Asbestos & Lead Based Paint Assessment

City of Spartanburg
342 Ridgewood Avenue
Spartanburg, South Carolina 29306

Prepared for:
The City of Spartanburg
440 South Church St., Suite B
Spartanburg, South Carolina 29306

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

Project Number: 0119-09

May 20, 2019

Environmental Management

Environmental Management

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Apex Project Number 0119-09

May 20, 2019

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

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

Dear Mr. Tillerson:

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

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

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

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

Respectfully submitted,
APEX ENVIRONMENTAL MANAGEMENT, INC.

Tom Oliver
Director of Operations

Appendices

ASBESTOS AND LEAD BASED PAINT ASSESSMENT

CITY OF SPARTANBURG
342 RIDGEWOOD AVENUE
SPARTANBURG, SOUTH CAROLINA 29306

APEX PROJECT NO. 0119-09

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SECTION

SECTION I

Asbestos & Lead Evaluation Report

ASBESTOS EVALUATION REPORT
APEX PROJECT NUMBER: 0119-09

Date:	5/20/2019	Page Number:	1 of 5
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:	342 Ridgewood Avenue Spartanburg, SC 29306		
Assessor:	Tom Oliver	Date of Assessment:	5/3/2019
Company:	Apex Environmental Management 7 Winchester Court Mauldin, SC 29662	Phone Number:	(864) 404-3210
Purpose of Assessment:	Demolition	Age of Structure:	Approximately 90 years
Building Type:	Residential	Number of Stories:	1
Foundation:	Partial Finished Basement & Partial Crawlspace	Approximate Square Footage	2,140 SF

EXTERIOR BUILDING MATERIALS

- Flat wooden roof with shingles, tar & felt on the front porch.
- Pitched wooden roof with tar & no felt on the main house.
- Tar on 1 chimney & on brick wall on left side of house on previous roof location.
- Brick siding/walls over felt & wooden shake shingle siding over wood.
- Wooden windows with glazing on the brick/wooden casings & on glass panes.
- Wooden doors with caulk on the brick/wooden casings.
- Portions of the front porch & main house roofs unstable and collapsing.

INTERIOR BUILDING MATERIALS

- Plaster with finish with skim coat throughout main level.
- Multiple types & layers of vinyl floor with & without mastics in the main level & basement.
- Wooden & ceramic tiled floors on the main level.
- Concrete walls with a skim coat in the basement.
- Drywall with joint compound & tape ceiling in the basement.
- HVAC “A” tape in the basement & crawlspace.
- The floors are unstable & collapsing throughout the main level.

SCOPE OF THE SURVEY

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

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

METHODS

Asbestos Containing Materials

In order to determine if the suspect materials observed during the visual survey contained asbestos, representative bulk samples were collected and placed in sealed packages. Forty-seven (47) bulk samples were collected during the survey and submitted to EMSL in Pineville, North Carolina for analysis using the EPA recommended method of Polarized Light Microscopy (PLM) coupled with dispersion staining (Method No. EPA 600/M4-82-020, Dec. 1982). EMSL participates in the National Voluntary Laboratory Accreditation Program (NVLAP). Their NVLAP accreditation number is 200841-0. EPA regulations require that multiple samples of each homogeneous material be collected for laboratory analysis. In accordance with South Carolina Regulation 61-86.1, non-friable organically bound materials that are reported to be non-asbestos containing by PLM analysis must also be analyzed by Transmission Electron Microscopy (TEM). Eleven (11) 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. Provided below is a general discussion of the asbestos containing materials identified in the residence. 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 400 SF of tar on roof shingles on the front porch roof.

- Approximately 30 LF of tar on 1 chimney & on brick wall on the left side of the house at the previous roof location near the side door.

- Approximately 21 wooden/brick window casings with glazing.

- Approximately 4 wooden/brick door casings with caulk.

- Approximately 240 SF of tan & blue pattern vinyl floor in the kitchen & dining room (2nd layer) & pantry (top layer).

- Approximately 425 SF of 12" x 12" tan rock fissure pattern floor tile & black mastic throughout the finished portion of the basement.

- Approximately 425 SF of the drywall ceiling system throughout the finished portion of the basement.

- Approximately 50 SF of HVAC "A" tape on metal ducts throughout the finished portion of the basement & crawlspace.

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 are included in the LBP Analysis Report in Appendix II of this report. The approximate locations of the paint samples collected and analytical results are presented in the *LBP Data Table* included in Appendix II of this report.

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

Exterior:

- White wooden doors & window systems.
- Beige wooden front porch columns & upper walls.
- Beige concrete front porch wall caps.
- Beige wooden soffits.
- White wooden roof overhang & shake shingle siding.
- White wooden back porch framing, ceiling & floor skirt.
- Grey wooden door casings.
- White metal window & door lintels.

Interior:

- Beige plaster walls.

- White ceramic tiled walls.
- White metal bath tub.

RECOMMENDATIONS AND DISCUSSION

Asbestos Containing Materials

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

Apex recommends the following:

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

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

Lead-Based Paint

Currently SCDHEC defines LBP as paint containing greater than 1.0 milligrams per square centimeter (mg/cm^2) lead or in excess of, or equal to, 0.5 percent lead. Building materials identified as being painted with LBP should be segregated from the other building materials and recycled or disposed of in a municipal lined landfill.

