



Asbestos & Lead Based Paint Assessment

City of Spartanburg
437 Arch Street
Spartanburg, South Carolina

Prepared for:

The City of Spartanburg
201 Caulder Avenue
Spartanburg, South Carolina

Prepared by:

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

Project Number: 0815-163

February 29, 2016





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 0815-163

February 29, 2016

Mr. Lynn Coggins
City of Spartanburg
P.O. Box 1749
Spartanburg, South Carolina 29304

Reference: Asbestos and Lead-Based Paint Assessment Services
437 Arch Street
Spartanburg, South Carolina

Dear Mr. Coggins:

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.

Thomas H. Oliver
Director of Operations

Appendices

ASBESTOS AND LEAD BASED PAINT ASSESSMENT

**CITY OF SPARTANBURG
437 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:	2/29/2016	Page Number:	1 of 4
Client:	City of Spartanburg	Client Contact:	Mr. Lynn Coggins
Client Address:	201 Caulder Avenue	Client Phone Number:	(864) 596-2914
	Spartanburg, SC 29304		
Project:	Asbestos and Lead Evaluation		
Property Address:	437 Arch Street		
	Spartanburg, SC		
Assessor:	Thomas H. Oliver	Date of Assessment:	2/1/2016
Company:	Apex Environmental Management	Phone Number	
	7 Winchester Court		
	Mauldin, SC 29662		
Purpose of Assessment:	Demolition	Age of Structure:	Approx. 80 years
Building Type:	Residential	Number of Stories:	1
Foundation:	Crawlspace	Approximate Square Footage	2,300 SF

EXTERIOR BUILDING MATERIALS

- Pitched wooden roof with shingles & felt
- Cement board siding with felt over wooden siding.
- Wooden framed windows with glazing.
- Wooden framed doors with no caulk.
- Chimney mastic on 1 chimney assumed positive.
- Exterior Small Shed: roof shingles & felt; CMU block walls; concrete floors; wooden windows with glazing.
- Exterior Big Shed: roof shingles with no felt, CMU block walls; concrete floor.

INTERIOR BUILDING MATERIALS

- Multiple types & layers of vinyl floor with & without mastics.
- Wooden floors.
- Plaster with finish.
- Drywall with joint compound & tape.
- Wooden wall panels.
- Drywall is beneath plaster in portions of the residence.

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-three (43) 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). Twenty (20) 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. Multiple 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 2,100 SF of exterior cement board siding.
- Approximately 115 SF of tan 9" x 9" floor tile (2nd layer) in the hallway.
- Approximately 165 SF of grey 9" x 9" floor tile in the front left bedroom (top layer) & in the bathroom (2nd layer).
- Approximately 6 LF of chimney mastic on 1 chimney - assumed.

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 µg/m³) during an eight-hour workday and a permissible exposure level of fifty micrograms per cubic meter (50 µg/m³) for employees.

Currently, SCDHEC defines LBP as paint containing in excess of, or equal to, 1.0 mg/cm³. 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 blue wooden porch ceiling & columns.
- Exterior white wooden windows.
- Exterior white metal over wood windows.
- Exterior Big Shed white wooden roof.

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/cm²) 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 mg/cm² or above to satisfy the OSHA requirements. If a baseline exposure lower than the OSHA Action Level of 30 micrograms per cubic meter (µg/m³) 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 & Lead Tables

