Asbestos & Lead Based Paint Assessment

City of Spartanburg
485 Beacham Street
Spartanburg, South Carolina 29301

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

September 5, 2018

PEX
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Management

Environmental Management

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Apex Project Number 0118-14

September 5, 2018

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

Reference: Asbestos and Lead-Based Paint Assessment Services
485 Beacham Street
Spartanburg, South Carolina 29301

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.

Tom Oliver
Director of Operations

Appendices

ASBESTOS AND LEAD BASED PAINT ASSESSMENT

CITY OF SPARTANBURG
485 BEACHAM STREET
SPARTANBURG, SOUTH CAROLINA 29301

APEX PROJECT NO. 0118-14

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SECTION

SECTION I

Asbestos & Lead Evaluation Report

ASBESTOS EVALUATION REPORT
APEX PROJECT NUMBER: 0118-14

Date:	9/5/2018	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:	485 Beacham Street Spartanburg, SC 29301		
Assessor:	Tom Oliver	Date of Assessment:	8/16/2018
Company:	Apex Environmental Management 7 Winchester Court Mauldin, SC 29662	Phone Number:	(864) 404-3210
Purpose of Assessment:	Demolition	Age of Structure:	Approximately 80 years
Building Type:	Residential	Number of Stories:	1
Foundation:	CMU Block Crawlspace	Approximate Square Footage	1,100 SF

EXTERIOR BUILDING MATERIALS

- Pitched wooden roof with shingles & felt.
- Roof flashing with tar.
- Vinyl siding over wooden siding.
- Wooden windows with glazing.
- Wooden doors with no caulk.
- Black mastic/tar on 1 chimney – assumed positive.

INTERIOR BUILDING MATERIALS

- 2’ x 4’ ceiling tiles (cellulose).
- 2’ x 4’ ceiling tiles (wooden).
- 12” x 12” ceiling tiles (cellulose).
- Wooden ceilings with & without joint compound.
- Wooden wall panels with no mastic over wooden walls.
- Multiple types & layers of vinyl flooring with and without mastics.
- Wooden floors.

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. Twenty-seven (17) 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). Ten (10) 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. 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 6 LF of mastic/tar on 1 chimney – 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/m^3) during an eight-hour workday and a permissible exposure level of fifty micrograms per cubic meter (50 µg/m^3) for employees.

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

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

- White wooden walls and ceilings.

RECOMMENDATIONS AND DISCUSSION

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

Apex recommends the following:

1. Abate the asbestos containing materials in the structure prior to renovation or demolition.

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

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

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

Lead-Based Paint

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

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

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

SECTION II

Asbestos & LBP Data Tables

ASBESTOS SURVEY FIELD DATA SHEET
PLM & TEM ANALYSIS

Project Name: COS 485 Beacham Street ACM/LBP

Sampled By: Tom Oliver

Project Location: 485 Beacham Street, Spartanburg, SC 29301

Project Manager: Tom Oliver

Project Number: 0118-14

Date: 8/16/2018

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	1,500 SF
2						
3			TEM - NAD			
4	Roof flashing	Tar	PLM - NAD	Non-Friable	Good	15 LF
5						
6			TEM - NAD			
7	Living room	2' x 4' ceiling tile	PLM - NAD	Friable	Good	190 SF
8						
9						
10	Windows	Window glazing	PLM - NAD	Non-Friable	Good	7 EA
11						
12			TEM - NAD			
13	Kitchen & hallway	12" x 12" ceiling tile	PLM - NAD	Friable	Good	110 SF
14						
15						
16	Kitchen & hallway	Joint compound over wooden ceilings	PLM - NAD	Friable	Good	50 SF
17						
18						
19	Kitchen & hallway top layer	12" x 12" wooden pattern self-stick floor tile	PLM - NAD	Non-Friable	Good	165 SF
20						
21			TEM - NAD			

