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RDT Prepared By: P. MOUTER
First Initial, Last Name

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**HOPE COLLEGE
HOLLAND, MICHIGAN**

**HAZARDOUS BUILDING MATERIALS INSPECTION
GRAVES HALL**

**FEBRUARY 14, 2007
PROJECT NO. G07060**

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LIST OF ACRONYMS and ABBREVIATIONS

ACM	asbestos-containing material
FTC&H	Fishbeck, Thompson, Carr & Huber, Inc.
ft ²	square feet
LBP	lead-based paint
PACM	presumed asbestos-containing material

1.0 INTRODUCTION

FTC&H was retained by Hope College to conduct an inspection of Graves Hall located at 363 College Avenue for hazardous materials including LBP, ACMs, fluorescent lights, and potential PCB-containing ballasts. Based on the information that was provided to FTC&H, the following is known about the facility:

- The original date of construction was 1894.
- Addition of the Dimnent Chapel and library expansion took place in 1929.
- Addition of the VanZooeren Library took place in 1962.
- There was a major renovation of the building in 1980.
- There are three floors, including a basement.
- The exterior of the building consists of stone and mortar with an asphalt shingled roof.
- The interior of the building consists of concrete flooring covered with vinyl floor tile and/or carpet, walls of plaster or drywall, and a variety of ceiling finishes including plaster, drywall, fixed ceiling tiles, and suspended ceiling systems.
- Steam heat is used from an outside source.
- The building is used for classroom teaching and offices.

The inspection was conducted according to the protocol described in the Asbestos Construction Standard, 29 CFR 1926.1101. It did not include building materials on the exterior of the building, destructive sampling, equipment, fiberglass, steel, concrete/mortar/block, ceramic tile, or inaccessible areas/materials.

The following assumptions were made in generating the inspection results:

- Fire doors contain asbestos.
- Asphalt roofing contains asbestos.
- Window caulking contains asbestos.

The inspection was conducted on January 16 and 31, 2007, and in accordance with the FTC&H proposal dated November 10, 2006.

2.0 CERTIFICATION

The building inspection was led by a State of Michigan accredited Asbestos Building Inspector, Mr. Mark R. Nelson (accreditation number 33420). All samples were sent to an independent laboratory for analyses. Laboratories used for the analyses are identified in Appendix 1 as shown on the analytical reports.

3.0 INSPECTION PROCEDURES AND SAMPLING METHODOLOGY

The inspection was conducted in a room-by-room fashion. According to the standard, all materials were considered PACMs for sampling purposes. For the purposes of this report, PACM and homogeneous material are used interchangeably. Homogeneous material numbers were arbitrarily selected depending on when they were first identified. The number of samples collected from each homogeneous material was determined depending on the type of material. For example, at least 3 samples were collected from thermal system insulation. Surfacing materials were sampled according to the size; 3 samples were collected from a material covering less than 1,000 ft²; 5 samples were collected from areas covering 1,001 to less than 3,000 ft², and 7 samples were collected from areas covering more than 3,000 ft². Finally, at least 1 sample was collected from miscellaneous materials. Sample locations were randomly selected by the inspector at the time of the inspection. The laboratory was instructed to discontinue analyzing samples from a homogeneous material when the first asbestos-containing sample was identified. All layers of the submitted sample were analyzed except if asbestos was identified in one of the layers.

The insulation on mechanical systems was identified and sampled independently as best as could be determined in the field. Fitting insulation was considered a specific part of a system depending upon the type of insulation (e.g., fiberglass, aircell, mag, etc.).

Paint chip samples were analyzed for lead content in order to provide the contractor with the information for conducting exposure assessments during demolition/renovation activities. Paint samples were collected based on location and color from a variety of materials throughout the building. Laboratories used for the analyses are identified in Appendix 1 as shown on the analytical reports.

Additional hazardous materials, such as fluorescent light bulbs and associated light ballasts were identified to recycle or remove prior to renovation as stated by environmental regulatory requirements.

4.0 RESULTS

4.1 ASBESTOS INSPECTION RESULTS

A total of 23 unique homogeneous materials were identified during the inspection, resulting in 45 samples collected and 55 sample analyses (including layers). As a result, 6 homogeneous materials were found to be asbestos containing (having a concentration greater than 1% by weight).

