



Asbestos & Lead Based Paint Assessment

City of Spartanburg
620 South Irwin Avenue
Spartanburg, South Carolina 29306

Prepared for:

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

Prepared by:

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

Project Number: 0118-14

May 17, 2017





Apex Project Number 0118-14

May 17, 2018

7 Winchester Court
Mauldin, SC 29662
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Mr. Jeff Tillerson
City of Spartanburg
440 South Church Street, Suite B
Spartanburg, SC 29306

Reference: Asbestos and Lead-Based Paint Assessment Services
620 South Irwin Avenue
Spartanburg, South Carolina 29306

SERVICES

- Indoor Air Quality
- Mold Remediation
- Asbestos & Lead
- Industrial Hygiene
- Worker Health & Safety
- Mold Consulting
- Moisture Management Plans
- Safety Assessment
- Environmental Site Assessments
- Hazard Communication

Dear Mr. Tillerson:

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

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

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

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

Respectfully submitted,
APEX ENVIRONMENTAL MANAGEMENT, INC.

A handwritten signature in blue ink, appearing to read 'Tom Oliver', is written over a horizontal line.

Tom Oliver
Director of Operations

Appendices

ASBESTOS AND LEAD BASED PAINT ASSESSMENT

**CITY OF SPARTANBURG
620 SOUTH IRWIN AVENUE
SPARTANBURG, SOUTH CAROLINA 29306**

APEX PROJECT NO. 0118-14

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SECTION I

Asbestos & Lead Evaluation Report

ASBESTOS EVALUATION REPORT APEX PROJECT NUMBER: 0118-14
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Date:	5/17/2018	Page Number:	1 of 4
Client:	City of Spartanburg	Client Contact:	Mr. Jeff Tillerson
Client Address:	440 South Church Street Suite B Spartanburg, SC 29306	Client Phone Number:	(864) 596-2911
Project:	Asbestos Evaluation and Lead Based Paint Assessment		
Property Address:	620 South Irwin Avenue Spartanburg, SC 29306		
Assessor:	Tom Oliver	Date of Assessment:	5/3/2018
Company:	Apex Environmental Management 7 Winchester Court Mauldin, SC 29662	Phone Number:	(864) 404-3210
Purpose of Assessment:	Demolition	Age of Structure:	Approximately 105 years
Building Type:	Residential	Number of Stories:	1
Foundation:	CMU Block & Brick Crawlspace	Approximate Square Footage:	1,600 SF

EXTERIOR BUILDING MATERIALS

- Pitched wooden roof with shingles & felt.
- Roof flashing with mastic/tar.
- Wooden siding.
- Wooden shake shingle siding.
- Wooden windows with glazing & caulk.
- Wooden doors with no caulk.
- Black mastic/tar on 2 chimneys – assumed positive.

INTERIOR BUILDING MATERIALS

- Plaster with finish walls & ceilings.
- Drywall with joint compound walls & ceilings.
- Double layer of drywall exists.
- Drywall over plaster exists.
- Plaster over drywall exists.
- Wooden floors.
- Multiple types & layers of vinyl flooring with and without mastics.
- Vinyl flooring exists under wood.
- Wall material with felt over plaster in the kitchen.
- A portion of the ceilings & floors are collapsing.

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 Eurofins CEI Labs, Inc. (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-six (46) 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). Thirteen (13) samples were analyzed using TEM.

Lead-Based Paint

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

RESULTS

Asbestos Results

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

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

- Approximately 50 LF of mastic/tar on roof flashing.
- Approximately 13 wooden windows with glazing.
- Approximately 40 SF of yellow square pattern vinyl floor & mastic (2nd layer) under wood in the back entry hallway.
- Approximately 12 LF of mastic/tar on 2 chimneys – assumed positive.

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/cm². The laboratory analytical results and chain-of-custody are included in the Lead Analysis Reports in Appendix II. The approximate locations of the paint samples collected and analytical results are presented in the *LBP Data Table* included with this report.

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

Exterior

- White wooden siding, window systems, door frames, house trim & shake shingles.
- White wooden front porch ceiling, columns & headers.

Interior

- White wooden doors, door frames, base boards & window systems.

RECOMMENDATIONS AND DISCUSSION

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

Apex recommends the following:

1. Abate the asbestos containing materials in the structure prior to renovation or demolition.
2. Follow applicable asbestos regulations during renovation or demolition of the structure. You should be aware that stringent requirements are imposed upon anyone renovating or demolishing a structure in which ACM will be disturbed. This work must be performed in accordance with OSHA asbestos regulations, 29 CFR 1910 & 1926, and NESHAP asbestos regulations 40 CFR 61, subpart M. South Carolina regulations require the accreditation of personnel who work in the asbestos field and notification and permitting fees for asbestos removal projects. There is a 10 working day notification period required prior to abatement of asbestos in a facility. Failure to take proper precautions and actions to protect human

health and the environment can result in penalties, danger to personnel, and construction delays.

