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## ASBESTOS SURVEY REPORT

### Bachelors Enlisted Quarters (ID: Building 149)

NASA-AMES  
Moffett Field  
Mt. View, CA

BUILDING INSPECTIONS

ENVIRONMENTAL ENGINEERING

SPECIALIZED TRAINING

CONTRACT MANAGEMENT

Prepared for:  
NASA - AMES (PAI CORPORTATION)  
Nasa-ames Research Center  
Mt. View, CA 94035-1000

Prepared by:  
Benchmark Environmental Engineering  
December 13, 2001  
Project Number: **E01-448-A-SU**

Prepared By:

A handwritten signature in blue ink, appearing to read "T MacFarlane", written over a horizontal line.

Terri MacFarlane  
a California Certified Asbestos Consultant  
90-2747

Reviewed By:

A second handwritten signature in blue ink, identical to the one above, written over a horizontal line.

Terri MacFarlane  
a California Certified Asbestos Consultant  
90-2747

## Table of Contents

### Section:

	Executive Summary
1	Introduction
2	Description of Building Construction and Systems
3	Summary of Findings for Suspect Materials
4	Material Information Tables
5	Removal Cost Estimate Summary

### Appendices:

A	Definitions of Terms and Assessment Criteria
B	Bulk Sampling Protocol and Analytical Methods
C	Laboratory Bulk Sampling Reports
D	Summary of Regulatory Requirements
E	AHERA Building Inspector Certifications
F	Drawings Indicating Material Locations

## Executive Summary

Benchmark Environmental Engineering (Benchmark) was retained by NASA - Ames (PAI Corporation) to perform an Asbestos Hazard Emergency Response Act (AHERA) style asbestos survey of the Bachelors Enlisted Quarters (Building ID: Building 149), to determine the locations of accessible and to the extent feasible, inaccessible friable and non-friable asbestos containing building materials (ACBM).

This inspection was limited to the interior spaces only. Pre-existing survey data was used to help provide a picture of existing condition of this building. Benchmark collected additional samples of the construction material to help supplement existing data, to contradict existing data or to provide additional data of materials not perviously identified.

Asbestos was detected in the following friable (or jacketed friable) materials:

- Pipe Elbows
- Pipe Insulation

Asbestos was detected in the following non-friable materials:

- Floor - Mastic
- Floor Tile
- Roofing Material
- Sink Undercoating

The following materials were assumed to contain asbestos:

- Fire Door

## Section 1 Introduction

Benchmark Environmental Engineering (Benchmark) performed an Asbestos Hazard Emergency Response Act (AHERA) style asbestos survey of the Bachelors Enlisted Quarters located at Moffett Field, Mt. View, CA, to identify ACBM. This report identifies the locations and asbestos content of friable and non-friable ACBM, provides assessment of the friable ACBM in relation to the material's hazard potential to building occupants and provides removal cost estimates.

This inspection was limited to the interior spaces only. Pre-existing survey data was used to help provide a picture of existing condition of this building. Benchmark collected additional samples of the construction material to help supplement existing data, to contradict existing data or to provide additional data of materials not perviously identified.

All identified suspect asbestos-containing materials are summarized in Section 3. Materials testing positive for asbestos including material assessments, recommended response actions, and quantities are described in Section 4. Removal cost estimates for asbestos-containing materials are included in Section 5.

Removal cost estimates (Section 5) are for budgeting purposes only and should not be used as a quote for removal of the materials. It is not our recommendation to remove these materials unless they are beyond repair, or planned demolition or renovation activities will disturb the materials. Estimates are based on recent pricing we have received from contractors performing similar work and may vary from actual prices obtained due to the actual scope of work, quantity of material removed, control measures specified and contractor work loads.

On Monday, July 2, 2001 Terri MacFarlane ( 90-2747 ) , a California Certified Asbestos Consultant and Roy J. Mabus ( 92-0191 ) , a California Certified Asbestos Consultant, from Benchmark, performed an asbestos survey of the building(s) in accordance with the Asbestos Hazard and Emergency Response Act of 1987 (AHERA).

### DISCLAIMER

This report is prepared for the express use and benefit of NASA - Ames (PAI Corportation), its agents and employees. The information in this report or portions thereof may be required to be included in notifications to employees, contractors or other visitors to the building(s). This report is not intended to be used as a specification or work plan for any of the work suggested or recommended in this report.

This report is based upon conditions observed at the property and information made available to the surveyor. This report does not intend to identify all hazards or unsafe

conditions, nor to indicate that other hazards or unsafe conditions do not exist at the premises.

## Section 2 Description of Building Construction and Systems

**Number of Floors:** 2

**Year Built:** 1953

**Total Square Footage:** 16,013

**Structural components consist of:**

Concrete Foundation

**Exterior Wall construction components consist of:** Concrete

**Interior Wall construction components consist of:** Drywall  
Plaster

**Interior ceiling components consist of:** Ceiling Tile

**Roofing construction components consist of:** Rolled Composite

### **Building Description/Comments:**

The building is concrete over a concrete foundation. It has a flat composition roof . The concrete exterior is a tan color.

### **Comments:**

There was a previous asbestos survey performed in June of 1993 by Tetra Tech, Inc.

### Section 3 Summary of Findings for Suspect Materials

The following table is a list of all materials at this building which were tested for the presence of asbestos or were assumed to contain asbestos along with overall sample results. Complete information on asbestos containing materials is included in Section 4 of this report.

Each unique material within the building is assigned a unique HM number by the surveyor at the time the survey is performed.

Section 3 and Section 4 are organized by building, surfacing, thermal systems insulation, flooring, walls, ceilings, roofing and miscellaneous materials.

*Site Information*

**Bachelors Enlisted Quarters (Site ID: Parcel 5)**  
Moffett Field  
Mt. View, CA

*Client Information*

NASA - Ames (PAI Corporation)  
NASA-Ames Research Center  
Mt. View, CA 94035-1000