Table 1 identifies the homogeneous materials and their corresponding identification number. Table 2 describes each of the sample locations. Table 3 describes the asbestos-containing and nonasbestos-containing homogeneous materials identified in each room and approximate quantities, and Table 4 is a summary of the asbestos-containing homogeneous materials.

4.2 LEAD BASED PAINT RESULTS

As a result of the LBP inspection, five paint samples were collected and analyzed. Sample lead concentrations ranged from 0.04% and 0.30% by weight and are summarized in Table 5. Laboratories used for the analyses are identified in Appendix 1 as shown on the analytical reports.

4.3 HAZARDOUS MATERIALS

Miscellaneous hazardous materials found in the building included fluorescent bulbs and ballasts. Total quantity and room-by-room breakdown of quantities are listed in Table 6. Ballasts were surveyed in a random manner to estimate the quantity of ballasts that may contain PCBs. A summary of this PCB-containing ballast survey is listed in Table 7.

5.0 CONCLUSIONS

On January 16, 2007, FTC&H conducted an asbestos, LBP, and hazardous materials inspection of Graves Hall on the Hope College campus in Holland, Michigan. The inspection was conducted by a State of Michigan accredited Asbestos Building Inspector, Mr. Mark Nelson (accreditation number A33420). The asbestos-containing materials and total quantities as a result of this inspection are shown in Table 3. The lead based paint results with sample locations are listed in Table 4, and miscellaneous hazardous materials type, location, and quantity are listed in Table 5.

Tables

Table 1 - Description of Homogeneous Materials

Asbestos Inspection Report

Graves Hall, Hope College, Holland, Michigan

HA No.	Material Description	Material Type	Asbestos Containing?	Quantity	Unit
1	Brown covebase	MM	N	2,728	l.f.
2	9" x 9" floor tile - brown	MM	Y	8,465	s.f.
3	Drywall and mud	SM	N	38,780	s.f.
4	Plaster	SM	N	29,943	s.f.
5	9" x 9" floor tile - brown and pink	MM	Y	16	s.f.
6	Seamless floor covering - brown	MM	N	200	s.f.
7	Seamless stair covering - brown diamond pattern	MM	N	200	s.f.
8	2' x 4' ceiling tile - pinhole and fissure	MM	N	600	s.f.
9	1' x 1' ceiling tile - gluepod only	MM	N	9,020	s.f.
10	6" covebase - brown	MM	N	108	l.f.
11	2' x 2' ceiling tile - pinhole and fissure	MM	N	650	s.f.
12	Seamless stair covering - brown square pattern	MM	N	10	s.f.
13	4" dark brown covebase	MM	N	980	l.f.
14	12" x 12" floor tile - white with brown	MM	N	1,045	s.f.
15	Black tar paper	MM	N	2,090	s.f.
16	2" mud fittings	TSI	Y	20	ea.
17	1" mud fittings	TSI	Y	30	ea.
18	4" black covebase	MM	N	90	l.f.
19	2' x 2' ceiling tile - pinhole and small fissures	MM	N	260	s.f.
20	6" mud fitting	TSI	Y	4	ea.
21	2' x 2' ceiling tile - large and small fissures	MM	N	3,345	s.f.
22	6" pipe insulation	TSI	Y	2	ea.
23	Attic insulation	MM	N	3,000	s.f.

Notes:

MM Miscellaneous Material

TSI Thermal System Insulation

SM Surfacing Material

Table 2 - Bulk Sample Location Log
 Asbestos Inspection Report
 Graves Hall, Hope College, Holland, Michigan

Sample No.	Sample Location	Asbestos %	Notes
1-1A	Room 207	None Detected	Cove base
1-1B		None Detected	Mastic
2-1A	Room 207	<1% Chrysotile	Tile
2-1B		None Detected	Mastic
2-2A	Room 208	3% Chrysotile	Tile
2-2B		None Detected	Mastic
3-1	Room 207 - south wall	None Detected	
3-2	Room 207 - south wall	None Detected	
3-3	Room 202	<1% Chrysotile	
3-4	Room 101	None Detected	
3-5	Room 105	None Detected	
3-6	Room 3	None Detected	
3-7	Room 5B	None Detected	
4-1	South attic - west	None Detected	
4-2	South attic - southeast	None Detected	
4-3	South attic - northeast	None Detected	
4-4	Room 200	None Detected	
4-5	Room 104A	None Detected	
4-6	Room 105	None Detected	
4-7	Room 3	None Detected	
5-1A	Stairwell closet	4% Chrysotile	Tile
5-1B		None Detected	Mastic
6-1A	2nd floor stairwell	None Detected	Tile
6-1B		None Detected	Mastic
7-1A	2nd floor stairwell	None Detected	Tile
7-1B		None Detected	Mastic
8-1	Room 200	None Detected	
9-1	Room 113	<1% Chrysotile	
10-1A	2nd floor stairwell	None Detected	Cove base
10-1B		None Detected	Mastic
11-1	Room 201	None Detected	
12-1	Stairs in 2nd floor hall	None Detected	
13-1A	Room 201	None Detected	Cove base
13-1B		None Detected	Mastic