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

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

Lead-Based Paint

Currently the South Carolina Department of Health and Environmental Control (SCDHEC) define LBP as paint containing greater than 1.0 milligram per square centimeter (mg/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 & LBP Data Tables

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

Project Name: COS 620 South Irwin Avenue ACM/LBP

Sampled By: Tom Oliver

Project Location: 620 South Irwin Avenue, Spartanburg, SC 29306

Project Manager: Tom Oliver

Project Number: 0118-14

Date: 5/3/2018

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
1	Roof	Roof shingles (1 layer & felt (1 layer)	PLM - NAD	Non-Friable	Good	2,200 SF
2			TEM - NAD			
3						
4	Roof flashing	Mastic/tar of roof flashing	5% chrysotile	Non-Friable	Good	50 LF
5						
6						
7	Wooden windows	Window glazing	2% chrysotile	Non-Friable	Good	13 EA
8						
9						
10	Wooden windows	Window caulk	PLM - NAD	Non-Friable	Good	13 EA
11			TEM - NAD			
12						
13	Throughout	Plaster with finish	PLM - NAD	Friable	Good	4,000 SF
14						
15						
16						
17						
18	Throughout	Drywall with joint compound & tape	PLM - NAD	Friable	Good	4,000 SF
19						
20						
21						
22						
23	Front left room, living room, dining room, kitchen, front bathroom & back-middle left bedroom	Popcorn ceiling texture	PLM - NAD	Friable	Good	950 SF
24						
25						

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

Project Name: COS 620 South Irwin Avenue ACM/LBP

Sampled By: Tom Oliver

Project Location: 620 South Irwin Avenue, Spartanburg, SC 29306

Project Manager: Tom Oliver

Project Number: 0118-14

Date: 5/3/2018

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
26	Kitchen	Wall material with felt over plaster	PLM - NAD	Non-Friable	Good	400 SF
27			TEM - NAD			
28						
29	Front bathroom (top layer)	12" x 12" green marble pattern self-stick floor tile & mastic	PLM - NAD	Non-Friable	Good	40 SF
30			TEM - NAD			
31						
32	Front bathroom (2nd layer); kitchen (top layer) & back bathroom (top layer)	Beige square pattern vinyl floor with no mastic	PLM - NAD	Non-Friable	Good	225 SF
33			TEM - NAD			
34						
35	Kitchen (2nd layer); back entry (2nd layer) & back entry hallway	12" x 12" wooden pattern self-stick floor tile & mastic	PLM - NAD	Non-Friable	Good	185 SF
36			TEM - NAD			
37						
38	Back entry (top layer)	Brown square pattern vinyl floor with no mastic	PLM - NAD	Non-Friable	Good	80 SF
39			TEM - NAD			
40						
41	Back entry hallway (under wood)	12" x 12" grey pattern self-stick floor tile & mastic over yellow square pattern vinyl floor & mastic	PLM - NAD (top layer tile & mastic);	Non-Friable	Good	40 SF
42			25% chry (2nd layer floor); 3% chry (2nd layer mastic)			
43			TEM - NAD (top layer tile) < 1% chry (top layer mastic)			
44	Front & back bathrooms	Tub/shower surround caulk	PLM - NAD	Non-Friable	Good	75 LF
45			TEM - NAD			
46						
47	Roof/chimneys	Mastic/tar on 2 chimneys	Assumed	Non-Friable	Good	12 LF

NAD = No Asbestos Detected

LF = Linear Feet

EA = Each

Amos = Amosite

Bold = Positive For Asbestos

SF = Square Feet

Chry = Chrysotile

FIELD DATA SHEET

LBP ANALYSIS

Project Name: COS 620 South Irwin Avenue ACM/LBP

Sampled By: Tom Oliver

Project Location: 620 South Irwin Avenue, Spartanburg, SC 29306

Project Manager Tom Oliver

Project Number: 0118-14

Date: 5/3/2018

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m ³)
1	Standardization Calibration				186.00
2	Calibration				1.15
3	Calibration				1.03
4	Calibration				1.07
5	Exterior	Siding	White	Wood	3.33
6	Exterior	Window	White	Wood	0.19
7	Exterior	Window frame	White	Wood	2.45
8	Exterior	Door	White	Wood	0.07
9	Exterior	Door frame	White	Wood	1.51
10	Exterior	Window shutter	White	Wood	0.00
11	Exterior	House trim	White	Wood	1.79
12	Front porch	Porch ceiling	White	Wood	3.10
13	Front porch	Shake shingles	White	Wood	2.67
14	Front porch	Column	White	Wood	4.66
15	Front porch	Rail cap	Blue	Wood	0.44
16	Front porch	Floor trim	Blue	Wood	0.02
17	Front porch	Steps	Blue	Concrete	0.11
18	Exterior	Foundation	Blue	Brick	0.56
19	Exterior	Foundation	Blue	CMU block	0.43
20	Exterior	Soffit	White	Wood	0.25
21	Exterior	Fascia	White	Wood	0.20
22	Front porch	Porch header	White	Wood	2.83
23	Exterior	Back siding	White	Wood	0.00
24	Front porch	Floor	Blue	Wood	0.04