*Survey Performed By*

Benchmark Environmental Engineering

*Inspector*

Terri MacFarlane

*Inspection Date*

Monday, July 2, 2001

*Job Number*

E01-448-A-SU

<i>Suspect Material</i>	<i>Category</i>	<i>HM Number</i>	<i>Material Location(s)</i>	<i>Asbestos Present?</i>
Baseboard Adhesive	Flooring	BA-3	THROUGHOUT THE BULDING	No
2x4 Pinhole Ceiling Tile	Ceilings	CT-4	THROUGHOUT THE BULDING	No
Wallboard		WLBD-5	THROUGHOUT THE BULDING	No
Plaster	Surfacing	PL-6	CENTER	No
1" TSI Pipe Insulation	TSI	PI-7	THROUGHOUT THE BULDING	Yes
1" TSI Pipe Elbows	TSI	PE-8	THROUGHOUT THE BULDING	Yes
2" TSI Pipe Insulation	TSI	PI-9	THROUGHOUT THE BULDING	Yes
2" TSI Pipe Elbows	TSI	PE-10	THROUGHOUT THE BULDING	Yes
Brown Stair Floor Tile	Flooring	FT-11	CENTER	No
Fire Door	Miscellaneous	FD-12	CENTER	Yes
Floor - Mastic	Flooring	FLMAS-13	THROUGHOUT THE BULDING	Yes
Sink Undercoating	Miscellaneous	SK-14	CENTER	Yes
Roofing Material	Roofing	RM-1	EXTERIOR	Yes
12" Tan Floor Tile	Flooring	FT-2	THROUGHOUT THE BULDING	No
9 x 9 Red/Brown Floor Tile	Flooring	FT-15		Yes

## Section 4 Material Information Tables

*Site Information*

**Bachelors Enlisted Quarters (Site ID: Parcel 5)**  
Moffett Field  
Mt. View, CA

*Client Information*

NASA - Ames (PAI Corporation)  
NASA-Ames Research Center  
Mt. View, CA 94035-1000

*Survey Performed By*

Benchmark Environmental Engineering

*Inspector*

Terri MacFarlane

*Inspection Date*

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E01-448-A-SU

<i>Material Description</i>			<i>Material Number</i>	<i>Asbestos Present?</i>
Roofing Material			RM-1	Yes
<i>Material Category</i>	<i>Friable Classification</i>	<i>EPA Category</i>	<i>Total Quantity</i>	<i>Unit of Measure</i>
Roofing	Non-Friable	Category I	16,013	Square Feet
<i>General Condition</i>	<i>Damage Category</i>	<i>Overall Material Assessment</i>	<i>Recommended Response</i>	
		Not Assessed under AHERA	Abate Prior to Demolition	
<i>General Material Comments</i>				
<i>Material Location(s)</i>				
EXTERIOR				

<i>Sample ID(s)</i>	<i>Sample Location(s)</i>	<i>Floor</i>	<i>Analyzed</i>	<i>Overall Result</i>	<i>Layer(s) Reported by Lab</i>	<i>Results by Layer</i>
rm-1-01-6603-149-1	Roof Core East		Yes	0	1) Roofing core 2) 3)	Non Detected
rm-1-01-6604-149-2	Roof Core North		Yes	0	1) Roofing core 2) 3)	Non Detected
rm-1-01-6605-149-3	Roof Patch South		Yes	0	1) Roofing material 2) 3)	Non Detected
rm-1-01-6606-149-4	Roof Penetration Northeast		Yes	12%	1) Roof penetration 2) 3)	12 % Chrysotile
rm-1-01-6607-149-5	Roof Penetration Southeast		Yes	15%	1) Roof penetration 2) 3)	15 % Chrysotile



## Section 4 Material Information Tables

Site Information

Bachelors Enlisted Quarters (Site ID: Parcel 5)

Inspection Date

Monday, July 2, 2001

<b>Material Description</b> 12" Tan Floor Tile			<b>Material Number</b> FT-2	<b>Asbestos Present?</b> No
<b>Material Category</b> Flooring	<b>Friable Classification</b> Non-Friable	<b>EPA Category</b> Category I	<b>Total Quantity</b> 4,250	<b>Unit of Measure</b> Square Feet
<b>General Condition</b>	<b>Damage Category</b>	<b>Overall Material Assessment</b> No Assessment, Non-asbestos	<b>Recommended Response</b>	

General Material Comments

Material Location(s)

THROUGHOUT THE BULDING

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
ft-2-01-4461-149-1	1st Floor North Side Entry at Dining Area		Yes	0%	1) Floor Tile 2) 3)	Non Detected
ft-2-01-4462-149-2	1st Floor Dining		Yes	0%	1) Floor Tile 2) 3)	Non Detected
ft-2-01-4463-149-3	2nd Floor Hallway at Room 210		Yes	0%	1) Floor Tile 2) 3)	Non Detected

<b>Material Description</b> Baseboard Adhesive			<b>Material Number</b> BA-3	<b>Asbestos Present?</b> No
<b>Material Category</b> Flooring	<b>Friable Classification</b> Non-Friable	<b>EPA Category</b> Category I	<b>Total Quantity</b> 680	<b>Unit of Measure</b> Linear Feet
<b>General Condition</b>	<b>Damage Category</b>	<b>Overall Material Assessment</b> No Assessment, Non-asbestos	<b>Recommended Response</b>	

General Material Comments

Material Location(s)

THROUGHOUT THE BULDING

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
ba-3-01-4464-149-4	1st Floor, North Entry		Yes	0%	1) Adhesive 2) 3)	Non Detected
ba-3-01-4465-149-5	2nd Floor, Hallway at Room 210		Yes	0%	1) Adhesive 2) 3)	Non Detected
ba-3-01-4466-149-6	2nd Floor, Room 207		Yes	0%	1) Composite 2) 3)	Non Detected

## Section 4 Material Information Tables

Site Information

**Bachelors Enlisted Quarters (Site ID: Parcel 5)**

Inspection Date

Monday, July 2, 2001

<b>Material Description</b> 2x4 Pinhole Ceiling Tile			<b>Material Number</b> CT-4	<b>Asbestos Present?</b> No
<b>Material Category</b> Ceilings	<b>Friable Classification</b> Friable	<b>EPA Category</b> Friable	<b>Total Quantity</b> 680	<b>Unit of Measure</b> Square Feet
<b>General Condition</b> Good	<b>Damage Category</b>	<b>Overall Material Assessment</b> No Assessment, Non-asbestos	<b>Recommended Response</b>	

General Material Comments

Material Location(s)

THROUGHOUT THE BULDING

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
ct-4-149-HO4-A			Yes	0%	1) Ceiling Tile 2) 3)	0
ct-4-149-HO4-B			Yes	0%	1) Ceiling Tile 2) 3)	0
ct-4-149-HO4-C			Yes	0%	1) Ceiling Tile 2) 3)	0
ct-4-149-HO4-D			Yes	0%	1) Ceiling Tile 2) 3)	0
ct-4-149-HO4-E			Yes	0%	1) Ceiling Tile 2) 3)	0

## Section 4 Material Information Tables

Site Information

Bachelors Enlisted Quarters (Site ID: Parcel 5)

Inspection Date

Monday, July 2, 2001

Material Description <b>Wallboard</b>			Material Number <b>WLBD-5</b>	Asbestos Present? <b>No</b>
Material Category	Friable Classification <b>Non-Friable</b>	EPA Category <b>Category II</b>	Total Quantity <b>15,100</b>	Unit of Measure <b>Square Feet</b>
General Condition	Damage Category	Overall Material Assessment <b>No Assessment, Non-asbestos</b>	Recommended Response	