ASBESTOS SURVEY FIELD DATA SHEET
PLM & TEM ANALYSIS

Project Name: COS 485 Beacham Street ACM/LBP

Sampled By: Tom Oliver

Project Location: 485 Beacham Street, Spartanburg, SC 29301

Project Manager: Tom Oliver

Project Number: 0118-14

Date: 8/16/2018

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
22	Kitchen & hallway 2nd & 3rd layers	Brown pattern roll vinyl floor with no mastic over white pattern roll vinyl floor with no mastic	PLM - NAD	Non-Friable	Good	165 SF
23						
24			TEM - NAD			
25	Bathroom	12" x 12" green square pattern self-stick floor tile	PLM - NAD	Non-Friable	Good	35 SF
26						
27			TEM - NAD			
Assumed	**Roof/chimney**	**Mastic/tar 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 485 Beacham Street ACM/LBP

Sampled By: Tom Oliver

Project Location: 485 Beacham Street, Spartanburg, SC 29301

Project Manager: Tom Oliver

Project Number: 0118-14

Date: 8/16/2018

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m^3)
41	Exterior	Siding	White	Wood	0.00
42	Exterior	Siding	Grey	Vinyl	0.00
43	Exterior	Window shutter	Black	Vinyl	0.00
44	Exterior	Window frame	White	Wood	0.00
45	Exterior side entry	Stairs	Tan	Wood	0.00
46	Exterior side entry	Handrail	Black	Metal	0.00
47	Exterior front porch	Foundation	Blue	CMU Block	0.00
48	Exterior front porch	Handrail	White	Wood	0.00
49	Exterior front porch	Porch rail	White	Wood	0.00
50	Exterior front porch	Porch framing	White	Wood	0.00
51	Exterior front porch	Ceiling	White	Vinyl	0.00
52	Exterior front porch	Floor	Brown	Wood	0.00
53	Exterior front porch	Door	White	Metal	0.00
54	Exterior front porch	Door frame	White	Wood	0.00
55	Exterior front porch	Window	White	Bead board	0.00
56	**Interior**	**Wall**	**White**	**Wood**	**1.19**
57	Interior	Wall panel	Brown	Bead board	0.54
58	**Interior**	**Ceiling**	**White**	**Wood**	**1.16**
59	Interior	Ceiling	White	Wood	0.00
60	Interior	Cabinet	Brown	Wood	0.00
61	Interior	Door	Brown	Wood	0.00
62	Interior	Door frame	Brown	Wood	0.00
63	Interior	Window frame	Brown	Wood	0.00
64	Interior	Window	Brown	Wood	0.00

FIELD DATA SHEET
LBP ANALYSIS

Project Name: COS 485 Beacham Street ACM/LBP

Sampled By: Tom Oliver

Project Location: 485 Beacham Street, Spartanburg, SC 29301

Project Manager: Tom Oliver

Project Number: 0118-14

Date: 8/16/2018

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m^3)
65	Interior	Toilet	White	Porcelain	0.00

Bold = LBP

SECTION III

Laboratory Analytical Results

August 27, 2018

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 485 Beacham St.; COS 0118-14
CEI LAB CODE: A189270

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on August 20, 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

NVLAP TESTING
NVLAP LAB CODE 101768-0

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ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS 485 Beacham St.; COS 0118-14

LAB CODE: A189270

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

REPORT DATE: 08/27/18

TOTAL SAMPLES ANALYZED: 21

SAMPLES >1% ASBESTOS:

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 485 Beacham St.; COS 0118-14 **LAB CODE:** A189270