FIELD DATA SHEET

LBP ANALYSIS

Project Name: COS 620 South Irwin Avenue ACM/LBP

Sampled By: Tom Oliver

Project Location: 620 South Irwin Avenue, Spartanburg, SC 29306

Project Manager Tom Oliver

Project Number: 0118-14

Date: 5/3/2018

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m ³)
25	Interior	Wall	Yellow	Plaster	0.00
26	Interior	Door	White	Wood	1.63
27	Interior	Door frame	White	Wood	1.36
28	Interior	Base board	White	Wood	1.02
29	Interior	Window	White	Wood	1.56
30	Interior	Window frame	White	Wood	0.78
31	Interior	Ceiling	Grey	Drywall	0.02
32	Interior	Wall	White	Drywall	0.00
33	Interior	Wall	Grey	Plaster	0.25
34	Interior	Cabinets	White	Wood	0.00
35	Interior	Cabinets	brown	Wood	0.01
36	Interior	Wall	Yellow	Wood	0.00
37	Interior	Wall	Yellow	Drywall	0.00
38	Interior	Ceiling	White	Wood	0.00
39	Interior	Wall	Grey	Bead board	0.79
40	Calibration				1.15
41	Calibration				1.09
42	Calibration				1.10

Bold = LBP

SECTION III

Laboratory Analytical Results

May 10, 2018

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 620 S. Irwin Ave ACM/LBP; 0118-14
CEI LAB CODE: B18-3472

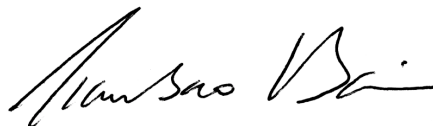
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on May 4, 2018. 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,



Tianbao Bai, Ph.D., CIH
Laboratory Director



CEI

ASBESTOS ANALYTICAL REPORT

By: Polarized Light Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS 620 S. Irwin Ave ACM/LBP; 0118-14

LAB CODE: B18-3472

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

REPORT DATE: 05/10/18

TOTAL SAMPLES ANALYZED: 33

SAMPLES >1% ASBESTOS: 4

TEL: 866-481-1412

www.ceilabs.com



CEI

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 620 S. Irwin Ave ACM/LBP; 0118-14 LAB CODE: B18-3472

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
1	Layer 1	B28741	Black	Roof Shingle	None Detected
	Layer 2	B28741	Black	Felt Paper	None Detected
2	Layer 1	B28742	Black	Roof Shingle	None Detected
	Layer 2	B28742	Black	Felt Paper	None Detected
3	Layer 1	B28743		Sample Submitted for TEM Analysis	
	Layer 2	B28743		Sample Submitted for TEM Analysis	
4		B28744	Black	Mastic/ Tar	Chrysotile 5%
5		B28745		Sample Not Analyzed per COC	
6		B28746		Sample Not Analyzed per COC	
7		B28747	Gray	Window Glazing	Chrysotile 2%
8		B28748		Sample Not Analyzed per COC	
9		B28749		Sample Not Analyzed per COC	
10		B28750	White	Window Caulking	None Detected
11		B28751	White	Window Caulking	None Detected
12		B28752		Sample Submitted for TEM Analysis	
13	Layer 1	B28753	White	Plaster Skim Coat	None Detected
	Layer 2	B28753	Tan	Plaster Base Coat	None Detected
14	Layer 1	B28754	White	Plaster Skim Coat	None Detected
	Layer 2	B28754	Tan	Plaster Base Coat	None Detected
15	Layer 1	B28755	White	Coating	None Detected
	Layer 2	B28755	White	Plaster Skim Coat	None Detected
	Layer 3	B28755	Tan	Plaster Base Coat	None Detected
16	Layer 1	B28756	White	Plaster Skim Coat	None Detected
	Layer 2	B28756	Tan	Plaster Base Coat	None Detected
17	Layer 1	B28757	White	Plaster Skim Coat	None Detected
	Layer 2	B28757	Tan	Plaster Base Coat	None Detected
18	Layer 1	B28758	White,Tan	Drywall	None Detected
	Layer 2	B28758	White	Joint Compound	None Detected
	Layer 3	B28758	Off-white	Tape	None Detected