Changes to SC DHEC and federal regulations have changed the disposal options for LBP waste and LBP residue. LBP waste is defined as material such as wood, brick, metal, etc. that is coated with LBP. LBP residue is defined as residue that is generated from the removal (scraped, chipped, sandblasted, chemical means, etc.) of LBP from a structure. The regulations allow LBP waste from residential and commercial structures to be disposed of in Class 2 (construction and demolition debris) and Class 3 (municipal solid waste or industrial) landfills in South Carolina. The management of LBP residue is based on the source and lead concentration characterized by Toxic Characteristic Leaching Procedures (TCLP) to determine if the waste is classified as hazardous or non-hazardous. LBP residues that have TCLP sample results less than 5 milligrams per liter (mg/L) lead may be disposed of in a Class 3 landfill and is considered to be non-hazardous. LBP residues that have TCLP sample results equal to or greater than 5 mg/L lead should be disposed of in a Subtitle C landfill and is considered to be hazardous. 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 342 Ridgewood Avenue ACM/LBP
Sampled By: Tom Oliver

Project Location: 342 Ridgewood Avenue, Spartanburg, SC 29306
Project Manager: Tom Oliver

Project Number: 0119-09
Date: 5/3/2019

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
1	**Front porch roof**	**Roof shingles (2 layers) with tar & felt**	**PLM - 3% chry (tar)** NAD (shingles & felt)	**Non-Friable**	**Good**	**400 SF**
2						
3			TEM - NAD (shingles & felt)			
4	Main house roof	Roof shingles (1 layer) with tar & no felt	PLM - NAD	Non-Friable	Good	2,100 SF
5						
6			TEM - NAD			
7	**Tar on brick wall on left side of house on previous roof & chimney**	**Tar on previous roof flashing & chimney**	**4% chrysotile**	**Non-Friable**	**Good**	**30 LF**
8						
9						
10	**Wooden/brick window casings**	**Window casing glazing**	**2% chrysotile**	**Non-Friable**	**Good**	**21 EA**
11						
12						
13	Wooden windows	Window glazing	PLM - NAD	Non-Friable	Good	21 EA
14						
15			TEM - NAD			
16	**Wooden/brick door casings**	**Door casing caulk**	**2% chrysotile**	**Non-Friable**	**Good**	**4 EA**
17						
18						
19	Throughout main level	Plaster with finish with skim coat	PLM - NAD	Friable	Significantly Damaged	4,300 SF
20						
21						
22						
23						
24	Dining room & kitchen patches (top layer)	12" x 12" wooden pattern self-stick floor tile	PLM - NAD	Non-Friable	Good	75 SF
25						
26			TEM - NAD			

ASBESTOS SURVEY FIELD DATA SHEET
PLM & TEM ANALYSIS

Project Name: COS 342 Ridgewood Avenue ACM/LBP
Sampled By: Tom Oliver

Project Location: 342 Ridgewood Avenue, Spartanburg, SC 29306
Project Manager: Tom Oliver

Project Number: 0119-09
Date: 5/3/2019

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
27	Kitchen - top layer	12" x 12" beige multi-square pattern self-stick floor tile	PLM - NAD	Non-Friable	Good	145 SF
28						
29			TEM - NAD			
30	**Kitchen & dining room - 2nd & 3rd layers; pantry 1st & 2nd layers**	**Tan & blue pattern vinyl floor with no mastic over brown rectangle pattern vinyl floor with no mastic**	**PLM - 8% chry (tan & blue floor)**; NAD (brown floor)	**Non-Friable**	**Good**	**240 SF**
31						
32			TEM - NAD (brown floor)			
33	Beneath exterior brick siding	Felt paper	PLM - NAD	Non-Friable	Good	1,900 SF
34						
35			TEM - NAD			
36	**Throughout the finished portion of the basement**	**12" x 12" tan rock fissure pattern floor tile & black mastic**	**PLM - 3% chry (floor tile) 6% (black mastic)**	**Non-Friable**	**Good**	**425 SF**
37						
38						
39	Throughout the finished portion of the basement	Skim coat over concrete walls	PLM - NAD	Friable	Good	650 SF
40						
41						
42	**Throughout the finished portion of the basement**	**Drywall with joint compound & tape ceilings**	**PLM - 3% chrysotile**	**Friable**	**Good**	**425 SF**
43						
44						
45	**Throughout the finished portion of the basement & crawlspace**	**HVAC "A" tape on metal ducts**	**60% chrysotile**	**Friable**	**Good**	**50 SF**
46						
47						

NAD = No Asbestos Detected
Bold = Positive For Asbestos
LF = Linear Feet
SF = Square Feet
EA = Each
Chry = Chrysotile
Amos = Amosite
FT3 = Cubic Feet