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
1	Layer 1	A84976	Black	Shingle	None Detected
	Layer 2	A84976	Black	Felt Paper	None Detected
2	Layer 1	A84977	Black	Shingle	None Detected
	Layer 2	A84977	Black	Felt Paper	None Detected
3		A84978		Sample Submitted for TEM Analysis	
4		A84979	Black	Tar	None Detected
5		A84980	Black	Tar	None Detected
6		A84981		Sample Submitted for TEM Analysis	
7		A84982	White	Ceiling Tile	None Detected
8		A84983	White	Ceiling Tile	None Detected
9		A84984	White	Ceiling Tile	None Detected
10		A84985	White,Beige	Glazing	None Detected
11		A84986	White,Beige	Glazing	None Detected
12		A84987		Sample Submitted for TEM Analysis	
13		A84988	White	Ceiling Tile	None Detected
14		A84989	White	Ceiling Tile	None Detected
15		A84990	White	Ceiling Tile	None Detected
16		A84991	White	Joint Compound	None Detected
17		A84992	White	Joint Compound	None Detected
18		A84993	White	Joint Compound	None Detected
19		A84994A	Wood Pattern	Self-stick Floor Tile	None Detected
		A84994B	Clear	Mastic	None Detected
20		A84995A	Wood Pattern	Self-stick Floor Tile	None Detected
		A84995B	Clear	Mastic	None Detected
21		A84996		Sample Submitted for TEM Analysis	
22		A84997A	Brown, Patterned	Vinyl Flooring	None Detected
		A84997B	White	Vinyl Flooring	None Detected

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS 485 Beacham St.; COS 0118-14 **LAB CODE:** A189270

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
23		A84998A	Brown, Patterned	Vinyl Flooring	None Detected
		A84998B	White	Vinyl Flooring	None Detected
24		A84999		Sample Submitted for TEM Analysis	
25		A85000A	Green	Self-stick Floor Tile	None Detected
		A85000B	Clear	Mastic	None Detected
26		A85001A	Green	Self-stick Floor Tile	None Detected
		A85001B	Clear	Mastic	None Detected
27		A85002		Sample Submitted for TEM Analysis	

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: A189270
Date Received: 08-20-18
Date Analyzed: 08-27-18
Date Reported: 08-27-18

Project: COS 485 Beacham St.; COS 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
1 Layer 1 A84976	Shingle	Heterogeneous Black Fibrous Bound	20%	Fiberglass	55% 25%	Tar Gravel	None Detected
Layer 2 A84976	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
2 Layer 1 A84977	Shingle	Heterogeneous Black Fibrous Bound	20%	Fiberglass	55% 25%	Tar Gravel	None Detected
Layer 2 A84977	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	None Detected
3 A84978	Sample Submitted for TEM Analysis						
4 A84979	Tar	Heterogeneous Black Fibrous Bound	15%	Cellulose	85%	Tar	None Detected
5 A84980	Tar	Heterogeneous Black Fibrous Bound	15%	Cellulose	85%	Tar	None Detected
6 A84981	Sample Submitted for TEM Analysis						

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: A189270
Date Received: 08-20-18
Date Analyzed: 08-27-18
Date Reported: 08-27-18

Project: COS 485 Beacham St.; COS 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
7 A84982	Ceiling Tile	Heterogeneous White Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected
8 A84983	Ceiling Tile	Heterogeneous White Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected
9 A84984	Ceiling Tile	Heterogeneous White Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected
10 A84985	Glazing	Heterogeneous White,Beige Non-fibrous Bound			5% 50% 45%	Paint Calc Carb Binder	None Detected
11 A84986	Glazing	Heterogeneous White,Beige Non-fibrous Bound			5% 50% 45%	Paint Calc Carb Binder	None Detected
12 A84987	Sample Submitted for TEM Analysis						
13 A84988	Ceiling Tile	Heterogeneous White Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected
14 A84989	Ceiling Tile	Heterogeneous White Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: A189270
Date Received: 08-20-18
Date Analyzed: 08-27-18
Date Reported: 08-27-18