General Material Comments

Material Location(s)

THROUGHOUT THE BULDING

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
WLBD-5-149-HO5-A			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-B			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-C			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-D			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-E			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-F			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-G			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-H			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-I			Yes	0%	1) Drywall 2) 3)	0
WLBD-5-149-HO5-J			Yes	0%	1) Drywall 2) 3)	0

## Section 4 Material Information Tables

Site Information

Bachelors Enlisted Quarters (Site ID: Parcel 5)

Inspection Date

Monday, July 2, 2001

Material Description <b>Plaster</b>			Material Number <b>PL-6</b>	Asbestos Present? <b>No</b>
Material Category Surfacing	Friable Classification Non-Friable	EPA Category Friable	Total Quantity 6,900	Unit of Measure Square Feet
General Condition Good	Damage Category	Overall Material Assessment No Assessment, Non-asbestos	Recommended Response	

General Material Comments

Material Location(s)

CENTER

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
pl-6-149-HO6-A			Yes	0%	1) Wall Plaster 2) Wall Plaster 3) Wall Plaster	0
pl-6-149-HO6-B			Yes	0%	1) Wall Plaster 2) Wall Plaster 3) Wall Plaster	0
pl-6-149-HO6-C			Yes	0%	1) Wall Plaster 2) Wall Plaster 3) Wall Plaster	0
pl-6-149-HO6-D			Yes	0%	1) Wall Plaster 2) Wall Plaster 3) Wall Plaster	0
pl-6-149-HO6-E			Yes	0%	1) Wall Plaster 2) Wall Plaster 3) Wall Plaster	0
pl-6-149-HO6-F			Yes	0%	1) Wall Plaster 2) Wall Plaster 3) Wall Plaster	0
pl-6-149-HO6-G			Yes	0%	1) Wall Plaster 2) Wall Plaster 3) Wall Plaster	0

## Section 4 Material Information Tables

Site Information

Bachelors Enlisted Quarters (Site ID: Parcel 5)

Inspection Date

Monday, July 2, 2001

<b>Material Description</b> 1" TSI Pipe Insulation			<b>Material Number</b> PI-7	<b>Asbestos Present?</b> Yes
<b>Material Category</b> TSI	<b>Friable Classification</b> Friable	<b>EPA Category</b> Friable	<b>Total Quantity</b> 1,400	<b>Unit of Measure</b> Linear Feet
<b>General Condition</b> Fair	<b>Damage Category</b>	<b>Overall Material Assessment</b>	<b>Recommended Response</b> Abate Prior to Demolition	

General Material Comments

Material Location(s)

THROUGHOUT THE BULDING

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
pi-7-149-HO7-A			Yes	10%	1) Pipe Insulation 2) Pipe Insulation 3)	5-10 % Amosite 5-10 % Chrysotile
pi-7-149-HO7-B			No	Not Avail.	1) Pipe Insulation 2) 3)	
pi-7-149-HO7-C			No	Not Avail.	1) Pipe Insulation 2) 3)	
pi-7-01-4476-149-16	Duty Office East		Yes	25%	1) Pipe Insulation 2) Pipe Insulation 3)	25 % Amosite 10 % Chrysotile
pi-7-01-4477-149-17	South Hallway Entry Door		Yes	10%	1) Pipe Insulation 2) Pipe Insulation 3)	10 % Amosite 10 % Chrysotile

## Section 4 Material Information Tables

Site Information

Bachelors Enlisted Quarters (Site ID: Parcel 5)

Inspection Date

Monday, July 2, 2001

<b>Material Description</b> 1" TSI Pipe Elbows			<b>Material Number</b> PE-8	<b>Asbestos Present?</b> Yes
<b>Material Category</b> TSI	<b>Friable Classification</b> Friable	<b>EPA Category</b> Friable	<b>Total Quantity</b> 265	<b>Unit of Measure</b> Each
<b>General Condition</b> Fair	<b>Damage Category</b>	<b>Overall Material Assessment</b>	<b>Recommended Response</b> Abate Prior to Demolition	

General Material Comments

Material Location(s)

THROUGHOUT THE BULDING

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
pe-8-149-HO8-A			Yes	10%	1) TSI Elbow 2) TSI Elbow 3)	5-10 % Chrysotile 5-10 % Amosite
pe-8-149-HO8-B			No	Not Avail.	1) TSI Elbow 2) 3)	
pe-8-149-HO8-C			No	Not Avail.	1) TSI Elbow 2) 3)	
pe-8-01-4478-149-18	Duty Office, S/W Corner		Yes	25%	1) TSI Elbow 2) TSI Elbow 3)	25 % Amosite 10 % Chrysotile
pe-8-01-4479-149-19	1st Floor Laundry		Yes	0%	1) TSI Elbow 2) 3)	Non Detected

## Section 4 Material Information Tables

Site Information

Bachelors Enlisted Quarters (Site ID: Parcel 5)

Inspection Date

Monday, July 2, 2001

<b>Material Description</b> 2" TSI Pipe Insulation			<b>Material Number</b> PI-9	<b>Asbestos Present?</b> Yes
<b>Material Category</b> TSI	<b>Friable Classification</b> Friable	<b>EPA Category</b> Friable	<b>Total Quantity</b> 700	<b>Unit of Measure</b> Linear Feet
<b>General Condition</b>	<b>Damage Category</b>	<b>Overall Material Assessment</b>	<b>Recommended Response</b> Abate Prior to Demolition	

General Material Comments

Material Location(s)

THROUGHOUT THE BULDING

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
pi-9-149-HO9-A			Yes	25%	1) Pipe Insulation 2) Pipe Insulation 3)	20-25 % Chrysotile 1-5 % Amosite
pi-9-149-HO9-B			No	Not Avail.	1) Pipe Insulation 2) 3)	
pi-9-149-HO9-C			No	Not Avail.	1) Pipe Insulation 2) 3)	
pi-9-01-4480-149-20	Duty Office East		Yes	20%	1) Pipe Insulation 2) Pipe Insulation 3)	20 % Amosite 15 % Chrysotile
pi-9-01-4481-149-21	1st Floor Hallway Near Bathroom		Yes	15%	1) Pipe Insulation 2) Pipe Insulation 3)	15 % Amosite 10 % Chrysotile

# Section 4 Material Information Tables

Site Information

**Bachelors Enlisted Quarters (Site ID: Parcel 5)**

Inspection Date  
Monday, July 2, 2001

<b>Material Description</b> 2" TSI Pipe Elbows			<b>Material Number</b> PE-10	<b>Asbestos Present?</b> Yes
<b>Material Category</b> TSI	<b>Friable Classification</b> Friable	<b>EPA Category</b> Friable	<b>Total Quantity</b> 700	<b>Unit of Measure</b> Each
<b>General Condition</b>	<b>Damage Category</b>	<b>Overall Material Assessment</b>	<b>Recommended Response</b> Abate Prior to Demolition	