ASBESTOS SURVEY FIELD DATA SHEET

Project Name: COS 437 Arch Street ACM

Sampled By: Thomas Oliver

Project Location: 437 Arch St, Spartanburg SC

Project Manager: Thomas Oliver

Project Number: 0815-163

Date: 2/1/2016

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
1	Roof	Roof shingles (2 layers) & felt	PLM - NAD	Non-Friable	Good	2,400 SF
2			TEM - NAD			
3						
4	Exterior windows	Window glazing	PLM - NAD	Non-Friable	Good	10 EA
5			TEM - NAD			
6						
7	Exterior siding	Cement board siding	PLM 15% chrysotile	Non-Friable	Good	2,100 SF
8						
9						
10	Exterior siding	Felt paper beneath cement board siding	PLM - NAD	Non-Friable	Good	2,100 SF
11			TEM - <1% chrysotile			
12						
13	Back porch, hallway & kitchen	Wood pattern vinyl floor with no mastic	PLM - NAD	Non-Friable	Good	200 SF
14			TEM - NAD			
15						
16	Kitchen	Residual vinyl floor	PLM - NAD	Friable	Significantly Damaged	155 SF
17			TEM - NAD			
18						
19	Hallway (2nd layer)	Tan 9" x 9" floor tile with mastic & felt	PLM 5% chry (tile) NAD (mastic & felt)	Non-Friable	Good	115 SF
20			TEM - NAD (felt) <1% chry (mastic)			
21						
22	Top layer in front left bedroom & 2nd layer in bathroom	Grey 9" x 9" floor tile with mastic & felt	PLM 5% chry (tile) NAD (mastic & felt)	Non-Friable	Good	165 SF
23			TEM			
24			<1% chry (mastic & felt)			

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
25	Bathroom (top layer)	Cream square pattern vinyl floor with no mastic	PLM - NAD	Non-Friable	Good	30 SF
26			TEM - NAD			
27						
28	Throughout	Plaster with finish	PLM - NAD	Friable	Good	4,500 SF
29						
30						
31						
32						
33	Throughout	Drywall with joint compound & no tape	PLM - NAD	Friable	Good	1,500 SF
34						
35						
36						
37						
38	Small Shed A roof	Roof shingles (2 layers) & felt	PLM - NAD	Non-Friable	Good	150 SF
39			TEM - NAD			
40						
41	Big Shed B roof	Roof shingles (5 layers) & felt	PLM - NAD	Friable	Significantly Damaged	400 SF
42			TEM - NAD			
43						
Assumed	Roof/chimney	Roof/chimney mastic on 1 chimney	Assumed	Non-Friable	Good	6 LF

NAD = No Asbestos Detected

Bold = Positive For Asbestos

LF = Linear Feet

SF = Square Feet

EA = Each

Chry = Chrysotile

Amos = Amosite

FIELD DATA SHEET

LBP ANALYSIS

Project Name: COS 437 Arch Street

Sampled By: Tom Oliver

Project Location: 437 Arch St, Spartanburg SC

Project Manager: Tom Oliver

Project Number: 0815-163

Date: 2/1/2016

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m ³)
1		resolution			
2		calibration			
3		calibration			
4		calibration			
5	exterior	siding	blue	cement board	0.00
6	exterior	porch column	blue	wood	1.30
7	exterior	porch ceiling	blue	wood	1.35
8	exterior	door frame	white	wood	0.00
9	exterior	door frame	red	metal	0.00
10	exterior	shutters	red	wood	0.05
11	exterior	window	white	wood	2.29
12	small shed	wall	white	CMU block	0.00
13	small shed	wall	tan	CMU block	0.00
14	small shed	roof	white	wood	0.00
15	big shed	wall	white	CMU block	0.00
16	big shed	roof	white	wood	1.97
17	interior	door frame	yellow	wood	0.01
18	interior	door frame	tan	wood	0.01
19	interior	window	tan	wood	0.05
20	interior	base board	tan	wood	0.01
21	interior	wall	green	plaster	0.11
22	interior	wall	tan	plaster	0.19
23	interior	cabinets	tan	wood	0.03
24	interior	wall	yellow	drywall	0.00

Bold is Lead Based Paint

SECTION III

Laboratory Analytical Results



February 9, 2016

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 437 Arch St.; 0815-163
CEI LAB CODE: B16-1084

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on February 2, 2016. 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", written in a cursive style.