Project: COS 485 Beacham St.; COS 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
15 A84990	Ceiling Tile	Heterogeneous White Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected
16 A84991	Joint Compound	Heterogeneous White Non-fibrous Bound			<1% 60% 40%	Paint Calc Carb Binder	None Detected
17 A84992	Joint Compound	Heterogeneous White Non-fibrous Bound			<1% 60% 40%	Paint Calc Carb Binder	None Detected
18 A84993	Joint Compound	Heterogeneous White Non-fibrous Bound			<1% 60% 40%	Paint Calc Carb Binder	None Detected
19 A84994A	Self-stick Floor Tile	Heterogeneous Wood Pattern Non-fibrous Bound			100%	Vinyl	None Detected
A84994B	Mastic	Homogeneous Clear Non-fibrous Bound			100%	Mastic	None Detected
20 A84995A	Self-stick Floor Tile	Heterogeneous Wood Pattern Non-fibrous Bound			100%	Vinyl	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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

Lab Code: A189270
Date Received: 08-20-18
Date Analyzed: 08-27-18
Date Reported: 08-27-18

Project: COS 485 Beacham St.; COS 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
A84995B	Mastic	Homogeneous Clear Non-fibrous Bound			100%	Mastic	None Detected
21 A84996	Sample Submitted for TEM Analysis						
22 A84997A	Vinyl Flooring	Heterogeneous Brown,Patterned Fibrous Bound	35% 10%	Cellulose Fiberglass	50% 5%	Vinyl Binder	None Detected
A84997B	Vinyl Flooring	Heterogeneous White Fibrous Bound	5%	Fiberglass	75% 20%	Vinyl Binder	None Detected
23 A84998A	Vinyl Flooring	Heterogeneous Brown,Patterned Fibrous Bound	35% 10%	Cellulose Fiberglass	50% 5%	Vinyl Binder	None Detected
A84998B	Vinyl Flooring	Heterogeneous White Fibrous Bound	5%	Fiberglass	75% 20%	Vinyl Binder	None Detected
24 A84999	Sample Submitted for TEM Analysis						
25 A85000A	Self-stick Floor Tile	Heterogeneous Green Non-fibrous Bound			100%	Vinyl	None Detected

ASBESTOS BULK ANALYSIS

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7 Winchester Court
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Lab Code: A189270
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Project: COS 485 Beacham St.; COS 0118-14

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
A85000B	Mastic	Homogeneous Clear Non-fibrous Bound		100%	Mastic	None Detected
26 A85001A	Self-stick Floor Tile	Heterogeneous Green Non-fibrous Bound		100%	Vinyl	None Detected
A85001B	Mastic	Homogeneous Clear Non-fibrous Bound		100%	Mastic	None Detected
27 A85002	Sample Submitted for TEM Analysis					

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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: Samantha Card

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

NVLAP TESTING
NVLAP LAB CODE 101768-0

ASBESTOS CHAIN OF CUSTODY

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

LAB USE ONLY:	
CEI Lab Code:	A189270 (27)
CEI Lab I.D. Range:	A89976-A85007

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: Tom Oliver
Company: Apex Environmental Management, Inc.	Email / Tel: toliver@apex-ehs.com
Address: 7 Winchester Ct.	Project Name: COS 485 Beacham St.
Mauldin, South Carolina 29662	Project ID#: COS 0118-14
Email:	PO #:
Tel: (864) 404-3210 Fax:	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	☐	☐	☐	☐	☐	☑
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-09	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☑
TEM DUST WIPE	ASTM D6480-05	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-13			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

REMARKS / SPECIAL INSTRUCTIONS:

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8-17-18 3:00pm	[signature]	8/20 @ 10:00

Samples will be disposed of 30 days after analysis

ASBESTOS SAMPLING FORM

AH89270

CEI LABS

COMPANY CONTACT INFORMATION	
Company: Apex Env. Mgt.	Job Contact: Tom Oliver
Project Name: COS 485 Beacham St	
Project ID #: 0118-14	Tel:

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
1	Roof / 1 shingle		PLM ☑	TEM ☐
2	1 felt 1		PLM ☑	TEM ☐
3			PLM ☐	TEM ☑
4	Roof / tar		PLM ☑	TEM ☐
5	1		PLM ☑	TEM ☐
6	1		PLM ☐	TEM ☑
7	Living RM / 2x4		PLM ☑	TEM ☐
8	ceiling tile		PLM ☑	TEM ☐
9	1		PLM ☑	TEM ☐
10	windows / glazing		PLM ☑	TEM ☐
11			PLM ☑	TEM ☐
12	1		PLM ☐	TEM ☑
13	Kitchen + Hall /		PLM ☑	TEM ☐
14	1x1 ceiling		PLM ☑	TEM ☐
15	tile		PLM ☑	TEM ☐
16	Kitchen + Hall ceiling /		PLM ☑	TEM ☐
17	joint compound		PLM ☑	TEM ☐
18	over wood		PLM ☑	TEM ☐
19	Kitchen ~~top~~ Hallway		PLM ☑	TEM ☐
20	top layer 12x12		PLM ☑	TEM ☐
21	self stick wd pattern	flr	PLM ☐	TEM ☑
22	2nd + 3rd layers of flooring		PLM ☑	TEM ☐
23	in Kitchen + Hallway		PLM ☑	TEM ☐
24	Brown patt. roll + wht. roll vinyl		PLM ☐	TEM ☑
25	Bathrm / 12x12 green		PLM ☑	TEM ☐
26	self-stick floor tile		PLM ☑	TEM ☐
27	1		PLM ☐	TEM ☑
			PLM ☐	TEM ☐

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August 31, 2018

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 485 Beacham St.; COS 0118-14
LAB CODE: T181977

Dear Customer:

Enclosed are asbestos analysis results for TEM bulk samples received at our laboratory on August 27, 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

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ASBESTOS ANALYTICAL REPORT
By: Transmission Electron Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS 485 Beacham St.; COS 0118-14

LAB CODE: T181977

TEST METHOD: Bulk Chatfield
EPA 600 / R93 / 116

REPORT DATE: 08/31/18

ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

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

Lab Code: T181977
Date Received: 08-27-18
Date Analyzed: 08-31-18
Date Reported: 08-31-18

Project: COS 485 Beacham St.; COS 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 T83624	Black Shingle	0.441	22	44.7	33.3	**None Detected**
3 T83625	Black Felt Paper	0.916	93.2	1.9	4.9	**None Detected**
6 T83626	Black Tar	0.418	80.4	5.3	14.3	**None Detected**
12 T83627	White, Beige Glazing	0.522	11.9	83	5.1	**None Detected**
21 T83628	Wood Pattern Self-Stick Tile	0.487	31.2	65.9	2.9	**None Detected**
21 T83629	Clear Mastic	0.099	46.5	48.5	5	**None Detected**
24 T83630	Brown, Patterned Vinyl Flooring	0.272	61.8	15.8	22.4	**None Detected**
24 T83631	White Vinyl Flooring	0.345	73.9	25.8	.3	**None Detected**
27 T83632	Green Self-Stick Floor Tile	0.754	26.8	71.6	1.6	**None Detected**
27 T83633	Clear Mastic	0.145	75.9	20.7	3.4	**None Detected**

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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 Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Estimated measurement of uncertainty is available on request. Samples were received in acceptable condition unless otherwise noted.

ANALYST: Jennifer Turner
Jennifer Turner

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

CEI LABS

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

T81977
T83624-633
(10)

ASBESTOS CHAIN OF CUSTODY

LAB USE ONLY:	
CEI Lab Code:	A189270 (27)
CEI Lab I.D. Range:	A84976-A85002

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: Tom Oliver
Company: Apex Environmental Management, Inc.	Email / Tel: toliver@apex-ehs.com
Address: 7 Winchester Ct.	Project Name: COS 485 Beacham St.
Mauldin, South Carolina 29662	Project ID#: COS 0118-14
Email:	PO #:
Tel: (864) 404-3210 Fax:	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	☐	☐	☐	☐	☐	☑
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-09	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☑
TEM DUST WIPE	ASTM D6480-05	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-13			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