PROJECT: COS 620 S. Irwin Ave ACM/LBP; 0118-14 **LAB CODE:** B18-3472

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
19	Layer 1	B28759	White,Tan	Drywall	None Detected
	Layer 2	B28759	White	Joint Compound	None Detected
	Layer 3	B28759	Off-white	Tape	None Detected
20	Layer 1	B28760	White,Tan	Drywall	None Detected
	Layer 2	B28760	White	Joint Compound	None Detected
	Layer 3	B28760	Off-white	Tape	None Detected
21	Layer 1	B28761	White,Tan	Drywall	None Detected
	Layer 2	B28761	White	Joint Compound	None Detected
	Layer 3	B28761	Off-white	Tape	None Detected
22	Layer 1	B28762	White,Tan	Drywall	None Detected
	Layer 2	B28762	White	Joint Compound	None Detected
	Layer 3	B28762	Off-white	Tape	None Detected
23		B28763	White	Popcorn Ceiling Texture	None Detected
24		B28764	White	Popcorn Ceiling Texture	None Detected
25		B28765	White	Popcorn Ceiling Texture	None Detected
26		B28766	Black,White	Wall Material	None Detected
27		B28767	Black,White	Wall Material	None Detected
28		B28768		Sample Submitted for TEM Analysis	
29		B28768A	Green,Black	Floor Tile	None Detected
		B28768B	Black	Mastic	None Detected
30		B28769A	Green,Black	Floor Tile	None Detected
		B28769B	Black	Mastic	None Detected
31		B28770A		Sample Submitted for TEM Analysis	
		B28770B		Sample Submitted for TEM Analysis	
32		B28771	Beige	Vinyl Flooring	None Detected
33		B28772	Beige	Vinyl Flooring	None Detected
34		B28773		Sample Submitted for TEM Analysis	
35		B28774A	Brown	Floor Tile	None Detected

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 620 S. Irwin Ave ACM/LBP; 0118-14 **LAB CODE:** B18-3472

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
		B28774B	Clear, Yellow	Mastic	None Detected
36		B28775A	Brown	Floor Tile	None Detected
		B28775B	Clear, Yellow	Mastic	None Detected
37		B28776A		Sample Submitted for TEM Analysis	
		B28776B		Sample Submitted for TEM Analysis	
38		B28778	Brown	Vinyl Flooring	None Detected
39		B28779	Brown	Vinyl Flooring	None Detected
40		B28780		Sample Submitted for TEM Analysis	
41		B28781A	Gray	Floor Tile	None Detected
		B28781B	Clear	Mastic	None Detected
	Layer 1	B28781C	Yellow	Vinyl Flooring	Chrysotile 25%
	Layer 2	B28781C	Yellow	Mastic	Chrysotile 3%
42		B28782A	Gray	Floor Tile	None Detected
		B28782B	Clear	Mastic	None Detected
		B28782C		Sample Not Analyzed per COC	
43		B28783A		Sample Submitted for TEM Analysis	
		B28783B		Sample Submitted for TEM Analysis	
		B28783C		Sample Not Analyzed per COC	
44		B28784	White	Caulking	None Detected
45		B28785	White	Caulking	None Detected
46		B28786		Sample Submitted for TEM Analysis	

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
1 Layer 1 B28741	Roof Shingle	Heterogeneous	25%	Fiberglass	10%	Gravel	None Detected
		Black			45%	Tar	
		Fibrous Bound			20%	Silicates	
Layer 2 B28741	Felt Paper	Heterogeneous	75%	Cellulose	25%	Tar	None Detected
		Black					
		Fibrous Bound					
2 Layer 1 B28742	Roof Shingle	Heterogeneous	25%	Fiberglass	10%	Gravel	None Detected
		Black			45%	Tar	
		Fibrous Bound			20%	Silicates	
Layer 2 B28742	Felt Paper	Heterogeneous	75%	Cellulose	25%	Tar	None Detected
		Black					
		Fibrous Bound					
3 Layer 1 B28743	Sample Submitted for TEM Analysis						
Layer 2 B28743	Sample Submitted for TEM Analysis						
4 B28744	Mastic/ Tar	Heterogeneous			5%	Paint	5% Chrysotile
		Black			75%	Tar	
		Fibrous			15%	Binder	
		Bound					
5 B28745	Sample Not Analyzed per COC						
6 B28746	Sample Not Analyzed per COC						

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
7 B28747	Window Glazing	Heterogeneous	3%	Paint	2% Chrysotile
		Gray	25%	Calc Carb	
		Non-fibrous	70%	Binder	
		Bound			
8 B28748	Sample Not Analyzed per COC				
9 B28749	Sample Not Analyzed per COC				
10 B28750	Window Caulking	Heterogeneous	25%	Calc Carb	None Detected
		White	75%	Binder	
		Non-fibrous			
		Bound			
11 B28751	Window Caulking	Heterogeneous	25%	Calc Carb	None Detected
		White	75%	Binder	
		Non-fibrous			
		Bound			
12 B28752	Sample Submitted for TEM Analysis				
Layer 1 B28753	Plaster Skim Coat	Heterogeneous	10%	Paint	None Detected
		White	55%	Calc Carb	
		Non-fibrous	35%	Binder	
		Bound			
Layer 2 B28753	Plaster Base Coat	Heterogeneous	<1%	Cellulose	None Detected
		Tan	<1%	Synthetic Fiber	
		Non-fibrous	35%	Binder	
		Bound	65%	Silicates	
14 Layer 1 B28754	Plaster Skim Coat	Heterogeneous	10%	Paint	None Detected
		White	55%	Calc Carb	
		Non-fibrous	35%	Binder	
		Bound			