General Material Comments

**Material Location(s)**  
THROUGHOUT THE BULDING

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
pe-10-149-H10-A			Yes	20%	1) TSI Elbow 2) TSI Elbow 3)	10-20 % Amosite 5-10 % Chrysotile
pe-10-149-H10-B			No	Not Avail.	1) TSI Elbow 2) 3)	
pe-10-149-H10-C			No	Not Avail.	1) TSI Elbow 2) 3)	
pe-10-01-4482-149-22	Duty Office East		Yes	25%	1) TSI Elbow 2) TSI Elbow 3)	25 % Amosite 10 % Chrysotile
pe-10-01-4483-149-23	1st Floor Hallway Near Bathroom		Yes	30%	1) TSI Elbow 2) TSI Elbow 3)	30 % Amosite 10 % Chrysotile

<b>Material Description</b> Brown Stair Floor Tile			<b>Material Number</b> FT-11	<b>Asbestos Present?</b> No
<b>Material Category</b> Flooring	<b>Friable Classification</b> Non-Friable	<b>EPA Category</b> Category I	<b>Total Quantity</b> 400	<b>Unit of Measure</b> Square Feet
<b>General Condition</b>	<b>Damage Category</b>	<b>Overall Material Assessment</b> No Assessment, Non-asbestos	<b>Recommended Response</b>	

General Material Comments

**Material Location(s)**  
CENTER

Sample ID(s)	Sample Location(s)	Floor	Analyzed	Overall Result	Layer(s) Reported by Lab	Results by Layer
ft-11-01-4467-149-7	2nd Floor Center Stairs		Yes	0%	1) Floor Tile 2) 3)	Non Detected
ft-11-01-4468-149-8	Landing		Yes	0%	1) Floor Tile 2) 3)	Non Detected
ft-11-01-4469-149-9	1st Floor Stairs		Yes	0%	1) Floor Tile 2) 3)	Non Detected



## Section 4 Material Information Tables

Site Information

Bachelors Enlisted Quarters (Site ID: Parcel 5)

Inspection Date

Monday, July 2, 2001

<b>Material Description</b> Fire Door			<b>Material Number</b> FD-12	<b>Asbestos Present?</b> Yes (assumed)		
<b>Material Category</b> Miscellaneous	<b>Friable Classification</b> Non-Friable	<b>EPA Category</b> Category II	<b>Total Quantity</b> 400	<b>Unit of Measure</b> Square Feet		
<b>General Condition</b> Good	<b>Damage Category</b>	<b>Overall Material Assessment</b> Not Assessed under AHERA	<b>Recommended Response</b> Abate Prior to Demolition			
<b>General Material Comments</b>						
<b>Material Location(s)</b> CENTER						
<b>Sample ID(s)</b>	<b>Sample Location(s)</b>	<b>Floor</b>	<b>Analyzed</b>	<b>Overall Result</b>	<b>Layer(s) Reported by Lab</b>	<b>Results by Layer</b>

<b>Material Description</b> Floor - Mastic			<b>Material Number</b> FLMAS-13	<b>Asbestos Present?</b> Yes		
<b>Material Category</b> Flooring	<b>Friable Classification</b> Non-Friable	<b>EPA Category</b> Category I	<b>Total Quantity</b> 4,650	<b>Unit of Measure</b> Square Feet		
<b>General Condition</b>	<b>Damage Category</b>	<b>Overall Material Assessment</b> Not Assessed under AHERA	<b>Recommended Response</b> Abate Prior to Demolition			
<b>General Material Comments</b>						
<b>Material Location(s)</b> THROUGHOUT THE BULDING						
<b>Sample ID(s)</b>	<b>Sample Location(s)</b>	<b>Floor</b>	<b>Analyzed</b>	<b>Overall Result</b>	<b>Layer(s) Reported by Lab</b>	<b>Results by Layer</b>
FLMAS-13-01-4470-149-10	1st Floor North Side Entry at Dining Area		Yes	0%	1) Mastic 2) 3)	Non Detected
FLMAS-13-01-4471-149-11	2nd Floor Center Stairs		Yes	0%	1) Mastic 2) 3)	Non Detected
FLMAS-13-01-4472-149-12	North Entry Near Dining Area		Yes	8%	1) Mastic 2) 3)	8 % Chrysotile

## Section 4 Material Information Tables

Site Information

Bachelors Enlisted Quarters (Site ID: Parcel 5)

Inspection Date

Monday, July 2, 2001

<b>Material Description</b> Sink Undercoating				<b>Material Number</b> SK-14		<b>Asbestos Present?</b> Yes	
<b>Material Category</b> Miscellaneous		<b>Friable Classification</b> Non-Friable		<b>EPA Category</b> Category I		<b>Total Quantity</b> 5	
<b>General Condition</b> Good		<b>Damage Category</b>		<b>Overall Material Assessment</b> Not Assessed under AHERA		<b>Recommended Response</b> Abate Prior to Demolition	
<b>General Material Comments</b>  							
<b>Material Location(s)</b> CENTER							
<b>Sample ID(s)</b>		<b>Sample Location(s)</b>		<b>Floor</b>	<b>Analyzed</b>	<b>Overall Result</b>	<b>Layer(s) Reported by Lab</b>
sk-14-149-H14-A					Yes	5%	1) Sink Undercoating 2) 3)
						<b>Results by Layer</b> 1-5 % Chrysotile	

<b>Material Description</b> 9 x 9 Red/Brown Floor Tile				<b>Material Number</b> FT-15		<b>Asbestos Present?</b> Yes	
<b>Material Category</b> Flooring		<b>Friable Classification</b> Non-Friable		<b>EPA Category</b> Category I		<b>Total Quantity</b> 4,250	
<b>General Condition</b>		<b>Damage Category</b>		<b>Overall Material Assessment</b> Not Assessed under AHERA		<b>Recommended Response</b> Abate Prior to Demolition	
<b>General Material Comments</b>  							
<b>Material Location(s)</b>  							
<b>Sample ID(s)</b>		<b>Sample Location(s)</b>		<b>Floor</b>	<b>Analyzed</b>	<b>Overall Result</b>	<b>Layer(s) Reported by Lab</b>
ft-15-01-4473-149-13		North Entry Near Dining Area Below Tile			Yes	7%	1) Floor Tile 2) 3)
						<b>Results by Layer</b> 7 % Chrysotile	
ft-15-01-4474-149-14		1st Floor Dining Area Below 12 x 12 Tan Tile			Yes	8%	1) Floor Tile 2) 3)
						<b>Results by Layer</b> 8 % Chrysotile	
ft-15-01-4475-149-15		2nd Floor Hall at Room 210 Below 12 x 12 Tan Tile			Yes	8%	1) Floor Tile 2) 3)
						<b>Results by Layer</b> 8 % Chrysotile	

## Section 5 Removal Cost Estimate Summary

These estimates are for budgeting purposes only and should not be used as a quote for removal of the materials. It is not our recommendation to remove these materials unless they are beyond repair, or planned demolition or renovation activities will disturb the materials. Estimates are based on recent pricing we have received from contractors performing similar work and may vary from actual prices obtained due to the actual scope of work, quantity of material removed, control measures specified and contractor work loads, etc.