Tianbao Bai, Ph.D., CIH
Laboratory Director





ASBESTOS ANALYTICAL REPORT

By: Polarized Light Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS 437 Arch St.; 0815-163

CEI LAB CODE: B16-1084

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

REPORT DATE: 02/09/16

TOTAL SAMPLES ANALYZED: 31

SAMPLES >1% ASBESTOS: 3

TEL: 866-481-1412

www.ceilabs.com



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 437 Arch St.; 0815-163

CEI LAB CODE: B16-1084

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
1	Layer 1	B138891	Black	Roof Shingle	None Detected
	Layer 2	B138891	Black	Roof Shingle	None Detected
	Layer 3	B138891	Black	Felt Paper	None Detected
2	Layer 1	B138892	Black	Roof Shingle	None Detected
	Layer 2	B138892	Black	Roof Shingle	None Detected
	Layer 3	B138892	Black	Felt Paper	None Detected
3	Layer 1	B138893		Sample Submitted for TEM Analysis	
	Layer 2	B138893		Sample Submitted for TEM Analysis	
	Layer 3	B138893		Sample Submitted for TEM Analysis	
4		B138894	Tan	Window Glazing	None Detected
5		B138895	Tan	Window Glazing	None Detected
6		B138896		Sample Submitted for TEM Analysis	
7		B138897	Gray	Siding	Chrysotile 15%
8		B138898		Sample Not Analyzed per COC	
9		B138899		Sample Not Analyzed per COC	
10		B138900	Black	Felt Paper	None Detected
11		B138901	Black	Felt Paper	None Detected
12		B138902		Sample Submitted for TEM Analysis	
13		B138903	Brown	Vinyl Flooring	None Detected
14		B138904	Brown	Vinyl Flooring	None Detected
15		B138905		Sample Submitted for TEM Analysis	
16		B138906	Brown	Vinyl Flooring	None Detected
17		B138907	Brown	Vinyl Flooring	None Detected
18		B138908		Sample Submitted for TEM Analysis	
19		B138909A	Tan	Floor Tile	Chrysotile 5%
	Layer 1	B138909B	Brown	Mastic	None Detected



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 437 Arch St.; 0815-163

CEI LAB CODE: B16-1084

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
20	Layer 2	B138909B	Black	Felt Paper	None Detected
		B138910A		Sample Not Analyzed per COC	
21	Layer 1	B138910B	Brown	Mastic	None Detected
	Layer 2	B138910B	Black	Felt Paper	None Detected
		B138911A		Sample Not Analyzed per COC	
	Layer 1	B138911B		Sample Submitted for TEM Analysis	
22	Layer 2	B138911B		Sample Submitted for TEM Analysis	
		B138912A	Tan	Floor Tile	Chrysotile 5%
	Layer 1	B138912B	Brown	Mastic	None Detected
	Layer 2	B138912B	Black	Felt Paper	None Detected
23		B138913A		Sample Not Analyzed per COC	
	Layer 1	B138913B	Brown	Mastic	None Detected
	Layer 2	B138913B	Black	Felt Paper	None Detected
		B138914A		Sample Not Analyzed per COC	
24	Layer 1	B138914B		Sample Submitted for TEM Analysis	
	Layer 2	B138914B		Sample Submitted for TEM Analysis	
		B138915	Cream	Vinyl Flooring	None Detected
		B138916	Cream	Vinyl Flooring	None Detected
25		B138917		Sample Submitted for TEM Analysis	
		B138918			
26	Layer 1	B138918	White	Plaster Finish Coat	None Detected
	Layer 2	B138918	Gray	Plaster Base Coat	None Detected
27	Layer 1	B138919	White	Plaster Finish Coat	None Detected
	Layer 2	B138919	Gray	Plaster Base Coat	None Detected
28	Layer 1	B138920	White	Plaster Finish Coat	None Detected
	Layer 2	B138920	Gray	Plaster Base Coat	None Detected
29	Layer 1	B138921	White	Plaster Finish Coat	None Detected
	Layer 2	B138921	Gray	Plaster Base Coat	None Detected