REMARKS / SPECIAL INSTRUCTIONS:

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8-17-18 3:00pm	[signature]	8/20 @ 10:00
[signature]	8-27-18 10:05 am		

Samples will be disposed of 30 days after analysis

Page 1 of 1

Version: CCOC.06.16.1/2.LD
Page 1 of 2

CEI LABS

ASBESTOS SAMPLING FORM

AH89270

COMPANY CONTACT INFORMATION		
Company: Apex Env. Mgt.	Job Contact: Tom Oliver	
Project Name: COS 485 Beacham St		
Project ID #: 0118-14	Tel:	

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME / AREA	TEST	
1	Roof / 1 shingle		PLM ☐	TEM ☐
2	1 felt		PLM ☑	TEM ☐
3	1		PLM ☐	TEM ☑
4	Roof / tar		PLM ☑	TEM ☐
5	1		PLM ☑	TEM ☐
6	1		PLM ☐	TEM ☑
7	Living RM / 2x4		PLM ☑	TEM ☐
8	ceiling tile		PLM ☑	TEM ☐
9	1		PLM ☑	TEM ☐
10	windows / glazing		PLM ☑	TEM ☐
11	1		PLM ☑	TEM ☐
12	1		PLM ☐	TEM ☑
13	Kitchen + Hall /		PLM ☑	TEM ☐
14	1x1 ceiling		PLM ☑	TEM ☐
15	tile		PLM ☑	TEM ☐
16	Kitchen + Hall ceiling /		PLM ☑	TEM ☐
17	joint compound		PLM ☑	TEM ☐
18	over wood		PLM ☑	TEM ☐
19	Kitchen + Hallway /		PLM ☑	TEM ☐
20	top layer 12x12		PLM ☑	TEM ☐
21	self stick wd pattern flr		PLM ☐	TEM ☑
22	2nd & 3rd layers of flring		PLM ☑	TEM ☐
23	in Kitchen & Hallway		PLM ☑	TEM ☐
24	Brown patt. roll & wht. roll vinyl		PLM ☐	TEM ☑
25	Bathrm / 12x12 green		PLM ☑	TEM ☐
26	self-stick floor tile		PLM ☑	TEM ☐
27	1		PLM ☐	TEM ☑
			PLM ☐	TEM ☐