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %	
			Fibrous	Non-Fibrous			
Layer 2 B28754	Plaster Base Coat	Heterogeneous Tan Non-fibrous Bound	<1% <1%	Cellulose Synthetic Fiber	35% 65%	Binder Silicates	None Detected
15 Layer 1 B28755	Coating	Heterogeneous White Non-fibrous Bound			10% 45% 45%	Paint Calc Carb Binder	None Detected
Layer 2 B28755	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound			10% 55% 35%	Paint Calc Carb Binder	None Detected
Layer 3 B28755	Plaster Base Coat	Heterogeneous Tan Non-fibrous Bound	<1% <1%	Cellulose Synthetic Fiber	35% 65%	Binder Silicates	None Detected
16 Layer 1 B28756	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound			10% 55% 35%	Paint Calc Carb Binder	None Detected
Layer 2 B28756	Plaster Base Coat	Heterogeneous Tan Non-fibrous Bound	<1% <1%	Cellulose Synthetic Fiber	35% 65%	Binder Silicates	None Detected
17 Layer 1 B28757	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound			10% 55% 35%	Paint Calc Carb Binder	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous	Non-Fibrous			
Layer 2 B28757	Plaster Base Coat	Heterogeneous Tan Non-fibrous Bound	<1% <1%	Cellulose Synthetic Fiber	35% 65%	Binder Silicates	None Detected
18 Layer 1 B28758	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
Layer 2 B28758	Joint Compound	Heterogeneous White Non-fibrous Bound			10% 45% 45%	Paint Calc Carb Binder	None Detected
Layer 3 B28758	Tape	Heterogeneous Off-white Fibrous Bound	100%	Cellulose			None Detected
19 Layer 1 B28759	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
Layer 2 B28759	Joint Compound	Heterogeneous White Non-fibrous Bound			10% 45% 45%	Paint Calc Carb Binder	None Detected
Layer 3 B28759	Tape	Heterogeneous Off-white Fibrous Bound	100%	Cellulose			None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID	Lab	Lab	NON-ASBESTOS COMPONENTS				ASBESTOS
Lab ID	Description	Attributes	Fibrous			Non-Fibrous	%
20 Layer 1 B28760	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
	Layer 2 B28760	Joint Compound	Heterogeneous White Non-fibrous Bound		10%	Paint Calc Carb Binder	None Detected
	Layer 3 B28760	Tape	Heterogeneous Off-white Fibrous Bound	100%	Cellulose		None Detected
21 Layer 1 B28761	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
	Layer 2 B28761	Joint Compound	Heterogeneous White Non-fibrous Bound		10%	Paint Calc Carb Binder	None Detected
	Layer 3 B28761	Tape	Heterogeneous Off-white Fibrous Bound	100%	Cellulose		None Detected
22 Layer 1 B28762	Drywall	Heterogeneous White, Tan 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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
Layer 2 B28762	Joint Compound	Heterogeneous	10%	Paint	None Detected
		White	45%	Calc Carb	
		Non-fibrous	45%	Binder	
		Bound			
Layer 3 B28762	Tape	Heterogeneous	100%	Cellulose	None Detected
		Off-white			
		Fibrous			
		Bound			
23 B28763	Popcorn Ceiling Texture	Heterogeneous	10%	Foam	None Detected
		White	45%	Calc Carb	
		Non-fibrous	45%	Binder	
		Bound			
24 B28764	Popcorn Ceiling Texture	Heterogeneous	10%	Foam	None Detected
		White	45%	Calc Carb	
		Non-fibrous	45%	Binder	
		Bound			
25 B28765	Popcorn Ceiling Texture	Heterogeneous	10%	Foam	None Detected
		White	45%	Calc Carb	
		Non-fibrous	45%	Binder	
		Bound			
26 B28766	Wall Material	Heterogeneous	65%	Cellulose	None Detected
		Black,White	10%	Paint	
		Fibrous	25%	Tar	
		Bound			
27 B28767	Wall Material	Heterogeneous	65%	Cellulose	None Detected
		Black,White	10%	Paint	
		Fibrous	25%	Tar	
		Bound			
28 B28768	Sample Submitted for TEM Analysis				

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
29 B28768A	Floor Tile	Homogeneous Green,Black Non-fibrous Bound			100%	Vinyl	None Detected
B28768B	Mastic	Homogeneous Black Fibrous Bound	10%	Cellulose	90%	Mastic	None Detected
30 B28769A	Floor Tile	Homogeneous Green,Black Non-fibrous Bound			100%	Vinyl	None Detected
B28769B	Mastic	Homogeneous Black Fibrous Bound	10%	Cellulose	90%	Mastic	None Detected
31 B28770A	Sample Submitted for TEM Analysis						
B28770B	Sample Submitted for TEM Analysis						
32 B28771	Vinyl Flooring	Heterogeneous Beige Fibrous Bound	25%	Cellulose	50%	Vinyl Binder	None Detected
33 B28772	Vinyl Flooring	Heterogeneous Beige Fibrous Bound	25%	Cellulose	50%	Vinyl Binder	None Detected
34 B28773	Sample Submitted for TEM Analysis						