FIELD DATA SHEET
XRF LBP ANALYSIS

Project Name: COS 342 Ridgewood Avenue ACM/LBP

Sampled By: Tom Oliver

Project Location: 342 Ridgewood Avenue, Spartanburg, SC 29306

Project Manager: Tom Oliver

Project Number: 0119-09

Date: 5/17/2019

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m^3)
1	Standardization				185.00
2	Calibration				1.20
3	Calibration				1.13
4	Calibration				1.12
5	Exterior	Door	Black	Wood	0.09
6	**Exterior**	**Door casing**	**White**	**Wood**	**1.72**
7	**Exterior**	**Window casing**	**White**	**Wood**	**1.24**
8	**Exterior**	**Front porch column**	**Beige**	**Wood**	**2.61**
9	**Exterior**	**Front porch wall cap**	**Beige**	**Concrete**	**1.96**
10	**Exterior**	**Front porch upper wall**	**Beige**	**Wood**	**5.00**
11	Exterior	Front porch ceiling frame	White	Wood	0.00
12	Exterior	Shake shingle siding	Beige	Wood	0.40
13	**Exterior**	**Soffit**	**Beige**	**Wood**	**2.07**
14	Exterior	Fascia	Beige	Wood	0.91
15	Exterior	Fascia	White	Wood	0.90
16	**Exterior**	**Roof overhang**	**White**	**Wood**	**1.67**
17	**Exterior**	**Shake shingle siding**	**White**	**Wood**	**2.61**
18	Exterior	Door	White	Wood	0.07
19	**Exterior**	**Back porch framing**	**White**	**Wood**	**1.41**
20	**Exterior**	**Back porch ceiling**	**White**	**Wood**	**1.83**
21	**Exterior**	**Back porch floor skirt**	**White**	**Wood**	**3.03**
22	**Exterior**	**Door casing**	**Grey**	**Wood**	**3.96**
23	Exterior	Door	Red	Wood	0.02
24	**Exterior**	**Door & window lintels**	**White**	**Metal**	**1.85**
25	Interior - Main Level	Fireplace	White	Brick	0.06

FIELD DATA SHEET
XRF LBP ANALYSIS

Project Name: COS 342 Ridgewood Avenue ACM/LBP

Sampled By: Tom Oliver

Project Location: 342 Ridgewood Avenue, Spartanburg, SC 29306

Project Manager: Tom Oliver

Project Number: 0119-09

Date: 5/17/2019

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m^3)
26	Interior - Main Level	Wall	White	Plaster	0.06
27	Interior - Main Level	Door casing	White	Wood	0.20
28	Interior - Main Level	Base board	White	Wood	0.10
29	Interior - Main Level	Window	White	Wood	0.09
30	Interior - Main Level	Window casing	White	Wood	0.07
31	**Interior - Main Level**	**Wall**	**Beige**	**Plaster**	**1.00**
32	Interior - Main Level	Cabinets	Beige	Wood	0.14
33	Interior - Main Level	Door casing	Beige	Wood	0.03
34	Interior - Main Level	Door casing	Beige	Wood	0.19
35	Interior - Main Level	Counter-top	Beige	Wood	0.65
36	Interior - Main Level	Pantry shelves	White	Wood	0.05
37	Interior - Main Level	Door	White	Wood	0.15
38	Interior - Main Level	Fireplace mantle	White	Wood	0.06
39	Interior - Main Level	Floor	Brown	Wood	0.01
40	**Interior - Main Level**	**Wall**	**White**	**Ceramic tile**	**1.61**
41	Interior - Main Level	Floor	Grey	Ceramic tile	0.00
42	**Interior - Main Level**	**Bath tub**	**White**	**Metal**	**5.00**
43	Interior - Basement	Wall	Blue	Concrete	0.01
44	Interior - Basement	Door casing	Blue	Wood	0.10
45	Interior - Basement	Column	Blue	Wood	0.00
46	Interior - Basement	Ceiling	White	Drywall	0.03
47	Calibration				1.08
48	Calibration				1.10
49	Calibration				1.11

Bold = LBP FFM = Factory Finish Metal FFM = Factory Finish Vinyl

SECTION III

Laboratory Analytical Results & Chain of Custody

EMSL Analytical, Inc.

10801 Southern Loop Blvd Pineville, NC 28134

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

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

EMSL Order: 411904123
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

Attention: Tom Oliver
Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

Phone: (864) 640-5274
Fax:
Received Date: 05/06/2019 8:05 AM
Analysis Date: 05/10/2019 - 05/13/2019
Collected Date: 05/03/2019

Project: 0119-09 COS 342 Ridgewood Ave. (City of Spartanburg)

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1-Shingle 1 *411904123-0001*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
1-Tar *411904123-0001A*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
1-Shingle 2 *411904123-0001B*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
1-Tar *411904123-0001C*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
1-Felt *411904123-0001D*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
2-Shingle 1 *411904123-0002*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
2-Tar *411904123-0002A*	Roof Shingles (2 Layers) w/ Tar & Felt				Positive Stop (Not Analyzed)
2-Shingle 2 *411904123-0002B*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
2-Tar *411904123-0002C*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Non-Fibrous Homogeneous	5% Cellulose	15% Ca Carbonate 80% Non-fibrous (Other)	None Detected
2-Felt *411904123-0002D*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
4-Shingle *411904123-0003*	Roof Shingles (1 Layer) w/ Tar & No Felt	Gray/Tan/Black Non-Fibrous Homogeneous	5% Glass	15% Ca Carbonate 80% Non-fibrous (Other)	None Detected
4-Tar *411904123-0003A*	Roof Shingles (1 Layer) w/ Tar & No Felt	Black Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
5-Shingle *411904123-0004*	Roof Shingles (1 Layer) w/ Tar & No Felt	White/Black Fibrous Homogeneous	5% Glass	8% Quartz 15% Ca Carbonate 72% Non-fibrous (Other)	None Detected
5-Tar *411904123-0004A*	Roof Shingles (1 Layer) w/ Tar & No Felt	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
7 *411904123-0005*	Roof Flashing & Chimney Tar	Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
8 *411904123-0006*	Roof Flashing & Chimney Tar				Positive Stop (Not Analyzed)