SECTION IV

Photographic Log

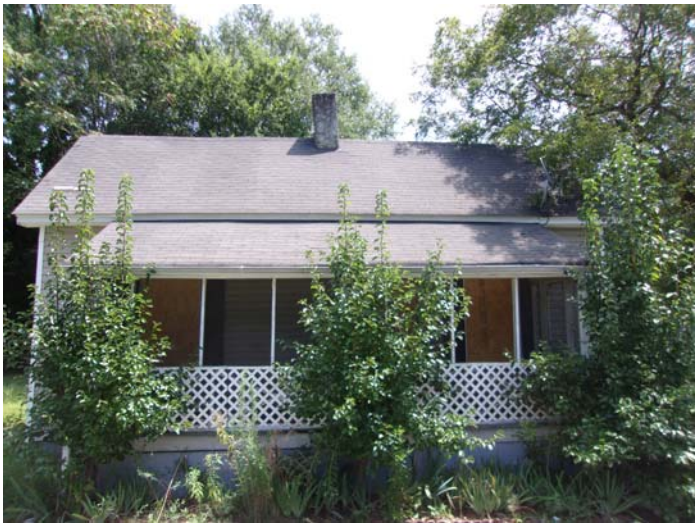

Photo 1 – 485 Beacham Street in Spartanburg, South Carolina

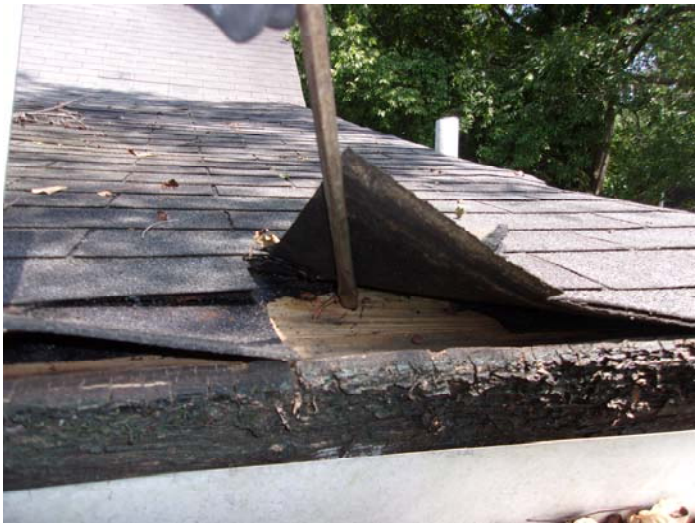

Photo 2 – Roof shingles & felt

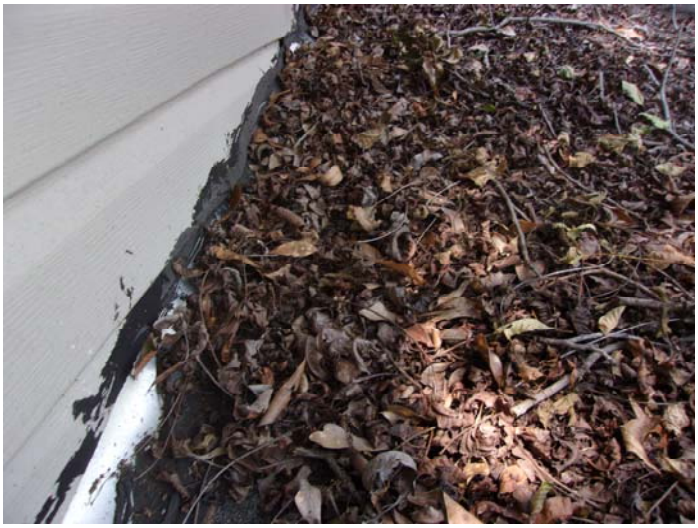

Photo 3 –Tar on roof flashing

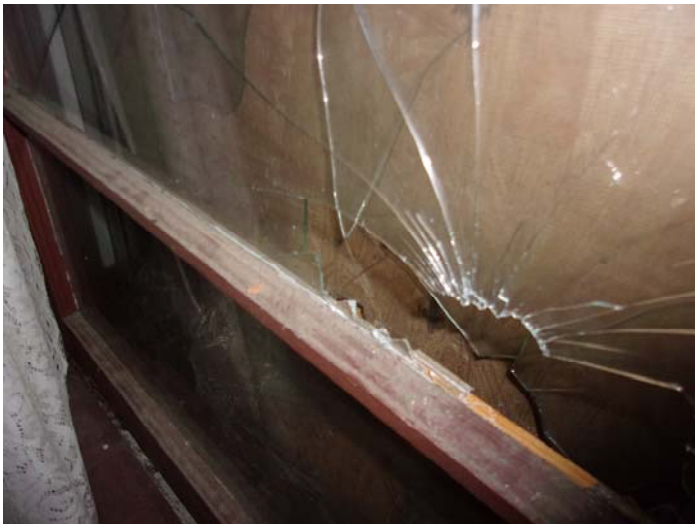

Photo 4 – Wooden window glazing

Photo 5 – 12" x 12" wooden pattern self-stick floor tile in the kitchen & hallway – top layer