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous		Non-Fibrous	
35 B28774A	Floor Tile	Homogeneous Brown Non-fibrous Bound	100%	Vinyl		None Detected
B28774B	Mastic	Homogeneous Clear, Yellow Fibrous Bound	10%	Cellulose	90%	Mastic None Detected
36 B28775A	Floor Tile	Homogeneous Brown Non-fibrous Bound	100%	Vinyl		None Detected
B28775B	Mastic	Homogeneous Clear, Yellow Fibrous Bound	10%	Cellulose	90%	Mastic None Detected
37 B28776A	Sample Submitted for TEM Analysis					
B28776B	Sample Submitted for TEM Analysis					
38 B28778	Vinyl Flooring	Heterogeneous Brown Non-fibrous Bound	50%	Vinyl	50%	Foam None Detected
39 B28779	Vinyl Flooring	Heterogeneous Brown Non-fibrous Bound	50%	Vinyl	50%	Foam None Detected
40 B28780	Sample Submitted for TEM Analysis					

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous		Non-Fibrous	
41 B28781A	Floor Tile	Heterogeneous Gray Non-fibrous Bound	100%	Vinyl		None Detected
B28781B	Mastic	Homogeneous Clear Fibrous Bound	10%	Cellulose	90%	Mastic None Detected
Layer 1 B28781C	Vinyl Flooring	Heterogeneous Yellow Fibrous Bound	50%	Vinyl	25%	Binder 25% Chrysotile
Layer 2 B28781C	Mastic	Heterogeneous Yellow Fibrous Bound	97%	Mastic		3% Chrysotile
Lab Notes: Analysis opinion: Contamination from layer 1.						
42 B28782A	Floor Tile	Heterogeneous Gray Non-fibrous Bound	100%	Vinyl		None Detected
B28782B	Mastic	Homogeneous Clear Fibrous Bound	10%	Cellulose	90%	Mastic None Detected
B28782C	Sample Not Analyzed per COC					
43 B28783A	Sample Submitted for TEM Analysis					

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: B18-3472
Date Received: 05-04-18
Date Analyzed: 05-10-18
Date Reported: 05-10-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
B28783B	Sample Submitted for TEM Analysis				
B28783C	Sample Not Analyzed per COC				
44 B28784	Caulking	Heterogeneous White Non-fibrous Bound	25% 75%	Calc Carb Binder	None Detected
45 B28785	Caulking	Heterogeneous White Non-fibrous Bound	25% 75%	Calc Carb Binder	None Detected
46 B28786	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

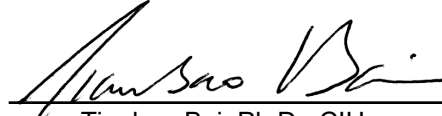
REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

REGULATORY LIMIT: >1% by weight

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

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

ANALYST: 
Mikaela Batta

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



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

ASBESTOS CHAIN OF CUSTODY

LAB USE ONLY:	B18-3472 (40)
CEI Lab Code:	
CEI Lab I.D. Range:	B28741-B28786

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: Tom Oliver
Company: Apex Environmental Management, Inc.	Email / Tel: toliu@apex-ehs.com
Address: 7 Winchester Ct.	Project Name: COS 620 S. Irwin Ave ALM/LB
Mauldin, South Carolina 29662	Project ID#: 0118-14
Email: toliu@apex-ehs.com	PO #:
Tel: (864) 404-3210 Fax: 864-404-3213	STATE SAMPLES COLLECTED IN: SC

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	<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"/>
PLM BULK	CARB 435	<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	EPA AHERA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	NIOSH 7402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ISO 10312	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ASTM 6281-09	<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 / SPECIAL INSTRUCTIONS:		<input checked="" type="checkbox"/> Accept Samples <input type="checkbox"/> Reject Samples	
Positive Stop			
Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	5-3-18 4:30 AM	ALP	5/4 9:00

Samples will be disposed of 30 days after analysis

ASBESTOS SAMPLING FORM



COMPANY CONTACT INFORMATION	
Company: <u>Apex Environmental Management</u>	Job Contact: <u>Tom Oliver</u>
Project Name:	
Project ID #: <u>011B-14</u>	Tel: <u>864-640-5127</u>

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
			PLM	<input type="checkbox"/>	TEM	<input type="checkbox"/>
1	Rootingles (1 layer) + felt (1 layer) w/ tar		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	Mastic/tar on roof flashing		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	Window glazing		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
8			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
9			PLM	<input type="checkbox"/>	TEM	<input checked="" type="checkbox"/>
10	Window caulk		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
11			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
12			PLM	<input type="checkbox"/>	TEM	<input checked="" type="checkbox"/>
13	Plaster w/ finish		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
14			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
15			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
16			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
17			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
18	Drywall w/ JC + tape		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
19			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
20			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
21			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
22			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
23	Pop Corn ceiling texture		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
24			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
25			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
26	Wall material w/ felt over plaster		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
27			PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
28			PLM	<input type="checkbox"/>	TEM	<input checked="" type="checkbox"/>