Initial report from: 05/13/2019 09:06:00

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
Tel/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411904123
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
10 *411904123-0007*	Window Casing Glazing	Gray Non-Fibrous Homogeneous		20% Ca Carbonate 78% Non-fibrous (Other)	2% Chrysotile
11 *411904123-0008*	Window Casing Glazing				Positive Stop (Not Analyzed)
13 *411904123-0009*	Window Glazing	Gray Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
14 *411904123-0010*	Window Glazing	Gray/White Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
16 *411904123-0011*	Door Caulk	Gray Non-Fibrous Homogeneous		15% Ca Carbonate 83% Non-fibrous (Other)	2% Chrysotile
17 *411904123-0012*	Door Caulk				Positive Stop (Not Analyzed)
19-Surfacing *411904123-0013*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	Gray Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
19-Skim Coat *411904123-0013A*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
19-Rough Coat *411904123-0013B*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	Tan Non-Fibrous Homogeneous	<1% Synthetic	30% Quartz 5% Ca Carbonate 65% Non-fibrous (Other)	None Detected
20-Surfacing *411904123-0014*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
20-Skim Coat *411904123-0014A*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
20-Rough Coat *411904123-0014B*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	Tan Non-Fibrous Homogeneous	1% Synthetic	30% Quartz 5% Ca Carbonate 64% Non-fibrous (Other)	None Detected
21-Surfacing *411904123-0015*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
21-Skim Coat *411904123-0015A*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
21-Rough Coat *411904123-0015B*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	Tan Non-Fibrous Homogeneous	1% Synthetic	30% Quartz 5% Ca Carbonate 64% Non-fibrous (Other)	None Detected
22-Surfacing *411904123-0016*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		30% Ca Carbonate 70% Non-fibrous (Other)	None Detected
22-Skim Coat *411904123-0016A*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
22-Rough Coat *411904123-0016B*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	Gray Non-Fibrous Homogeneous	1% Synthetic	25% Quartz 5% Ca Carbonate 69% Non-fibrous (Other)	None Detected
23-Surfacing *411904123-0017*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected

Initial report from: 05/13/2019 09:06:00

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
Tel/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411904123
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
23-Skim Coat *411904123-0017A*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	White Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
23-Rough Coat *411904123-0017B*	Plaster w/ Finish Walls & Ceilings w/ Skim Coat	Gray Non-Fibrous Homogeneous	1% Synthetic	25% Quartz 5% Ca Carbonate 69% Non-fibrous (Other)	None Detected
24 *411904123-0018*	Wooden Pattern 12"x12" Self-Stick Floor Tile	Brown/Gray Non-Fibrous Homogeneous		20% Ca Carbonate 80% Non-fibrous (Other)	None Detected
25 *411904123-0019*	Wooden Pattern 12"x12" Self-Stick Floor Tile	Brown/Gray Non-Fibrous Homogeneous		30% Ca Carbonate 70% Non-fibrous (Other)	None Detected
27 *411904123-0020*	Beige Multi-Square Pattern 12"x12" Self-Stick Floor Tile	Beige Non-Fibrous Homogeneous		20% Ca Carbonate 80% Non-fibrous (Other)	None Detected
28 *411904123-0021*	Beige Multi-Square Pattern 12"x12" Self-Stick Floor Tile	Beige Non-Fibrous Homogeneous		30% Ca Carbonate 70% Non-fibrous (Other)	None Detected
30-Top Flooring *411904123-0022*	Tan & Blue Pattern Vinyl Floor w/ 2nd Layer of Vinyl Floor	Tan/Blue Non-Fibrous Homogeneous		10% Ca Carbonate 82% Non-fibrous (Other)	8% Chrysotile
30-Bottom Flooring *411904123-0022A*	Tan & Blue Pattern Vinyl Floor w/ 2nd Layer of Vinyl Floor	Brown Non-Fibrous Homogeneous	40% Cellulose 3% Synthetic	20% Ca Carbonate 37% Non-fibrous (Other)	None Detected
31-Top Flooring *411904123-0023*	Tan & Blue Pattern Vinyl Floor w/ 2nd Layer of Vinyl Floor				Positive Stop (Not Analyzed)
31-Bottom Flooring *411904123-0023A*	Tan & Blue Pattern Vinyl Floor w/ 2nd Layer of Vinyl Floor	Brown Fibrous Heterogeneous	40% Cellulose 3% Synthetic	10% Ca Carbonate 47% Non-fibrous (Other)	None Detected
33 *411904123-0024*	Felt Paper	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
34 *411904123-0025*	Felt Paper	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
36-Floor Tile *411904123-0026*	12"x12" Tan Rock Fissure Pattern Floor Tile & Black Mastic	Brown Non-Fibrous Homogeneous		30% Ca Carbonate 67% Non-fibrous (Other)	3% Chrysotile
36-Mastic *411904123-0026A*	12"x12" Tan Rock Fissure Pattern Floor Tile & Black Mastic	Black Non-Fibrous Homogeneous		94% Non-fibrous (Other)	6% Chrysotile
37-Floor Tile *411904123-0027*	12"x12" Tan Rock Fissure Pattern Floor Tile & Black Mastic				Positive Stop (Not Analyzed)
37-Mastic *411904123-0027A*	12"x12" Tan Rock Fissure Pattern Floor Tile & Black Mastic				Positive Stop (Not Analyzed)
39 *411904123-0028*	Skim Coat over Concrete Walls	Gray Non-Fibrous Homogeneous		15% Quartz 10% Ca Carbonate 75% Non-fibrous (Other)	None Detected
40 *411904123-0029*	Skim Coat over Concrete Walls	White Non-Fibrous Homogeneous		15% Quartz 5% Ca Carbonate 80% Non-fibrous (Other)	None Detected
41 *411904123-0030*	Skim Coat over Concrete Walls	White Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
42-Drywall *411904123-0031*	Drywall w/ Joint Compound & Tape Ceilings	Brown/Gray Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
42-Joint Compound *411904123-0031A*	Drywall w/ Joint Compound & Tape Ceilings	Gray Non-Fibrous Homogeneous		30% Ca Carbonate 67% Non-fibrous (Other)	3% Chrysotile
42-Tape *411904123-0031B*	Drywall w/ Joint Compound & Tape Ceilings				Positive Stop (Not Analyzed)
43-Drywall *411904123-0032*	Drywall w/ Joint Compound & Tape Ceilings				Positive Stop (Not Analyzed)
43-Joint Compound *411904123-0032A*	Drywall w/ Joint Compound & Tape Ceilings				Positive Stop (Not Analyzed)
43-Tape *411904123-0032B*	Drywall w/ Joint Compound & Tape Ceilings				Positive Stop (Not Analyzed)
44-Drywall *411904123-0033*	Drywall w/ Joint Compound & Tape Ceilings				Positive Stop (Not Analyzed)
44-Joint Compound *411904123-0033A*	Drywall w/ Joint Compound & Tape Ceilings				Positive Stop (Not Analyzed)
44-Tape *411904123-0033B*	Drywall w/ Joint Compound & Tape Ceilings				Positive Stop (Not Analyzed)
45 *411904123-0034*	HVAC A-Tape on Metal Ducts	White Fibrous Homogeneous	20% Cellulose	20% Non-fibrous (Other)	60% Chrysotile
46 *411904123-0035*	HVAC A-Tape on Metal Ducts				Positive Stop (Not Analyzed)
47 *411904123-0036*	HVAC A-Tape on Metal Ducts				Positive Stop (Not Analyzed)