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 437 Arch St.; 0815-163

CEI LAB CODE: B16-1084

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
32	Layer 1	B138922	White	Plaster Finish Coat	None Detected
	Layer 2	B138922	Gray	Plaster Base Coat	None Detected
33	Layer 1	B138923	White,Tan	Drywall	None Detected
	Layer 2	B138923	White	Joint Compound	None Detected
34	Layer 1	B138924	White,Tan	Drywall	None Detected
	Layer 2	B138924	White	Joint Compound	None Detected
35	Layer 1	B138925	White,Tan	Drywall	None Detected
	Layer 2	B138925	White	Joint Compound	None Detected
36	Layer 1	B138926	White,Tan	Drywall	None Detected
	Layer 2	B138926	White	Joint Compound	None Detected
37	Layer 1	B138927	White,Tan	Drywall	None Detected
	Layer 2	B138927	White	Joint Compound	None Detected
38	Layer 1	B138928	Black	Roof Shingle	None Detected
	Layer 3	B138928	Black	Felt Paper	None Detected
39	Layer 1	B138929	Black	Roof Shingle	None Detected
	Layer 2	B138929	Black	Roof Shingle	None Detected
	Layer 2	B138929	Black	Roof Shingle	None Detected
	Layer 3	B138929	Black	Felt Paper	None Detected
40	Layer 1	B138930		Sample Submitted for TEM Analysis	
	Layer 2	B138930		Sample Submitted for TEM Analysis	
	Layer 3	B138930		Sample Submitted for TEM Analysis	
41	Layer 1	B138931	Black	Roof Shingle	None Detected
	Layer 2	B138931	Black	Roof Shingle	None Detected
	Layer 3	B138931	Black	Roof Shingle	None Detected
	Layer 4	B138931	Black	Roof Shingle	None Detected
	Layer 5	B138931	Black	Roof Shingle	None Detected
42	Layer 1	B138932	Black	Roof Shingle	None Detected
	Layer 2	B138932	Black	Roof Shingle	None Detected
	Layer 3	B138932	Black	Roof Shingle	None Detected



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 437 Arch St.; 0815-163

CEI LAB CODE: B16-1084

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
43	Layer 4	B138932	Black	Roof Shingle	None Detected
	Layer 5	B138932	Black	Roof Shingle	None Detected
	Layer 1	B138933		Sample Submitted for TEM Analysis	
	Layer 2	B138933		Sample Submitted for TEM Analysis	
	Layer 3	B138933		Sample Submitted for TEM Analysis	
	Layer 4	B138933		Sample Submitted for TEM Analysis	
	Layer 5	B138933		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: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 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 B138891	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	None Detected
Layer 2 B138891	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	None Detected
Layer 3 B138891	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
2 Layer 1 B138892	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	None Detected
Layer 2 B138892	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	None Detected
Layer 3 B138892	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
3 Layer 1 B138893	Sample Submitted for TEM Analysis						
Layer 2 B138893	Sample Submitted for TEM Analysis						



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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CEI Lab Code: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 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 B138893	Sample Submitted for TEM Analysis						
4 B138894	Window Glazing	Heterogeneous Tan Non-fibrous Bound		95% 5%	Binder Paint		None Detected
5 B138895	Window Glazing	Heterogeneous Tan Non-fibrous Bound		95% 5%	Binder Paint		None Detected
6 B138896	Sample Submitted for TEM Analysis						
7 B138897	Siding	Heterogeneous Gray Fibrous Tightly Bound		80% 5%	Binder Paint		15% Chrysotile
8 B138898	Sample Not Analyzed per COC						
9 B138899	Sample Not Analyzed per COC						
10 B138900	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
11 B138901	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
12 B138902	Sample Submitted for TEM Analysis						



ASBESTOS BULK ANALYSIS

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CEI Lab Code: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
13 B138903	Vinyl Flooring	Heterogeneous Brown Fibrous Bound	25%	Cellulose Fiberglass	50%	Vinyl	None Detected
14 B138904	Vinyl Flooring	Heterogeneous Brown Fibrous Bound	25%	Cellulose Fiberglass	50%	Vinyl	None Detected
15 B138905	Sample Submitted for TEM Analysis						
16 B138906	Vinyl Flooring	Heterogeneous Brown Fibrous Bound	50%	Cellulose	25% 25%	Vinyl Tar	None Detected
17 B138907	Vinyl Flooring	Heterogeneous Brown Fibrous Bound	50%	Cellulose	25% 25%	Vinyl Tar	None Detected
18 B138908	Sample Submitted for TEM Analysis						
19 B138909A	Floor Tile	Heterogeneous Tan Non-fibrous Bound			95%	Vinyl	5% Chrysotile
Layer 1 B138909B	Mastic	Heterogeneous Brown Non-fibrous Bound			100%	Mastic	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