Building Bachelors Enlisted Quarters				QTY. Units Removal Costs (low to high)
HM	EPA Category	Suspect Material	Material Location	
7	Friable	1" TSI Pipe Insulation	THROUGHOUT THE BULDING	1,400 Linear Feet \$21000 to \$28000
8	Friable	1" TSI Pipe Elbows	THROUGHOUT THE BULDING	265 Each \$5300
9	Friable	2" TSI Pipe Insulation	THROUGHOUT THE BULDING	700 Linear Feet \$10500 to \$14000
10	Friable	2" TSI Pipe Elbows	THROUGHOUT THE BULDING	700 Each \$14000
12	Category II	Fire Door	CENTER	400 Square Feet \$60000
13	Category I	Floor - Mastic	THROUGHOUT THE BULDING	4,650 Square Feet \$4650 to \$9300
14	Category I	Sink Undercoating	CENTER	5 Square Feet \$500

**QTY.  
Units  
Removal  
Costs  
(low to high)**

HM	Building EPA Category	Suspect Material	Material Location	QTY. Units Removal Costs (low to high)
1	Category I	Roofing Material	EXTERIOR	16,013 Square Feet \$16013 to \$32026
15	Category I	9 x 9 Red/Brown Floor Tile		4,250 Square Feet \$6375 to \$8500
Total Removal Costs:			\$138,338	to \$171,626

Building	Floor	Sample #	Sample Location	Room	Material Sampled	%/Type
149	1	01-4461-149-1	1st Floor North Side Entry at Dining Area	Entry	12" Tan Floor Tile	Non Detected
149	1	01-4462-149-2	1st Floor Dining	Dining	12" Tan Floor Tile	Non Detected
149	2	01-4463-149-3	2nd Floor Hallway at Room 210	210	12" Tan Floor Tile	Non Detected
149	1	01-4464-149-4	1st Floor, North Entry	Entry	Baseboard Adhesive	Non Detected
149	2	01-4465-149-5	2nd Floor, Hallway at Room 210	210	Baseboard Adhesive	Non Detected
149	2	01-4466-149-6	2nd Floor, Room 207	207	Baseboard Adhesive	Non Detected
149	2	01-4467-149-7	2nd Floor Center Stairs	stair	Brown Stair Floor Tile	Non Detected
149	stair	01-4468-149-8	Landing	stair	Brown Stair Floor Tile	Non Detected
149	1	01-4469-149-9	1st Floor Stairs	stair	Brown Stair Floor Tile	Non Detected
149	1	01-4470-149-10	1st Floor North Side Entry at Dining Area	Entry	Floor - Mastic	Non Detected
149	2	01-4471-149-11	2nd Floor Center Stairs	stair	Floor - Mastic	Non Detected
149	1	01-4472-149-12	North Entry Near Dining Area	Dining	Floor - Mastic	8%Chrysotile
149	1	01-4476-149-16	Duty Office East	Office	1" TSI Pipe Insulation	25% Amosite
149	1	01-4477-149-17	South Hallway Entry Door	Entry	1" TSI Pipe Insulation	10% Amosite
149	1	01-4478-149-18	Duty Office, S/W Corner	Office	1" TSI Pipe Elbows	25% Amosite
149	1	01-4479-149-19	1st Floor Laundry	Laundry	1" TSI Pipe Elbows	Non Detected
149	1	01-4480-149-20	Duty Office East	bathroom	2" TSI Pipe Insulation	20 % Amosite
149	1	01-4481-149-21	1st Floor Hallway Near Bathroom	Office	2" TSI Pipe Insulation	15% Amosite
149	1	01-4482-149-22	Duty Office East	Office	2" TSI Pipe Elbows	25% Amosite
149	1	01-4483-149-23	1st Floor Hallway Near Bathroom	Hall	2" TSI Pipe Elbows	30% Amosite
149	1	01-4473-149-13	North Entry Near Dining Area Below Tile	Dining	9 x 9 Red/Brown Floor	7%Chrysotile
149	1	01-4474-149-14	1st Floor Dining Area Below 12 x 12 Tan Tile	Entry	9 x 9 Red/Brown Floor	8%Chrysotile
149	2	01-4475-149-15	2nd Floor Hall at Room 210 Below 12 x 12 Tan Tile	210	9 x 9 Red/Brown Floor	8%Chrysotile
149	Roof	01-6603-149-1	Roof Core East	Roof	Roofing Material	Non Detected
149	Roof	01-6604-149-2	Roof Core North	Roof	Roofing Material	Non Detected
149	Roof	01-6605-149-3	Roof Patch South	Roof	Roofing Material	Non Detected
149	Roof	01-6606-149-4	Roof Penetration Northeast	Roof	Roofing Material	12%Chrysotile
149	Roof	01-6607-149-5	Roof Penetration Southeast	Roof	Roofing Material	15%Chrysotile
Pre-Existing Report						
149		149-H14-A			Sink Undercoating	1-5%Chrysotile
149		149-HO4-A			2x4 Pinhole Ceiling Tile	Non Detected
149		149-HO4-B			2x4 Pinhole Ceiling Tile	Non Detected
149		149-HO4-C			2x4 Pinhole Ceiling Tile	Non Detected
149		149-HO4-D			2x4 Pinhole Ceiling Tile	Non Detected
149		149-HO4-E			2x4 Pinhole Ceiling Tile	Non Detected
149		149-HO5-A			Wallboard	Non Detected