Analyst(s)
Eric Loomis (2)
Lacy Searcy (18)
Sarah Breneman (30)

Lee Plumley, Laboratory Manager
or Other Approved Signatory

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

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

Initial report from: 05/13/2019 09:06:00

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
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http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411904123
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

Attention: Tom Oliver
Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

Phone: (864) 640-5274
Fax:
Received Date: 05/06/2019 8:05 AM
Analysis Date: 05/18/2019
Collected Date: 05/03/2019

Project: 0119-09 COS 342 Ridgewood Ave. (City of Spartanburg)

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

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
3-Shingle 1 *411904123-0037*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
3-Shingle 2 *411904123-0038*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
3-Tar *411904123-0039*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
3-Felt *411904123-0040*	Roof Shingles (2 Layers) w/ Tar & Felt	Black Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
6-Shingle *411904123-0041*	Roof Shingles (1 Layer) w/ Tar & No Felt	Gray/Black Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
6-Tar *411904123-0042*	Roof Shingles (1 Layer) w/ Tar & No Felt	Black Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
15 *411904123-0043*	Window Glazing	White Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
26 *411904123-0044*	Wooden Pattern 12"x12" Self-Stick Floor Tile	Brown Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
29 *411904123-0045*	Beige Multi-Square Pattern 12"x12" Self-Stick Floor Tile	Beige Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
32-Bottom Flooring *411904123-0046*	Tan & Blue Pattern Vinyl Floor w/ 2nd Layer of Vinyl Floor	Brown Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
35 *411904123-0047*	Felt Paper	Gray Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 05/18/2019 16:14:21

OrderID: 411904123

EMSL Analytical, Inc.
10801 Southern Loop Blvd

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

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411904123

Company : Apex Environmental Management, Inc.	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 7 Winchester Court	
City: Mauldin **State/Province:** SC	**Zip/Postal Code:** 29662 **Country:** US
Report To (Name): Tom Oliver	**Telephone #:** 864-404-3210
Email Address: toliver@apex-ehs.com	**Fax #:** 864-404-3213 **Purchase Order:**
Project Name/Number: 0119-09 COS 342 Ridgewood Ave	**Please Provide Results:** ☐ Fax ☑ Email ☐ Mail
U.S. State Samples Taken: SC	**CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt

Turnaround Time (TAT) Options* – Please Check

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

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

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

☑ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 5-3-19

Samplers Name: Tom Oliver **Samplers Signature:**

Sample #	HA #	Sample Location	Material Description
1		Roof shingles (2 layers) w/	PLM
2		tar & felt |	|
3		|	TEM
4		Roof shingles (1 layer) w/ tar	PLM
5		& no felt |	|
6		|	TEM
7		Roof flashing & chimney	PLM
8		tar |	|
9		|	TEM

Client Sample # (s): 1-47 **Total # of Samples:** 47

Relinquished (Client): **Date:** 5-3-19 **Time:** 4:30 PM

Received (Lab): Kyle Nelson **Date:** 5/6/19 **Time:** 8:05AM FK

Comments/Special Instructions:

Positive stop on analysis. If joint compound on drywall is positive, then positive stop on drywall and tape layers. Bill according to Special City of Spartanburg project Pricing & Layering.