CEI Lab Code: B16-1084

Date Received: 02-02-16

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Date Reported: 02-09-16

Project: COS 437 Arch St.; 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 B138909B	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
20 B138910A	Sample Not Analyzed per COC						
Layer 1 B138910B	Mastic	Heterogeneous Brown Non-fibrous Bound			100%	Mastic	None Detected
Layer 2 B138910B	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
21 B138911A	Sample Not Analyzed per COC						
Layer 1 B138911B	Sample Submitted for TEM Analysis						
Layer 2 B138911B	Sample Submitted for TEM Analysis						
22 B138912A	Floor Tile	Heterogeneous Tan Non-fibrous Bound			95%	Vinyl	5% Chrysotile
Layer 1 B138912B	Mastic	Heterogeneous Brown Non-fibrous Bound			100%	Mastic	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

CEI Lab Code: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 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 B138912B	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
23 B138913A	Sample Not Analyzed per COC						
Layer 1 B138913B	Mastic	Heterogeneous Brown Non-fibrous Bound			100%	Mastic	None Detected
Layer 2 B138913B	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
24 B138914A	Sample Not Analyzed per COC						
Layer 1 B138914B	Sample Submitted for TEM Analysis						
Layer 2 B138914B	Sample Submitted for TEM Analysis						
25 B138915	Vinyl Flooring	Heterogeneous Cream Fibrous Bound	25% 25%	Cellulose Fiberglass	50%	Vinyl	None Detected
26 B138916	Vinyl Flooring	Heterogeneous Cream Fibrous Bound	25% 25%	Cellulose Fiberglass	50%	Vinyl	None Detected
27 B138917	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: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
28 Layer 1 B138918	Plaster Finish Coat	Heterogeneous		60% Binder	None Detected
		White		35% Silicates	
		Non-fibrous		5% Paint	
		Bound			
Layer 2 B138918	Plaster Base Coat	Heterogeneous		40% Binder	None Detected
		Gray		60% Silicates	
		Non-fibrous			
		Bound			
29 Layer 1 B138919	Plaster Finish Coat	Heterogeneous		60% Binder	None Detected
		White		35% Silicates	
		Non-fibrous		5% Paint	
		Bound			
Layer 2 B138919	Plaster Base Coat	Heterogeneous		40% Binder	None Detected
		Gray		60% Silicates	
		Non-fibrous			
		Bound			
30 Layer 1 B138920	Plaster Finish Coat	Heterogeneous		60% Binder	None Detected
		White		35% Silicates	
		Non-fibrous		5% Paint	
		Bound			
Layer 2 B138920	Plaster Base Coat	Heterogeneous		40% Binder	None Detected
		Gray		60% Silicates	
		Non-fibrous			
		Bound			
31 Layer 1 B138921	Plaster Finish Coat	Heterogeneous		60% Binder	None Detected
		White		35% Silicates	
		Non-fibrous		5% Paint	
		Bound			



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

CEI Lab Code: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 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 B138921	Plaster Base Coat	Heterogeneous Gray Non-fibrous Bound			40% 60%	Binder Silicates	None Detected
32 Layer 1 B138922	Plaster Finish Coat	Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Silicates Paint	None Detected
Layer 2 B138922	Plaster Base Coat	Heterogeneous Gray Non-fibrous Bound			40% 60%	Binder Silicates	None Detected
33 Layer 1 B138923	Drywall	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
Layer 2 B138923	Joint Compound	Heterogeneous White Non-fibrous Bound	10%	Fiberglass	55% 35%	Binder Calc Carb	None Detected
34 Layer 1 B138924	Drywall	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
Layer 2 B138924	Joint Compound	Heterogeneous White Non-fibrous Bound	10%	Fiberglass	55% 35%	Binder Calc Carb	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

CEI Lab Code: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
35 Layer 1 B138925	Drywall	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
Layer 2 B138925	Joint Compound	Heterogeneous White Non-fibrous Bound	10%	Fiberglass	55% 35%	Binder Calc Carb	None Detected
36 Layer 1 B138926	Drywall	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
Layer 2 B138926	Joint Compound	Heterogeneous White Non-fibrous Bound	10%	Fiberglass	55% 35%	Binder Calc Carb	None Detected
37 Layer 1 B138927	Drywall	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
Layer 2 B138927	Joint Compound	Heterogeneous White Non-fibrous Bound	10%	Fiberglass	55% 35%	Binder Calc Carb	None Detected
38 Layer 1 B138928	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