Table 2 - Bulk Sample Location Log
 Asbestos Inspection Report
 Graves Hall, Hope College, Holland, Michigan

Sample No.	Sample Location	Asbestos %	Notes
14-1A	Room 102		None Detected
14-1B			None Detected
15-1A	Room 102		None Detected
15-1B			None Detected
16-1	Room 1	15%	Chrysotile
16-2	Room 1	15%	Chrysotile
16-3	Room 6		None Detected
17-1	Room 1	5%	Chrysotile
17-2	Room 6		None Detected
17-3	Room 6		None Detected
18-1A	Room 104A		None Detected
18-1B			None Detected
19-1	Room 5B		None Detected
20-1	Room 6	10%	Chrysotile
20-2	Room 6	10%	Chrysotile
20-3	Room 6	10%	Chrysotile
21-1	Room 25		None Detected
22-1A	Room 6	25%	Chrysotile
22-1B			None Detected
22-2A	Room 6	25%	Chrysotile
22-2B			None Detected
22-3	Room 6		None Detected
23-1A	Attic		None Detected
23-1B			None Detected
23-2	Attic		None Detected

Table 3 - Room-By-Room Building Inspection
 Asbestos Inspection Report
 Graves Hall, Hope College
 Holland, Michigan

Location I.D. (Room No.)	Homogenous Area No.																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Attic				5000																			3000
200	100	600	1000	1800				600															
200A	50	150	450	600					150														
200B	20	40	240	40					40														
200C	20	50	270	50					50														
201	120	650	1250	2078						650													
202	70	250	970						250														
202A	40	100	290						100														
202B	55	160	500						160														
202C	40	100	380						100														
202D	40	100	380						100														
203	36	80	180	230																			
204	36	80	180	230																			
205	45	120	360	200																			
206	100	600	1000	1800					600														
207	70	270	870	270					270														
208	90	550	1050	1050					550														
209	90	550	950				15		550	13		10											
Stairwell	60		1680			200	185			95													
Stairwell closet	16				16																		
101		240	700	250					250				65										
102A	50		480	130					130														
102	50		700	2030										1045	2090								
103		550																					
104	90	650	2330	740					740														
104A		120	350	350					130										45				
104B		60	340	340					60										30				
104 A and B corridor		20	110	110					35										15				
105	90	550	1040	1040					580														
106	40	70	220	220					65														
107	40	70	300	140					65														
108	40	70	250	250					75														
108A	25	40	150	150					40														
109		55		300																			
110		230		340																			

Table 3 - Room-By-Room Building Inspection
 Asbestos Inspection Report
 Graves Hall, Hope College
 Holland, Michigan

Location I.D. (Room No.)	Homogenous Area No.																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
111		110		170																			
112		120		170																			
113	145	380	1590	480					480														
114	90	320	400	900					400														
115	130	360	1380	320					320														
1	100		640	440					320							2	10						
2	110		540	960					720														
3	70		790	230					230														
4	60		650	180					180														
5	30		80	40					40										40				
5A	50		490	130					130										130				
5B	40		500	90					90								3		90				
6	60		740	180					180														
7	55		680	160					160														
8	170		2260	500					500							2	8						
9				1830												16	9			4		2	
10	40		400																	100			
10A	55		720	180					180														
12			640	680									100								680		
13																							
14			520	170									55								170		
15			360	80									40								80		
16			360	80									40								80		
17			1170	300									80								300		
18			660	260									65								260		
19			660	260									65								260		
20			660	260									65								260		
21			440	130									45								130		
22			640	230									65								230		
23			320	65									30								65		
24			720	330									75								330		
25			800	400									190								400		
TOTALS	2728	8465	38780	29943	16	200	200	600	9020	108	650	10	980	1045	2090	20	30	90	260	4	3345	2	3000