Building	Floor	Sample #	Sample Location	Room	Material Sampled	%/Type
149		149-HO5-B			Wallboard	<1% Chrysotile
149		149-HO5-C			Wallboard	Non Detected
149		149-HO5-D			Wallboard	<% Chrysotile
149		149-HO5-E			Wallboard	Non Detected
149		149-HO5-F			Wallboard	Non Detected
149		149-HO5-G			Wallboard	<% Chrysotile
149		149-HO5-H			Wallboard	Non Detected
149		149-HO5-I			Wallboard	Non Detected
149		149-HO5-J			Wallboard	Non Detected
149		149-HO6-A			Plaster	Non Detected
149		149-HO6-B			Plaster	Non Detected
149		149-HO6-C			Plaster	Non Detected
149		149-HO6-D			Plaster	Non Detected
149		149-HO6-E			Plaster	Non Detected
149		149-HO6-F			Plaster	Non Detected
149		149-HO6-G			Plaster	Non Detected
149		149-HO7-A			1" TSI Pipe Insulation	5-10% Amosite
149		149-HO7-B			1" TSI Pipe Insulation	Not Analyzed
149		149-HO7-C			1" TSI Pipe Insulation	5-10% Amosite
149		149-HO8-A			1" TSI Pipe Elbows	5-10% Amosite
149		149-HO8-B			1" TSI Pipe Elbows	Not Analyzed
149		149-HO8-C			1" TSI Pipe Elbows	Not Analyzed
149		149-HO9-A			2" TSI Pipe Insulation	20-25% Chrysotile
149		149-HO9-B			2" TSI Pipe Insulation	Not Analyzed
149		149-HO9-C			2" TSI Pipe Insulation	Not Analyzed
149		149-H10-A			2" TSI Pipe Elbows	10-20% Amosite
149		149-H10-B			2" TSI Pipe Elbows	15% Chrysotile
149		149-H10-C			2" TSI Pipe Elbows	Not Analyzed

Appendix A  
**Definitions of Terms and Assessment Criteria**

## Definitions of Terms and Assessment Criteria

This survey report organizes information on each suspect ACBM identified in tables located in Section 4. This section describes how to interpret the data found on materials listed in Section 4.

**Material description** contains the description of the suspect homogeneous asbestos containing building material.

**Material Serial Number** is used to reference the material for reinspections, etc..

**Asbestos type and content** describes the type of asbestos and its percentage in the material.

**Asbestos Results** for positive materials are shown as a percentage. Samples having less than 1% asbestos are reported as containing "Trace" amounts of asbestos and samples with no detected asbestos are reported as "BLD" or below limit of detection.

**Sample number(s)** identifies a particular material sample obtained from a specific sample location. Sample numbers are used primarily for laboratory identification.

**Sample Location** identifies where the samples of this material were obtained.

**Material Category** categorizes each material as surfacing, TSI or miscellaneous.

*Surfacing Materials* - Asbestos containing materials that are sprayed-on, trowled-on or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

*Thermal Systems Insulation (TSI)* - Asbestos containing materials applied to pipes, fittings, boilers, breaching, tanks, ducts or other interior structural components to prevent heat loss or gain or water condensation.

*Miscellaneous Materials* - Asbestos containing materials applied to or a part of building components that are not classified as surfacing materials or thermal systems insulation.

**Quantity & Units** reports approximate total quantity per unit of measure for each material.

**Building(s) & Floor(s)** specifies where a material is located.

**Material Location** describes where the material is found throughout the building.

**Material Condition** identifies the material as Friable, Non-friable or Jacketed (for thermal systems insulation only) if asbestos is present.

*Friable* - An asbestos containing material that can be crumbled, pulverized or reduced to powder, when dry, by hand pressure, such as spray applied fireproofing on structural steel members, spray applied acoustical ceiling materials or damaged thermal systems insulation. Friable materials are of greatest concern due to their potential fiber release.

*Non-Friable* - An asbestos containing material where the asbestos is bound tightly in a matrix or sealed by a protective layer. Non-friable materials can become friable by being rendered to a crumbled, pulverized or powdered state, when dry, by crushing, sanding, sawing, shot-blasting, severe weathering or by other mechanically induced means. Common examples of non-friable materials are adhesives, floor tiles, transite and roofing materials.

*Jacketed* - An asbestos containing material applied to thermal systems insulation and "jacketed" with a protective outer layer such as canvas or metal to keep the material in good condition. Undamaged jacketed ACBM is considered non-friable. If the jacketing is damaged, the material is considered friable.

**Damage Category** describes the type of damage, if any, to the material. The following damage categories are used: None, Physical, Air, and Water.

**Material Assessment** identifies the condition of the material in relation to physical and water damage, delamination of the material from its substrate, the extent of the damage and the potential for damage from building conditions, such as, accessibility by building occupants, influence of vibration, etc. The six standard assessment categories ranked by hazard potential, with the first being the lowest hazard are as follows: 1) Potential for Damage, 2) Potential for Significant Damage, 3) Damaged, 4) Damaged with Potential for Damage, 5) Damaged with Potential for Significant Damage, and 6) Significantly Damaged. Only friable materials are assessed under AHERA regulations. Non-friable materials, unless damaged, are not assessed and can be assumed to be in good condition.



*Damaged* - The damage or deterioration of the material results in inadequate cohesion or adhesion with crumbling, blistering, water stains, marring or otherwise abraded over less than one-tenth (1/10) of the surface if the damage is evenly distributed or one-fourth (1/4) if the damage is localized.

*Significant Damage* - The damage or deterioration of the material results in inadequate adhesion or cohesion and the damage is extensive and severe with one or more of the following characteristics: 1) Crumbling or blistering over at least one-tenth (1/10) of the surface if evenly distributed, one-fourth (1/4) if the damage is localized; 2) Areas of the material hanging from the surface, delaminated, or showing adhesive failure; 3) Water stains, gouges or marred.

**Recommended Response** suggests the appropriate options for controlling or maintaining ACBM in a safe manner. There are four options used:

*Operations & Maintenance (O&M)* - A program designed to "manage" asbestos in-place. As long as asbestos containing materials remain in a building, an O&M program should be instituted to alert maintenance personnel, custodial workers and outside vendors of the existence and location of these materials and to set a policy for the maintenance of these materials. The material is usually only required to be removed if it is significantly damaged, prior to demolition of the building or if it will be disturbed by renovation activities.

*Repair* - The restoration of damaged or deteriorated asbestos containing building materials to an intact condition. Once the intact condition is established, the material should be included in an O&M program. The material is usually only required to be removed if it is significantly damaged, prior to demolition of the building or if it will be disturbed by renovation activities.

*Abate Due to Condition* - This material is significantly damaged and is unsafe in its current condition. The access to the area should be restricted to personnel equipped with appropriate personal protection. This material should be properly removed by a licensed contractor using workers trained in the safe removal of asbestos.

*Abate Prior to Renovation* - This material should be properly removed prior to planned renovation activities by a licensed contractor using workers trained in the safe removal of asbestos. This recommendation is usually made only on survey reports prepared prior to planned renovation activities.

**Comments & Damage Description** contains any additional information and or specific details of material damage are noted here.

**EPA Category** provides the appropriate material category as outlined in the NESHAPS regulation. The four options are friable, Category 1, Category 2, and needs determination.