CEI Lab Code: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 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 B138928	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
39 Layer 1 B138929	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	None Detected
Layer 2 B138929	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	None Detected
Layer 2 B138929	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	None Detected
Layer 3 B138929	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
40 Layer 1 B138930	Sample Submitted for TEM Analysis						
Layer 2 B138930	Sample Submitted for TEM Analysis						
Layer 3 B138930	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: B16-1084
Date Received: 02-02-16
Date Analyzed: 02-08-16
Date Reported: 02-09-16

Project: COS 437 Arch St.; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
41 Layer 1 B138931	Roof Shingle	Heterogeneous	60%	Fiberglass	35%	Tar	None Detected
		Black			5%	Gravel	
		Fibrous					
		Bound					
Layer 2 B138931	Roof Shingle	Heterogeneous	60%	Fiberglass	35%	Tar	None Detected
		Black			5%	Gravel	
		Fibrous					
		Bound					
Layer 3 B138931	Roof Shingle	Heterogeneous	60%	Fiberglass	35%	Tar	None Detected
		Black			5%	Gravel	
		Fibrous					
		Bound					
Layer 4 B138931	Roof Shingle	Heterogeneous	60%	Fiberglass	35%	Tar	None Detected
		Black			5%	Gravel	
		Fibrous					
		Bound					
Layer 5 B138931	Roof Shingle	Heterogeneous	60%	Fiberglass	35%	Tar	None Detected
		Black			5%	Gravel	
		Fibrous					
		Bound					
42 Layer 1 B138932	Roof Shingle	Heterogeneous	60%	Fiberglass	35%	Tar	None Detected
		Black			5%	Gravel	
		Fibrous					
		Bound					
Layer 2 B138932	Roof Shingle	Heterogeneous	60%	Fiberglass	35%	Tar	None Detected
		Black			5%	Gravel	
		Fibrous					
		Bound					



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

CEI Lab Code: B16-1084

Date Received: 02-02-16

Date Analyzed: 02-08-16

Date Reported: 02-09-16

Project: COS 437 Arch St.; 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 B138932	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35%	Tar Gravel	None Detected
Layer 4 B138932	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35%	Tar Gravel	None Detected
Layer 5 B138932	Roof Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35%	Tar Gravel	None Detected
43 Layer 1 B138933	Sample Submitted for TEM Analysis						
Layer 2 B138933	Sample Submitted for TEM Analysis						
Layer 3 B138933	Sample Submitted for TEM Analysis						
Layer 4 B138933	Sample Submitted for TEM Analysis						
Layer 5 B138933	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

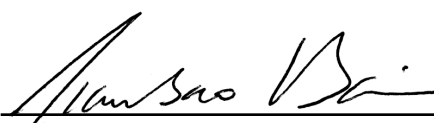
LIMIT OF DETECTION: <1% by visual estimation

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: 
Megan Fisher

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

(43)

LAB USE ONLY:

CEI Lab Code:

CEI Lab I.D. Range:

B110 1084
B138891 B138933

COMPANY INFORMATION		PROJECT INFORMATION	
CEI CLIENT #:		Job Contact:	Tom Oliver
Company:	Apex Environmental Management, Inc.	Email / Tel:	toliver@apex-ehs.com
Address:	7 Winchester Court	Project Name:	COS 437 Arch St.
	Maulding, South Carolina 29662	Project ID#	0815-163
Email:	toliver@apex-ehs.com	PO #:	
Tel:	864-404-3210	STATE SAMPLES COLLECTED IN:	South Carolina
Fax:	864-404-3213		

GENERAL INSTRUCTIONS			
POSITIVE STOP ANALYSIS	<input checked="" type="checkbox"/>	PLM DUE DATE:	/ /
ANALYZE NOB'S BY TEM	<input checked="" 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:
	2-1-16	
		Date/Time
		2/2/16 10:00

Samples will be disposed of 30 days after analysis



ASBESTOS SAMPLING FORM

B16 1084

COMPANY CONTACT INFORMATION

Company: Apex Environmental Management, Inc.