B18-3472

ASBESTOS SAMPLING FORM



COMPANY CONTACT INFORMATION	
Company: <u>Apex Environmental Management</u>	Job Contact: <u>Tom Oliver</u>
Project Name:	
Project ID #: <u>011B-14</u>	Tel: <u>864-640-5127</u>

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
			PLM	<input type="checkbox"/>	TEM	<input type="checkbox"/>
29	12"x12" green marble		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
30	pattern self-stick floor		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
31	tile		PLM	<input type="checkbox"/>	TEM	<input checked="" type="checkbox"/>
32	Beige square pattern		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
33	vinyl floor w/ no mastic		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
34			PLM	<input type="checkbox"/>	TEM	<input checked="" type="checkbox"/>
35	12"x12" wooden pattern		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
36	self-stick floor tile		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
37			PLM	<input type="checkbox"/>	TEM	<input checked="" type="checkbox"/>
38	Brown square pattern		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
39	vinyl floor w/ no		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
40	mastic		PLM	<input type="checkbox"/>	TEM	<input checked="" type="checkbox"/>
41	12"x12" grey pattern		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
42	self-stick floor tile over		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
43	yellow square pattern w/ mastic		PLM	<input type="checkbox"/>	TEM	<input checked="" type="checkbox"/>
44	Tub/shower surround		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
45	caulk		PLM	<input checked="" type="checkbox"/>	TEM	<input type="checkbox"/>
46			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"/>
			PLM	<input type="checkbox"/>	TEM	<input type="checkbox"/>
			PLM	<input type="checkbox"/>	TEM	<input type="checkbox"/>
			PLM	<input type="checkbox"/>	TEM	<input type="checkbox"/>

May 17, 2018

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 620 S. Irwin Ave ACM/LBP; 0118-14
LAB CODE: T18-0937

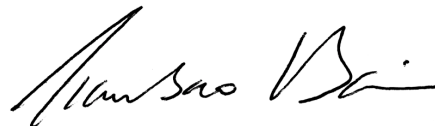
Dear Customer:

Enclosed are asbestos analysis results for TEM bulk samples received at our laboratory on May 10, 2018. 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,



Tianbao Bai, Ph.D., CIH
Laboratory Director



CEI

ASBESTOS ANALYTICAL REPORT
By: Transmission Electron Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS 620 S. Irwin Ave ACM/LBP; 0118-14

LAB CODE: T18-0937

TEST METHOD: Bulk Chatfield
EPA 600 / R93 / 116

REPORT DATE: 05/17/18

TEL: 866-481-1412

www.ceilabs.com



CEI

ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

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

Lab Code: T18-0937
Date Received: 05-10-18
Date Analyzed: 05-16-18
Date Reported: 05-17-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

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 T77492	Black Roof Shingle	0.594	20.5	42.6	36.9	None Detected
3 T77493	Black Felt Paper	0.89	96.5	2.7	.8	None Detected
12 T77494	White Window Caulking	0.212	16	83.5	.5	None Detected
28 T77495	Black,White Wall Material	0.334	57.2	25.7	17.1	None Detected
31 T77496	Green ,Black Floor Tile	0.314	20.1	77.1	2.8	None Detected
31 T77497	Black Mastic	0.276	54	39.5	6.5	None Detected
34 T77498	Beige Vinyl Flooring	0.271	63.8	22.9	13.3	None Detected
37 T77499	Brown Floor Tile	0.354	13.3	85.3	1.4	None Detected
37 T77500	Clear, Yellow Mastic	0.123	36.6	61.8	1.6	None Detected
40 T77501	Brown Vinyl Flooring	0.214	71.5	23.8	4.7	None Detected
43 T77502	Gray Floor Tile	0.267	13.9	83.9	2.2	None Detected
43 T77503	Clear Mastic	0.3	51.7	45.3	3	<1% Chrysotile

*Probable contamination from positive tile



CEI

ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

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

Lab Code: T18-0937
Date Received: 05-10-18
Date Analyzed: 05-16-18
Date Reported: 05-17-18

Project: COS 620 S. Irwin Ave ACM/LBP; 0118-14

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 %
46 T77504	White Caulking	0.313	31.6	66.8	1.6	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

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ANALYST:


Amanda Rucinski

APPROVED BY:


Tianbao Bai, Ph.D., CIH
Laboratory Director

T18-0937

13 T 77492-504



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

ASBESTOS CHAIN OF CUSTODY

LAB USE ONLY:
CEI Lab Code: B18-3472 (40)
CEI Lab I.D. Range: B28741-B28780

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: Tom Oliver
Company: Apex Environmental Management, Inc.	Email / Tel: tolivero@apex-ehs.com
Address: 7 Winchester Ct. Mauldin, South Carolina 29662	Project Name: COS 620 S. Irwin Ave ALM/l
Email: tolivero@apex-ehs.com	Project ID#: 0118-14
Tel: (864) 404-3210 Fax: 864-404-3213	PO #:
STATE SAMPLES COLLECTED IN: SC	