Table 4 - Summary of Asbestos-Containing Homogeneous Materials

Asbestos Inspection Report

Graves Hall, Hope College, Holland, Michigan

HA No.	Material Description	Asbestos Containing?	Quantity	Unit
2	9"x9" floor tile - brown (tile only)	Y	8,465	s.f.
5	9"x9" floor tile - brown and pink	Y	16	s.f.
16	2" mud fittings	Y	20	l.f.
17	1" mud fittings	Y	30	l.f.
20	6" mud fitting	Y	4	l.f.
22	6" pipe insulation	Y	2	l.f.

Table 5 - Summary of Lead Based Paint Results**Lead Inspection Report**

Graves Hall, Hope College, Holland, Michigan

Sample	Sample Location	Lead Concentration
102W	Room 102 - wood panels and beams	0.30% Wt.
102P	Room 102 - plaster walls	0.04% Wt.
105	Room 105 - plaster wall near window	0.06% Wt.
202B	Room 202B - walls and ceiling	0.17% Wt.
203	Room 203 - wood beams	0.26% Wt.

Table 6 - Summary of Hazardous Materials
Hazardous Materials Inspection Report
 Graves Hall, Hope College, Holland, Michigan

Location I.D. (Room No.)	Number of Florescent Bulbs	Number of Ballasts
Attic	None	None
200	40	20
200A	4	2
200B	2	1
200C	2	1
201	24	12
202	10	5
202A	4	2
202B	4	2
202C	4	2
202D	2	1
203	2	1
204	4	2
205	6	3
206	20	10
207	8	4
208	20	10
209	12	7
Stairwell	12	6
Stairwell closet	None	None
101	6	3
102A	None	None
102	None	None
103	None	None
104	28	14
104A	4	2
104B	2	1
104 A and B corridor	2	1
105	18	9
106	2	1
107	4	2
108	2	1
108A	2	3
109	None	None
110	6	3
111	4	2
112	5	3
113	10	5
114	8	4
115	8	4
1	10	5
2	24	12
3	8	4
4	6	3
5	2	1

Table 6 - Summary of Hazardous Materials
Hazardous Materials Inspection Report
Graves Hall, Hope College, Holland, Michigan

Location I.D. (Room No.)	Number of Florescent Bulbs	Number of Ballasts
5A	6	3
5B	4	2
6	6	3
7	6	3
8	9	9
9	8	4
10	4	2
10A	6	3
12	None	None
13		
14	4	2
15	2	1
16	2	1
17	24	12
18	12	6
19	12	6
20	8	4
21	8	4
22	8	4
23	20	10
24	12	6
25	14	7

Table 7 - Summary of PCB Ballast Survey
Hazardous Materials Inspection Report
Graves Hall, Hope College, Holland, Michigan

Location I.D.	Light Fixture Location/Description	Number of Ballasts	Number of Ballasts Containing PCB's
Room 3	South light	1	0
Room 7	North light	1	0
Room 10	East Light	1	0
Basement hall	East wall, north light	1	0
Room 5	"U" shaped bulb	1	0
Room 21	West light	2	0
Room 24	West light	2	0
Room 24	Middle light	2	0
Hall outside Room 12	Flush with ceiling	1	0
East end of 1st floor hall	Wood frame	1	0
West end of 1st floor hall	Metal frame	1	0
Room 101	West light	1	0
Room 104	Corridor	1	0
Room 104	West row	1	0
Room 105	North light	1	0
Room 201	West row	1	0
Room 200	North light - "control room"	1	0
Room 206	North light - west row	1	0
Room 205	North light	1	0
Room 203	Suspended light	1	0
Room 200	North light - east row	2	0
Room 201	North light - east row	2	1
2nd floor hall	1 bulb	1	1
Room 204	Plastic cover	2	0
TOTALS		30	2

Appendix 1

**EMSL Analytical, Inc.**

212 South Wagner Road, Ann Arbor, MI 48103

Phone: (734) 668-6810 Fax: (734) 668-8532 Email: annarborlab@emsl.com

Attn: **Mark Nelson**
Fishbeck, Thompson, Carr & Huber
1515 Arboretum Drive SE
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Fax: (616) 464-3992 Phone: (616) 638-2835
Project: G07060 Hope/Graves Hall