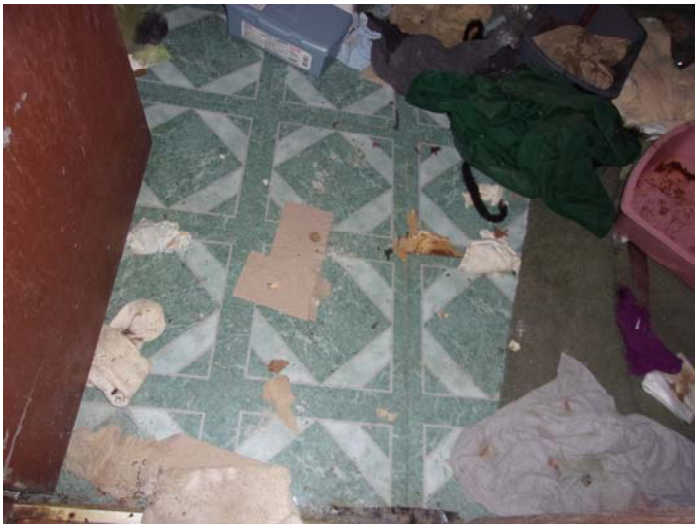

Photo 6 – Brown pattern roll vinyl floor with no mastic over white pattern roll vinyl floor with no mastic in the kitchen & hallway – 2nd & 3rd layers

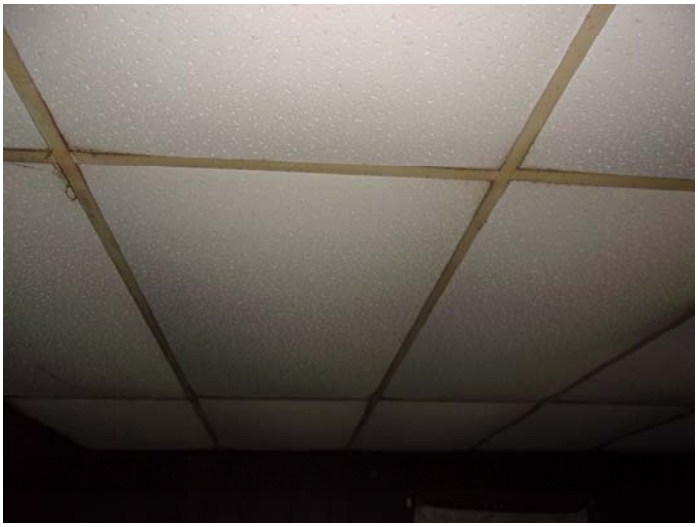

Photo 7 – 2’ x 4’ ceiling tiles in the living room

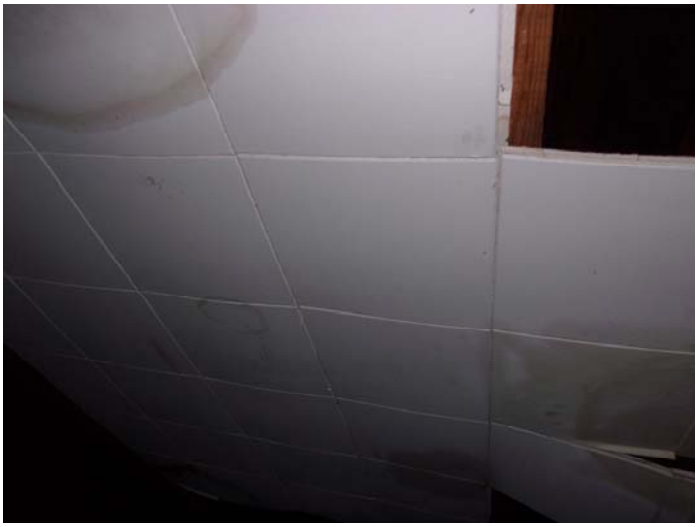

Photo 8 – 12” x 12” ceiling tiles in the kitchen 7 hallway

Photo 9 – Joint compound on wooden ceiling sin the kitchen & hallway

SECTION V

SC DHEC Asbestos Inspector License

SCDHEC ISSUED
Asbestos ID Card

Thomas H Oliver

		Expiration Date:
CONSULTBI	BI-00680	01/18/19
AIRSAMPLER	AS-00202	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