Job Contact: Tom Oliver

Project Name: COS 437 Arch St.

Project ID #: 0815-163

Tel: 864-640-5127

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
1	Roof shingles + felt (2 layers)		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
2	↓		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
3	↓		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
4	Window Glazing		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
5	↓		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
6	↓		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
7	Cement Board Siding		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
8	↓		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
9	↓		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
10	Felt paper beneath		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
11	cement board siding		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
12	↓		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
13	Wood pattern vinyl floor		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
14	↓		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
15	↓		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
16	Residual Vinyl floor		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
17	↓		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
18	↓		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
19	Tan 9"x9" Floor tile +		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
20	mastic + felt.		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
21	↓		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
22	Grey 9"x9" Floor tile,		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
23	mastic + felt		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
24	↓		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>

Page 2 of 3



February 15, 2016

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 437 Arch St.; 0815-163
CEI LAB CODE: T16-0180

Dear Customer:

Enclosed are asbestos analysis results for TEM bulk samples received at our laboratory on February 8, 2016. 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", 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 437 Arch St.; 0815-163

CEI LAB CODE: T16-0180

TEST METHOD: Bulk Chatfield
EPA 600 / R93 / 116

REPORT DATE: 02/15/16

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: T16-0180
Date Received: 02-08-16
Date Analyzed: 02-15-16
Date Reported: 02-15-16

Project: COS 437 Arch St.; 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 T46751	Black Roof Shingle	0.617	21.9	30.6	47.5	None Detected
3 T46752	Black Roof Shingle	0.589	22.4	39.7	37.9	None Detected
3 T46753	Black Felt Paper	0.431	96.1	3.2	.7	None Detected
6 T46754	Tan Window Glazing	0.29	11.4	65.5	23.1	None Detected
12 T46755	Black Felt Paper	0.47	95.7	3	1.3	<1% Chrysotile
15 T46756	Brown Vinyl Flooring	0.284	69	29.9	1.1	None Detected
18 T46757	Brown Vinyl Flooring	0.229	82.5	8.7	8.8	None Detected
21 T46758	Brown Mastic	0.183	61.2	11.5	27.3	<1% Chrysotile
21 T46759	Black Felt Paper	0.219	96.8	1.8	1.4	None Detected
24 T46760	Brown Mastic	0.128	60.2	27.3	12.5	<1% Chrysotile
24 T46761	Black Felt Paper	0.104	95.2	2.9	1.9	<1% Chrysotile
27 T46762	Cream Vinyl Flooring	0.232	58.2	15.1	26.7	None Detected



ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

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

CEI Lab Code: T16-0180
Date Received: 02-08-16
Date Analyzed: 02-15-16
Date Reported: 02-15-16

Project: COS 437 Arch St.; 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 %
40 T46763	Black Roof Shingle	0.704	19.7	47.6	32.7	None Detected
40 T46764	Black Roof Shingle	0.614	21.8	47.4	30.8	None Detected
40 T46765	Black Felt Paper	0.765	89.2	10.5	.3	None Detected
43 T46766	Black Roof Shingle	0.379	52.8	17.7	29.5	None Detected
43 T46767	Black Roof Shingle	0.301	40.9	44.5	14.6	None Detected
43 T46768	Black Roof Shingle	0.399	42.4	44.1	13.5	None Detected
43 T46769	Black Roof Shingle	0.305	57	38.4	4.6	None Detected
43 T46770	Black Roof Shingle	0.485	43.3	47	9.7	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.

ANALYST:

A handwritten signature in black ink, appearing to read "Daniel Liguori", is written over a horizontal line.

Daniel Liguori

APPROVED BY:

A handwritten signature in black ink, appearing to read "Tianbao Bai", is written over a horizontal line.