*Friable* - Materials containing greater than 1% asbestos are always considered Regulated Asbestos Containing Materials (RACM) that require removal prior to building renovation or demolition activities that impact the material.

*Category 1* - Materials that are bituminous non-friable and contain more than 1% asbestos that become RACM and require removal only when will be subject to grinding, cutting, sanding or abrading.

Appendix B  
**Bulk Sampling Protocol and Analytical Methods**

## **Bulk Sampling Protocol and Analytical Methods**

Bulk samples of suspect asbestos containing building materials were obtained using standard industrial hygiene techniques including wetting the material to minimize fiber release. Our personnel wore half-face air purifying respirators equipped with high efficiency particulate (HEPA) filters while obtaining samples

Our sampling strategy for suspect friable surfacing materials was based on the guidelines outlined in the EPA publication *Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials*, and the procedures outlined in 40 CFR 763, Subpart E (AHERA). For non-friable suspect materials, AHERA requires the building inspector to determine the appropriate number of samples to obtain and analyze. Usually one to three samples of non-friable materials are collected.

For each homogeneous material identified by visual inspection as suspect material, random samples are obtained. A single bulk sample is randomly selected from each homogeneous material for first-round testing. If the sample is positive, the remaining samples are not analyzed; if the sample is negative, the other samples are submitted for study. Every sample must be reported negative if the material is to be considered non-asbestos containing.

The bulk samples were delivered to an independent laboratory that participates in the bulk sample proficiency analysis program conducted by the United States Environmental Protection Agency and is accredited by the National Voluntary Laboratory Program (NVLAP). The samples were analyzed using Polarized Light Microscopy (PLM) with dispersion staining to estimate the percent of asbestos composition by volume. Samples with no observable asbestiform minerals are designated as None-Detected. Samples in which asbestiform minerals are observed, but exist in concentrations of less than one percent (<1%), are designated as present in Trace amounts; all other samples are designated as asbestos containing with the appropriate percent of asbestos noted.

Appendix C  
**Laboratory Bulk Sampling Reports**

# SCHNEIDER LABORATORIES INCORPORATED

2512 W. Cary Street • Richmond, Virginia • 23220-5117  
804-353-6778 • 800-785-LABS (5227) • (FAX) 804-353-6928

*Excellence in Service and Technology*

AIHA/ELLAP 100527, NVLAP 1150, NYELAP 11413, CAELAP 2078, NC 593, SC 93003

## LABORATORY ANALYSIS REPORT

Asbestos Identification by EPA Method 600/R-93/116

ACCOUNT: 2541-01-12  
CLIENT: Benchmark  
ADDRESS: 3732 Charter Park Drive  
San Jose, CA 95136

DATE COLLECTED:  
DATE RECEIVED: 7/ 6/2001  
DATE ANALYZED: 7/ 6/2001  
DATE REPORTED: 7/ 9/2001

PO NO.:  
PROJECT NAME:  
PROJECT NO.: 001-448-A-SU  
JOB LOCATION: Parcel 5 Bldg. 149

Client Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	Asbestos Detected (Yes/No)	Sample Description
01-4461-149-1	1981457 Layer 1: 100% Non-Asbestos	N side entry dining Floor Tile	No	Gray/Brown, Organically Bound NON FIBROUS MATERIAL 100%
01-4462-149-2	1981458 Layer 1: 100% Non-Asbestos	1st flr dining Floor Tile	No	Gray/Brown, Organically Bound NON FIBROUS MATERIAL 100%
01-4463-149-3	1981459 Layer 1: 100% Non-Asbestos	2nd flr hall rm 210 Floor Tile	No	Gray/Brown, Organically Bound NON FIBROUS MATERIAL 100%
01-4464-149-4	1981460 Layer 1: 100% Non-Asbestos	1st flr N entry Mastic	No	Brown, Brittle NON FIBROUS MATERIAL 100%
01-4465-149-5	1981461 Layer 1: 100% Non-Asbestos	Hall 2nd flr rm 210 Mastic	No	Brown, Brittle NON FIBROUS MATERIAL 100%
01-4466-149-6	1981462 Layer 1: 100% Non-Asbestos	2nd flr rm 207 Mastic	No	Brown, Brittle NON FIBROUS MATERIAL 95%, WOLLASTONITE 5%

*Samples analyzed by the EPA Test Method are subject to the inherent limitations of light microscopy including interference by matrix components. Gravimetric reduction and correlative analyses are recommended for all non-friable, organically bound materials. For calibrated visual estimate, 1% is the concentration at which there is a quantitative uncertainty. This report relates only to the items tested, must not be reproduced except in full with the approval of the lab, and must not be used to claim NVLAP or other government agency endorsement.*

Client Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	Asbestos Detected (Yes/No)	Sample Description
	Layer 2: 100% Non-Asbestos	Mastic	No	White, Soft NON FIBROUS MATERIAL 100%
01-4467-149-7	1981463 Layer 1: 100% Non-Asbestos	Ctr stairs 2nd flr Stair Tile	No	Brown, Organically Bound NON FIBROUS MATERIAL 100%
01-4468-149-8	1981464 Layer 1: 100% Non-Asbestos	Landing Stair Tile	No	Brown, Organically Bound NON FIBROUS MATERIAL 100%
01-4469-149-9	1981465 Layer 1: 100% Non-Asbestos	1st flr stairs Stair Tile	No	Brown, Organically Bound NON FIBROUS MATERIAL 100%
01-4470-149-10	1981466 Layer 1: 100% Non-Asbestos	With sample #1 Mastic	No	Yellow, Brittle NON FIBROUS MATERIAL 100%
01-4471-149-11	1981467 Layer 1: 100% Non-Asbestos	With sample #7 Mastic	No	Brown, Brittle NON FIBROUS MATERIAL 100%
01-4472-149-12	1981468 Layer 1: 8% Asbestos 92% Non-Asbestos	With sample #13 Mastic	Yes	Black, Bituminous CHRYSOTILE 8% NON FIBROUS MATERIAL 92%
01-4473-149-13	1981469 Layer 1: 7% Asbestos 93% Non-Asbestos	N entry near dining Floor Tile	Yes	Brown, Organically Bound CHRYSOTILE 7% NON FIBROUS MATERIAL 93%
01-4474-149-14	1981470 Layer 1: 8% Asbestos 92% Non-Asbestos	1st flr dining Floor Tile	Yes	Brown, Organically Bound CHRYSOTILE 8% NON FIBROUS MATERIAL 92%
01-4475-149-15	1981471 Layer 1: 8% Asbestos 92% Non-Asbestos	2nd flr hall rm 210 Floor Tile	Yes	Brown, Organically Bound CHRYSOTILE 8% NON FIBROUS MATERIAL 92%

Samples analyzed by the EPA Test Method are subject to the inherent limitations of light microscopy including interference by matrix components. Gravimetric reduction and correlative analyses are recommended for all non-friable, organically bound materials. For calibrated visual estimate, 1% is the concentration at which there is a quantitative uncertainty. This report relates only to the items tested, must not be reproduced except in full with the approval of the lab, and must not be used to claim NVLAP or other government agency endorsement.