Customer ID: FTCH62
Customer PO:
Received: 01/19/07 10:30 AM
EMSL Order: 080700157

EMSL Proj:
Analysis Date: 1/22/2007
Report Date: 1/22/2007

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

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
1-1A 080700157-0001	Cove base	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
1-1B 080700157-0001A	Mastic	Brown Non-Fibrous Heterogeneous	2% Synthetic	98% Non-fibrous (other)	None Detected
2-1A 080700157-0002	Tile	Non-Fibrous Heterogeneous	2% Cellulose	98% Non-fibrous (other)	<1% Chrysotile
2-1B 080700157-0002A	Mastic	Yellow Non-Fibrous Heterogeneous	1% Cellulose 2% Synthetic	97% Non-fibrous (other)	None Detected
2-2A 080700157-0003	Tile	Brown Non-Fibrous Heterogeneous	<1% Cellulose	97% Non-fibrous (other)	3% Chrysotile
2-2B 080700157-0003A	Mastic	Yellow Fibrous Heterogeneous	2% Cellulose 2% Synthetic	96% Non-fibrous (other)	None Detected
3-1 080700157-0004		White/Brown Fibrous Heterogeneous	20% Cellulose <1% Glass	80% Non-fibrous (other)	<1% Chrysotile
3-2 080700157-0005		White/Brown Fibrous Heterogeneous	20% Cellulose <1% Glass	80% Non-fibrous (other)	None Detected

Analyst(s)

Justin Bolton (55)
Jane Zhang (1)

Paul Senne,
Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.

Analysis performed by EMSL Ann Arbor (NVLAP #101048-4)

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

Sample	Location	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
3-3 080700157-0006		White/Brown Fibrous Heterogeneous	20% Cellulose <1% Glass	80% Non-fibrous (other)	<1% Chrysotile
3-4 080700157-0007		White/Brown Fibrous Heterogeneous	20% Cellulose 2% Glass	78% Non-fibrous (other)	None Detected
3-5 080700157-0008		White/Brown Fibrous Heterogeneous	20% Cellulose 2% Glass	78% Non-fibrous (other)	None Detected
3-6 080700157-0009		White/Brown Fibrous Heterogeneous	20% Cellulose 2% Glass	78% Non-fibrous (other)	None Detected
3-7 080700157-0010		White/Brown Fibrous Heterogeneous	2% Cellulose 2% Glass	96% Non-fibrous (other)	None Detected
4-1 080700157-0011		Tan Fibrous Heterogeneous	2% Hair	98% Non-fibrous (other)	None Detected
4-2 080700157-0012		Tan Fibrous Heterogeneous	2% Hair	98% Non-fibrous (other)	None Detected
4-3 080700157-0013		Tan Fibrous Heterogeneous	2% Hair	98% Non-fibrous (other)	None Detected

Analyst(s)

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Jane Zhang (1)

Paul Senne,
Laboratory Manager
or other approved signatory

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

Sample	Location	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
4-4 080700157-0014		Tan Fibrous Heterogeneous	2% Hair	98% Non-fibrous (other)	None Detected
4-5 080700157-0015		Tan/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
4-6 080700157-0016		Tan/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
4-7 080700157-0017		White Fibrous Heterogeneous	2% Hair	98% Non-fibrous (other)	None Detected
5-1A 080700157-0018	Tile	Brown Non-Fibrous Heterogeneous		96% Non-fibrous (other)	4% Chrysotile
5-1B 080700157-0018A	Mastic	Black Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
6-1A 080700157-0019	Vinyl floor tile	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
6-1B 080700157-0019A	Mastic	Yellow Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected

Analyst(s)

Justin Bolton (55)
Jane Zhang (1)

Paul Senne,
Laboratory Manager
or other approved signatory

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Analysis performed by EMSL Ann Arbor (NVLAP #101048-4)

**EMSL Analytical, Inc.**

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Project: **G07060 Hope/Graves Hall**

Customer ID: FTCH62
Customer PO:
Received: 01/19/07 10:30 AM
EMSL Order: 080700157