Page 1 of 3 pages

7957 1279 6968

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL Analytical, Inc.
10801 Southern Loop Blvd
Pineville, NC 28134
PHONE: (704) 525-2205
FAX: (704) 525-2382

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411904123

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

Sample #	HA #	Sample Location	Material Description
10		Window casing glazing	PLM
11		"	"
12		"	TEM
13		Window glazing	PLM
14		"	"
15		"	TEM
16		Door Caulk	PLM
17		"	"
18		"	TEM
19		Plaster w/ finish walls	PLM
20		& ceilings w/ skim coat	"
21		"	"
22		"	"
23		"	"
24		Wooden pattern 12" x 12"	PLM
25		self-stick floor tile	"
26		"	TEM
27		Beige multi-Square pattern	PLM
28		12" x 12" self-stick floor tile	"
29		"	TEM
30		Tan & blue pattern vinyl floor	PLM
31		w/ 2nd layer of vinyl floor	"
32		"	TEM

***Comments/Special Instructions:**

Positive stop on analysis. If joint compound on drywall is positive, then positive stop on drywall and tape layers. Bill according to Special City of Spartanburg project Pricing & Layering.

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Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411904123

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

Sample #	HA #	Sample Location	Material Description
33		Felt paper	PLM
34		"	"
35		"	TEM
36		12"x12" tan rock fissure	PLM
37		pattern floor tile + black	"
38		mastic "	TEM
39		Skim coat over	PLM
40		concrete walls "	"
41		"	"
42		Drywall w/ joint compound	PLM
43		+ tape ceiling "	"
44		"	"
45		HVAC A-Tape on	PLM
46		metal ducts "	"
47		"	"

*Comments/Special Instructions:

Positive stop on analysis. If joint compound on drywall is positive, then positive stop on drywall and tape layers. Bill according to Special City of Spartanburg project Pricing & Layering.

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

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types

Analyst(s)

Aaron Hartley (11)

