile with mastic over cream vinyl floor with mastic .

SECTION V

SC DHEC Asbestos Inspector License

SCDHEC ISSUED
Asbestos ID Card

Thomas H Oliver

Expiration Date



CONSULTBI BI-00680 01/20/17
AIRSAMPLER AS-00202 02/02/17

This card is nontransferable and considered invalid if loaned or given to another person for identification. This card will also be invalid if altered or defaced. This card is property of SCDHEC. It must be returned to the department if the holder's accreditation is revoked or if this card is invalidated. Any person performing regulated asbestos activities without current accreditation shall be subject to legal sanction. This card must be returned upon expiration and/or issuance of a new card.

YOU MUST HAVE THIS IDENTIFICATION CARD WITH YOU ON THE JOB.

For information or corrections contact: SCDHEC - Asbestos Section
2600 Bull Street
Columbia, SC 29201
(803) 898-4289