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	<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"/>
PLM BULK	CARB 435	<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	EPA AHERA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	NIOSH 7402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ISO 10312	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ASTM 6281-09	<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 / SPECIAL INSTRUCTIONS: Positive Stop		<input checked="" type="checkbox"/> Accept Samples <input type="checkbox"/> Reject Samples	
Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	5-3-18 4:30 AM	ALP	5/4 9:00

Samples will be disposed of 30 days after analysis

T18-0937

B18-3472

ASBESTOS SAMPLING FORM



COMPANY CONTACT INFORMATION	
Company: <u>Apex Environmental Management</u>	Job Contact: <u>Tom Oliver</u>
Project Name:	
Project ID #: <u>0118-14</u>	Tel: <u>864-640-5127</u>

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
			PLM	TEM
1	Roof shingles (1 layer) ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	felt (1 layer) w/ tar ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3			<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Mastic/tar on roof ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Flashing ↓		<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			<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Window caulk ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
11			<input checked="" type="checkbox"/>	<input type="checkbox"/>
12			<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	Plaster w/ finish ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
14			<input checked="" type="checkbox"/>	<input type="checkbox"/>
15			<input checked="" type="checkbox"/>	<input type="checkbox"/>
16			<input checked="" type="checkbox"/>	<input type="checkbox"/>
17			<input checked="" type="checkbox"/>	<input type="checkbox"/>
18	Drywall w/ JL ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
19	tape ↓		<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	Pop Corn ceiling ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
24	texture ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
25			<input checked="" type="checkbox"/>	<input type="checkbox"/>
26	Wall material w/ felt ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
27	over plaster ↓		<input checked="" type="checkbox"/>	<input type="checkbox"/>
28			<input type="checkbox"/>	<input checked="" type="checkbox"/>

SECTION IV
Photographic Log



Photo 1 – 620 South Irwin Avenue in Spartanburg, South Carolina



Photo 2 – Roof shingles and felt



Photo 3 – Roof flashing with mastic/tar



Photo 4 – Wooden window glazing



Photo 5 – Wooden window caulk



Photo 6 – mastic/tar on 2 chimneys – assumed positive.



Photo 7 – Plaster with finish throughout



Photo 8 – Drywall with joint compound & tape throughout



Photo 9 – Popcorn ceiling texture in the front left room, living room, dining room, kitchen, front bathroom & back-middle left bedroom



Photo 10 – Drywall over plaster



Photo 11 – Plaster over drywall



Photo 12 – Drywall over plaster



Photo 13 – Double layer drywall



Photo 14 – Wall material with felt over plaster in the kitchen



Photo 15 – 12" x 12" green marble pattern self-stick floor tile & mastic in the front bathroom (top layer)



Photo 16 – Beige square pattern vinyl floor with no mastic in the front bathroom (2nd layer); kitchen (top layer) & back bathroom (top layer)



Photo 17 – 12" x 12" wooden pattern self-stick floor tile & mastic in the Kitchen (2nd layer); back entry (2nd layer) & back entry hallway

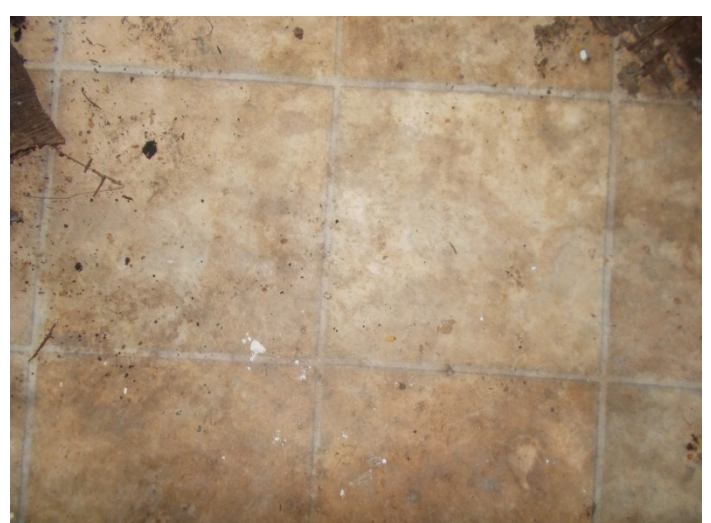


Photo 18 – Brown square pattern vinyl floor with no mastic in the back entry (top layer)



Photo 19 – 12" x 12" grey pattern self-stick floor tile & mastic over yellow square pattern vinyl floor & mastic in the back entry hallway (under wood)



Photo 20 – Tub/shower surround caulk in the front & back bathrooms

SECTION V

SC DHEC Asbestos Inspector License

SCDHEC ISSUED
Asbestos ID Card

Thomas H Oliver



CONSULTBI BI-00680
AIRSAMPLER AS-00202

Expiration Date:
01/18/19
04/04/19

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 of corrections contact: SCDHEC – Asbestos Section
2600 Bull Street
Columbia, SC 29201
(803) 898-4289