Lee Plumley, Laboratory Manager
or other approved signatory

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 05/18/2019 16:14:21

SECTION IV

Photographic Log

Photo 1 – 342 Ridgewood Avenue in Spartanburg, South Carolina

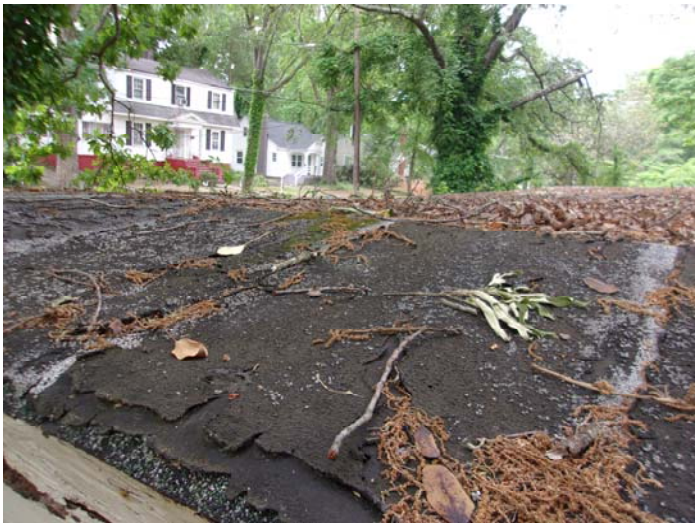

Photo 2 – Roof shingles with tar & felt on the front porch roof

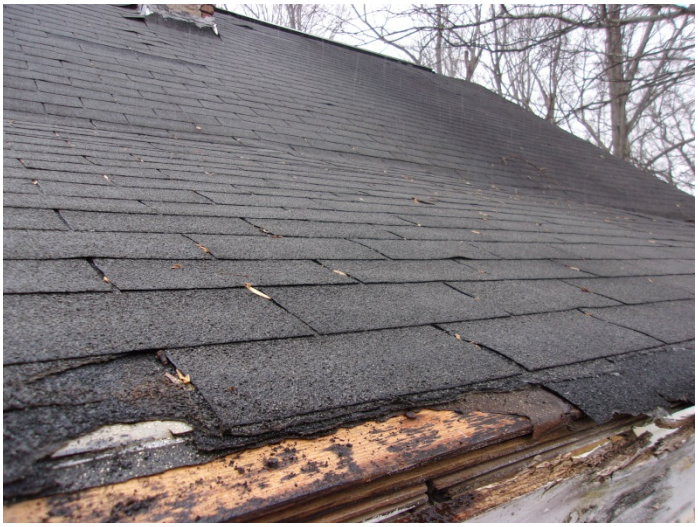

Photo 3 – Roof shingles with tar & no felt on the main house roof

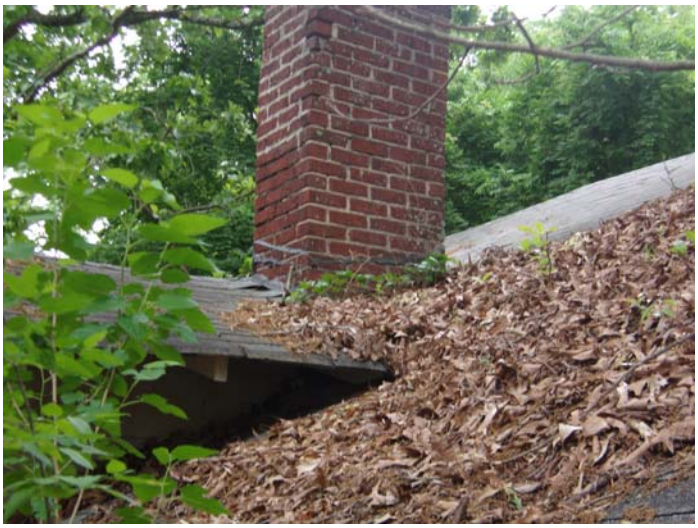

Photo 4 – Tar on chimney

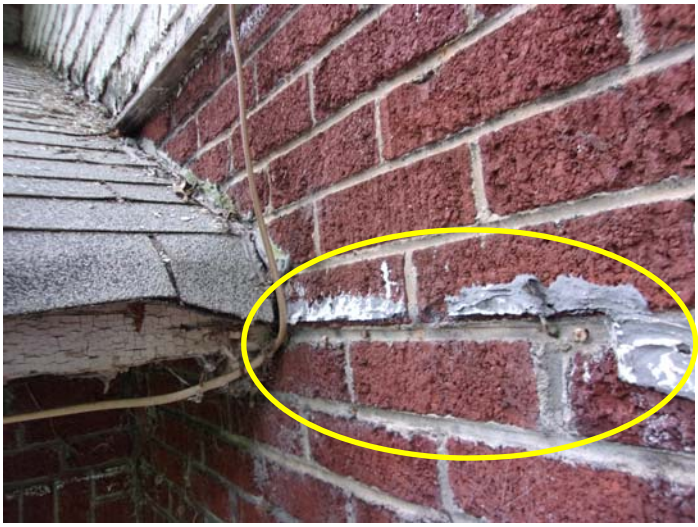

Photo 5 – Tar on brick wall on left side of house on previous roof flashing

Photo 6 – Wooden/brick window casings with glazing


Photo 7 – Wooden window glazing

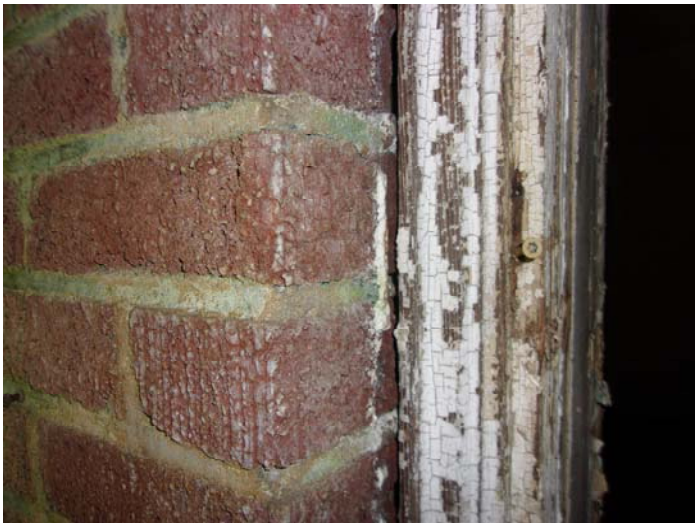
Photo 8 – Wooden/brick door casings with caulk

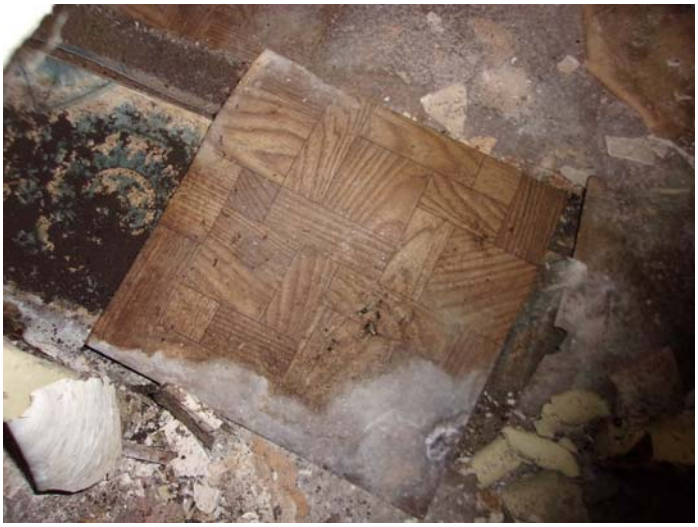
Photo 9 – 12" x 12" wooden pattern self-stick floor tile in the dining room & kitchen patches (top layer)


Photo 10 – 12" x 12" beige multi-square pattern self-stick floor tile in the kitchen (top layer)