EMSL Proj:
Analysis Date: 1/22/2007
Report Date: 1/22/2007

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

Sample	Location	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
7-1A 080700157-0020	Vinyl floor tile	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
7-1B 080700157-0020A	Mastic	Yellow Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
8-1 080700157-0021		White Fibrous Heterogeneous	60% Cellulose 20% Glass	20% Non-fibrous (other)	None Detected
9-1 080700157-0022		Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
10-1A 080700157-0023	Cove base	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
10-1B 080700157-0023A	Mastic	Brown Non-Fibrous Heterogeneous	1% Synthetic	99% Non-fibrous (other)	None Detected
11-1 080700157-0024		White Fibrous Heterogeneous	60% Cellulose 20% Glass	20% Non-fibrous (other)	None Detected
12-1 080700157-0025		Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected

Analyst(s)

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

Sample	Location	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
13-1A 080700157-0026	Cove base	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
13-1B 080700157-0026A	Mastic	Brown Non-Fibrous Heterogeneous	2% Synthetic	98% Non-fibrous (other)	None Detected
14-1A 080700157-0027	Tile	White/Brown Non-Fibrous Heterogeneous	2% Cellulose	98% Non-fibrous (other)	None Detected
14-1B 080700157-0027A	Mastic	Black Non-Fibrous Heterogeneous	3% Cellulose	97% Non-fibrous (other)	None Detected
15-1A 080700157-0028	Tar paper	Brown/Black Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
15-1B 080700157-0028A	Mastic	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
16-1 080700157-0029		White Fibrous Heterogeneous	10% Glass	75% Non-fibrous (other)	15% Chrysotile
16-2 080700157-0030		White Fibrous Heterogeneous	10% Glass	75% Non-fibrous (other)	15% Chrysotile

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

Sample	Location	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
16-3 080700157-0031		Gray Fibrous Heterogeneous	35% Cellulose	65% Non-fibrous (other)	None Detected
17-1 080700157-0032		White Fibrous Heterogeneous	35% Cellulose 15% Glass	45% Non-fibrous (other)	5% Chrysotile
17-2 080700157-0033		White Fibrous Heterogeneous	20% Glass	80% Non-fibrous (other)	None Detected
17-3 080700157-0034		White Fibrous Heterogeneous	20% Glass	80% Non-fibrous (other)	None Detected
18-1A 080700157-0035	Cove base	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
18-1B 080700157-0035A	Mastic	Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
19-1 080700157-0036		White Fibrous Heterogeneous	60% Cellulose 20% Glass	20% Non-fibrous (other)	None Detected
20-1 080700157-0037		White/Cream Fibrous Heterogeneous	10% Cellulose 25% Glass	55% Non-fibrous (other)	10% Chrysotile

Analyst(s)

Justin Bolton (55)
Jane Zhang (1)

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Analysis performed by EMSL Ann Arbor (NVLAP #101048-4)

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Customer ID: FTCH62
Customer PO:
Received: 01/19/07 10:30 AM
EMSL Order: 080700157

EMSL Proj:
Analysis Date: 1/22/2007
Report Date: 1/22/2007

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

Sample	Location	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
21-1 080700157-0038		Tan Fibrous Heterogeneous	50% Cellulose 45% Glass	5% Non-fibrous (other)	None Detected
22-1A 080700157-0039	Wrap	White Fibrous Heterogeneous	10% Cellulose 10% Glass	55% Non-fibrous (other)	25% Chrysotile
22-1B 080700157-0039A	Insulation	Gray Fibrous Heterogeneous	20% Glass	80% Non-fibrous (other)	None Detected
22-2A 080700157-0040	Wrap	White Fibrous Heterogeneous	10% Cellulose 10% Glass	55% Non-fibrous (other)	25% Chrysotile
22-2B 080700157-0040A	Insulation	Gray Fibrous Heterogeneous	20% Glass	80% Non-fibrous (other)	None Detected
22-3 080700157-0041		Yellow/Silver Fibrous Heterogeneous	90% Glass	10% Non-fibrous (other)	None Detected
20-2 080700157-0042		White/Yellow Fibrous Heterogeneous	10% Cellulose 25% Glass	55% Non-fibrous (other)	10% Chrysotile
20-3 080700157-0043		White/Cream Fibrous Heterogeneous	10% Cellulose 25% Glass	55% Non-fibrous (other)	10% Chrysotile

Analyst(s)

Justin Bolton (55)
Jane Zhang (1)

Paul Senne,
Laboratory Manager
or other approved signatory

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Analysis performed by EMSL Ann Arbor (NVLAP #101048-4)