Tianbao Bai, Ph.D., CIH
Laboratory Director



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

T16-0180
746751-770
(20)

ASBESTOS CHAIN OF CUSTODY

(43)

LAB USE ONLY:

CEI Lab Code:

B16 1084

CEI Lab I.D. Range:

B138891 B138933

COMPANY INFORMATION		PROJECT INFORMATION	
CEI CLIENT #:		Job Contact:	Tom Oliver
Company:	Apex Environmental Management, Inc.	Email / Tel:	toliver@apex-ehs.com
Address:	7 Winchester Court Mauldin, South Carolina 29662	Project Name:	COS 437 Arch St.
Email:	toliver@apex-ehs.com	Project ID#	0815-163
Tel:	864-404-3210	PO #:	
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 checked="" 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
	2-1-16 218116		2/2/16 10:00

Samples will be disposed of 30 days after analysis



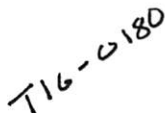
T16-0180

ASBESTOS SAMPLING FORM

B16 1084

COMPANY CONTACT INFORMATION	
Company: Apex Environmental Management, Inc.	Job Contact: Tom Oliver
Project Name: COS 437 Arch St.	
Project ID #: 0815-163	Tel: 864-640-5127

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
1	Roof shingles + felt (2 layers)		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
2			PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
3			PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
4	Window Glazing		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
5			PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
6			PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
7	Cement Board Siding		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
8			PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
9			PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
10	Felt paper beneath		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
11	cement board siding		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
12			PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
13	Wood pattern vinyl floor		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
14			PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
15			PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
16	Residual vinyl floor		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
17			PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
18			PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
19	Tan 9"x9" Floor tile +		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
20	mastic + felt.		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
21			PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
22	Grey 9"x9" Floor tile,		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
23	mastic + felt		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
24			PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>



B16 1084

Company: Apex Environmental Management, Inc.	Job Contact: Tom Oliver
Project Name: COS 437 Arch St.	
Project ID #: 0815-163	Tel: 864-640-5127

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SECTION IV
Photographic Log

*Asbestos & LBP Assessment
City of Spartanburg
437 Arch Street
Spartanburg, South Carolina*



Photo 1 -- 437 Arch Street in Spartanburg, SC.



Photo 2 – Roof shingles & felt on house.



Photo 3 – Chimney mastic assumed positive on house roof.



Photo 4 – Small Shed A.



Photo 5 – Roof shingles & felt on Small Shed A.



Photo 6 – Collapsed Big Shed B.



Photo 7 – Roof shingles & felt on Big Shed B.



Photo 8 – Cement board siding & felt beneath on house.



Photo 9 – Top layer of wood pattern vinyl floor with no mastic in back porch, kitchen & hallway.



Photo 10 – Residual vinyl floor in kitchen.



Photo 11 – 2nd layer of tan 9" x 9" floor tile with mastic & felt in the hallway.



Photo 12 – Top layer of grey 9" x 9" floor tile with mastic & felt in the front left bedroom & 2nd layer in bathroom.



Photo 13 – Top layer cream square pattern vinyl floor with no mastic in the bathroom.



Photo 14 – Drywall with joint compound & tape.

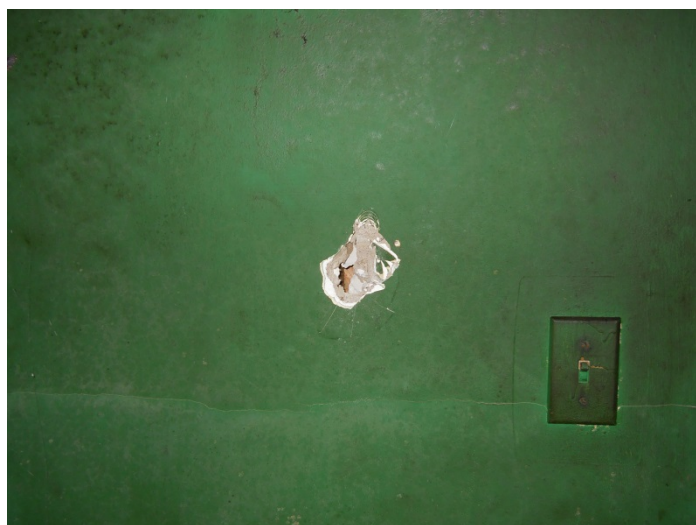


Photo 15 – Plaster with finish.



Photo 16 – Plaster with finish over drywall with joint compound & tape.

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