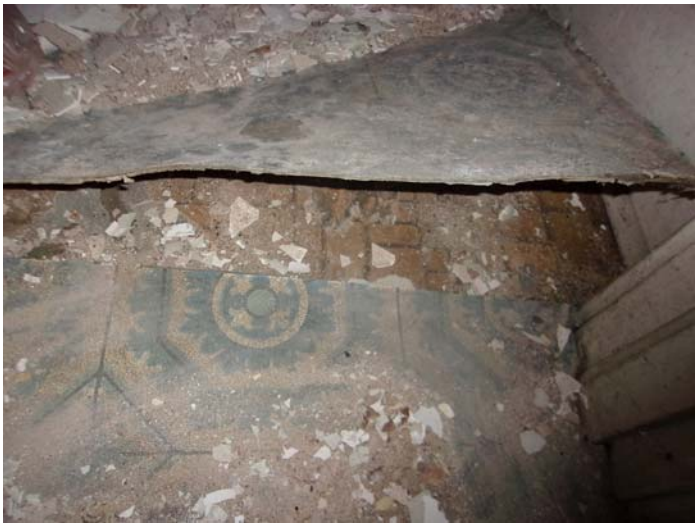
Photo 11 – Tan & blue pattern vinyl floor with no mastic in the dining room & kitchen (2nd layer) & pantry (top layer)


Photo 12 – Brown rectangle pattern vinyl floor with no mastic in the dining room & kitchen (3rd layer) & pantry (2nd layer)

Photo 13 – 12" x 12" tan rock fissure pattern floor tile & black mastic throughout the finished portion of the basement

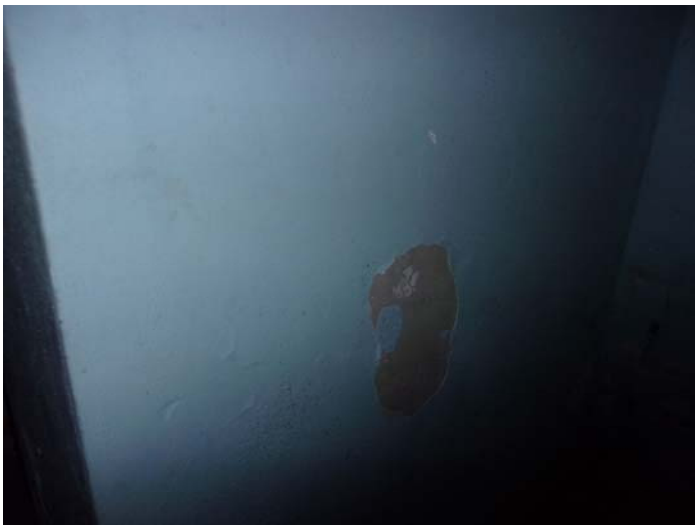

Photo 14 – Skim coat over concrete walls throughout the finished portion of the basement

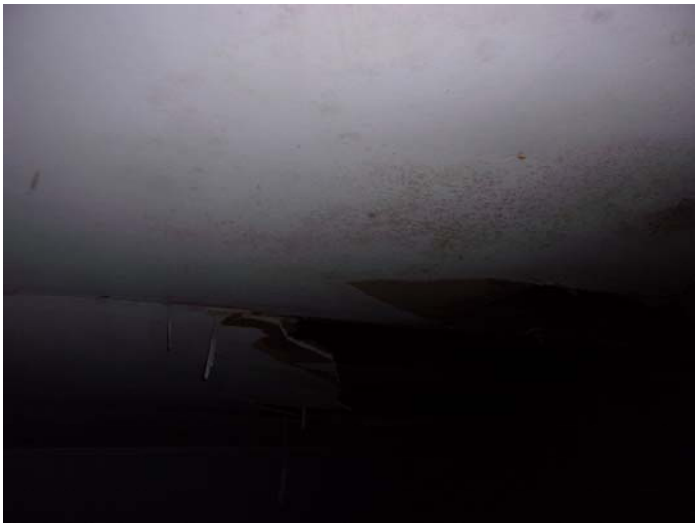

Photo 15 – Drywall with joint compound & tape ceilings throughout the finished portion of the basement

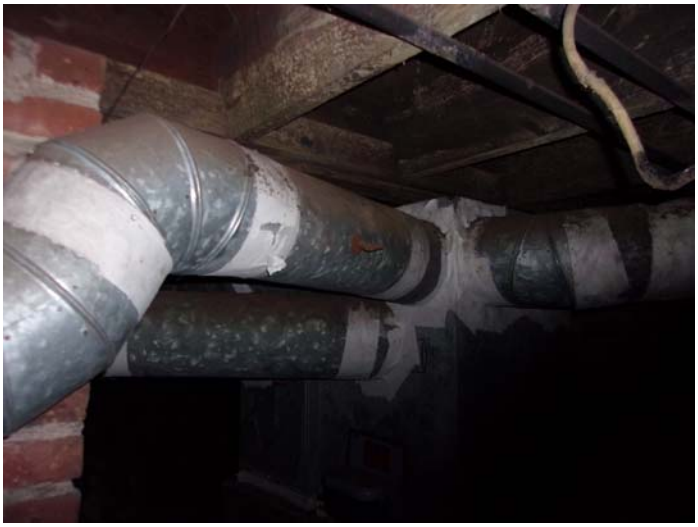

Photo 16 – HVAC "A" tape on metal ducts throughout the finished & unfinished basement

SECTION V

SC DHEC Asbestos Inspector License

SCDHEC ISSUED

Asbestos ID Card

Thomas H Oliver

		Expiration Date:
AIRSAMPLER	AS-00202	04/04/19
CONSULTBI	BI-00680	01/18/20