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Project: **Graves Hall- Hope College/ G07060**

Customer ID: FTCH62

Customer PO:

Received: 02/02/07 10:00 AM

EMSL Order: 080700315

EMSL Proj:

Analysis Date: 2/2/2007

Report Date: 2/5/2007

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

Sample	Location	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
23-1A 080700315-0001	Gray	Grayish Fibrous Heterogeneous	5% Cellulose 90% Glass	5% Non-fibrous (other)	None Detected
23-1B 080700315-0001A	White	White Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
23-2 080700315-0002		White/Grayish Fibrous Heterogeneous	2% Cellulose 90% Glass	8% Non-fibrous (other)	None Detected

Analyst(s)

Jane Zhang (3)

Jong-Sim Park
or other approved signatory

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Analysis performed by EMSL Ann Arbor (NVLAP #101048-4)

Lead in Paint Chips by Flame AAS (SW 846 3050B and 7420*)

Client Sample Description	Lab ID	D.L.		Dilution	Reported Concentration	Actual Concentration
Method Blank				1	0.015 mg/L	0.015 mg/L
102W	160700799-0001	0.06	n/a	1	0.30 % wt	0.299 % wt
102P	160700799-0002	0.01	n/a	1	0.04 % wt	0.044 % wt
105	160700799-0003	0.02	n/a	1	0.06 % wt	0.056 % wt
202B	160700799-0004	0.01	n/a	1	0.17 % wt	0.169 % wt
203	160700799-0005	0.01	n/a	1	0.26 % wt	0.261 % wt

QUALITY CONTROL DATA,

Pb-FLAA

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE	ACCURACY					PRECISION	
	SPK CONC.	MS	MSD	ACP		RPD	ACP
	% wt	% wt	%MS	% wt	%MSD	%MS	%RPD
Lead	0.125	0.31	203.2	75.-125.			

AUDIT DATA	LAB. RECEIVING #	LAB Sample ID	LAB BATCH ID	QC STD #	ANALYZED
	160700799	160700799-0003	16Q070122-chip1		1/22/2007

LABORATORY CONTROL STANDARD/DUPLICATE	ACCURACY					PRECISION	
	SPK CONC.	LCS	LCSD	ACP		RPD	ACP
	% wt	% wt	%LCS	% wt	%LCSD	%LCS	%RPD
Lead	4.34	3.70	86.3	80.-120.			

AUDIT DATA	LAB ID	LAB BATCH ID	QC STD #	ANALYZED
	LABORATORY CONTROL STANDARD (LCS)	16Q070122-chip1		1/22/2007

DUPLICATE	RESULTS		PRECISION	
	Sample	Duplicate	RPD	ACP
	% wt	% wt		%RPD
Lead	0.06	0.05	15.4	

AUDIT DATA	LAB. RECEIVING #	LAB Sample ID	LAB BATCH ID	ANALYZED
	160700799	160700799-0003	16Q070122-chip1	1/22/2007

REPORTING LIMIT VERIFICATION SAMPLE	ACCURACY			ACP
	SPK CONC.	RLVS		%RLVS
	% wt	% wt	%RLVS	
Lead	0.01	0.01	100.0	

AUDIT DATA	LAB ID	LAB BATCH ID	QC STD #	ANALYZED
	Reporting Limit Verification Sample (RLVS)	16Q070122-chip1	n/a	1/22/2007

Project Name		HOPE/ GRAVES HALL						
Project Number		607060						
Project Manager		XL						
Document Title		GRAVES HALL REPORT						
Document Type (circle one):		Report	Letter	Permit	Plan	QAPP	Proposal	Memo
Are the following applicable?:								
Field Data		Yes / No	Figures		Yes / No			
Laboratory Data		<u>Yes</u> / No	Tables		<u>Yes</u> / No		See reverse side of form	
Database		Yes / No	Appendices		<u>Yes</u> / No			
TEXT DRAFT #:		1	Date Created:		2-5-07	By:		MRM
Reviewed by:		DL	Date:		2/9/07	Edits required:		<u>Yes</u> / No
Comments:								
See text								
Corrective action taken:								
CORRECTED NOTED ERRORS								
TEXT DRAFT #:			Date Created:			By:		
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Comments:								
Corrective action taken:								
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Comments:								
Corrective action taken:								

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Comments:					
Corrective action taken:					