Client Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	Asbestos Detected (Yes/No)	Sample Description
01-4476-149-16	1981472	Duty office E		
	Layer 1: Insulation		<b>Yes</b>	White, Powdery AMOSITE 25%, CHRYSOTILE 10% NON FIBROUS MATERIAL 65%
	Layer 2: Cover		<b>No</b>	White, Fibrous CELLULOSE FIBER 50%, MINERAL/GLASS WOOL 40%, NON FIBROUS MATERIAL 10%
01-4477-149-17	1981473	S hallway entry		
	Layer 1: Insulation		<b>Yes</b>	White, Powdery AMOSITE 10%, CHRYSOTILE 10% NON FIBROUS MATERIAL 80%
	Layer 2: Cover		<b>No</b>	White, Fibrous CELLULOSE FIBER 80%, NON FIBROUS MATERIAL 20%
01-4478-149-18	1981474	Duty office SW crnr		
	Layer 1: Insulation		<b>Yes</b>	White, Powdery AMOSITE 25%, CHRYSOTILE 10% NON FIBROUS MATERIAL 65%
	Layer 2: Cover		<b>No</b>	White, Fibrous CELLULOSE FIBER 80%, NON FIBROUS MATERIAL 20%
01-4479-149-19	1981475	1st flr laundry		
	Layer 1: Insulation		<b>No</b>	White, Powdery NON FIBROUS MATERIAL 95%, SYNTHETIC FIBER 5%
	Layer 2: Cover		<b>No</b>	White, Fibrous MINERAL/GLASS WOOL 95%, NON FIBROUS MATERIAL 5%
01-4480-149-20	1981476	Duty office E		
	Layer 1: Insulation		<b>Yes</b>	White, Powdery AMOSITE 20%, CHRYSOTILE 15% NON FIBROUS MATERIAL 65%
	Layer 2: Cover		<b>No</b>	White, Fibrous CELLULOSE FIBER 80%, NON FIBROUS MATERIAL 20%
01-4481-149-21	1981477	1st flr hallway bath		
	Layer 1: Insulation		<b>Yes</b>	White, Powdery AMOSITE 15%, CHRYSOTILE 10% CELLULOSE FIBER 2%, NON FIBROUS MATERIAL 73%

*Samples analyzed by the EPA Test Method are subject to the inherent limitations of light microscopy including interference by matrix components. Gravimetric reduction and correlative analyses are recommended for all non-friable, organically bound materials. For calibrated visual estimate, 1% is the concentration at which there is a quantitative uncertainty. This report relates only to the items tested, must not be reproduced except in full with the approval of the lab, and must not be used to claim NVLAP or other government agency endorsement.*

Client Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	Asbestos Detected (Yes/No)	Sample Description
01-4482-149-22	1981478	Duty office E Layer 1: Insulation	Yes	White, Powdery AMOSITE 25%, CHRYSOTILE 10% NON FIBROUS MATERIAL 65%
		<b>35% Asbestos</b> <b>65% Non-Asbestos</b>		
01-4483-149-23	1981479	1st flr hall bath Layer 1: Insulation	Yes	White, Powdery AMOSITE 30%, CHRYSOTILE 10% NON FIBROUS MATERIAL 60%
		<b>40% Asbestos</b> <b>60% Non-Asbestos</b>		
		Layer 2: Cover	No	White, Fibrous MINERAL/GLASS WOOL 80%, NON FIBROUS MATERIAL 20%
		<b>100% Non-Asbestos</b>		

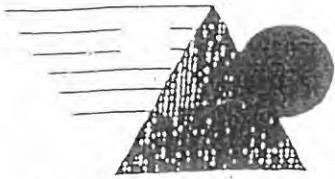
ANALYST: SAMI A. HOSN

Total no. of pages in report = 4

  
 REVIEWED BY Beverly A. Schrage, Analyst

*amples analyzed by the EPA Test Method are subject to the inherent limitations of light microscopy including interference by matrix components. Gravimetric reduction and correlative analyses are recommended for all non-friable, organically bound materials. For calibrated visual estimate, 1% is the concentration at which there is a quantitative uncertainty. This report relates only to the items tested, must not be reproduced except in full with the approval of the lab, and must not be used to claim NVLAP or other government agency endorsement.*





# BENCHMARK

Sample Location Worksheet  
Chain Of Custody

2541-01-12

3680 Charter Park Dr Suite E San Jose, CA 95136  
(408) 448-7594 (408) 448-3849 (fax)

Project Number: 01-448-A-50

Date: 7/2/01

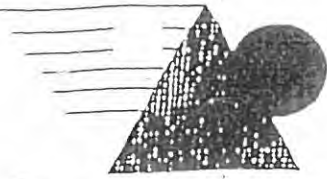
Technician: T. McFarlane

Project Location: Parcel 5 Bldg 149

Client Name: K. McElroy-Liu Company: PAI

Project Type	Type Of Analysis	Turnaround Time
<u>Asbestos</u>	<u>PLM/Bulk (EPA 600)</u>	Same Day 3 Hr 6 Hr
Lead-based Paint	EPA SW846-7420, FLAA	<u>24 Hour</u>
Lead Risk Assessment	Dust Wipes, Paint Chips	48 Hour
Lead (water)	Air, Soil	72 Hour
Mold/Fungus/Bacteria	SM313B, GFAA, Water	5 Day
Indoor Air Quality	TEM/Bulk (Chatfield)	Other: _____
Other: _____	Other: _____	<u>TTP = Test Till Positive</u>

Homogenous Material Group	Material / Component	Sample Number	Location Of Samples	Analysis Specification
02	12x12 TAN FT	01-4461-149-1	NORTH SIDE ENTRY, AT DINING AREA (1 <sup>st</sup> Floor)	ANALYZE ALL SUBMITTIONS
		01-4462-149-2	FIRST FLOOR DINING	
		01-4463-149-3	SECOND FLOOR HALLWAY AT ROOM 210	
03	CONCRETE MASTIC	01-4464-149-4	FIRST FLOOR NORTH ENTRY	
		01-4465-149-5	HALLWAY, 2ND FLOOR AT ROOM 210	
		01-4466-149-6	2ND FLOOR, ROOM 207	
11	STONE TILE Brown	01-4467-149-7	CENTER STAIRS, 2ND FLOOR	
		01-4468-149-8	LANDING	
		01-4469-149-9	FIRST FLOOR STAIRS	
13	FLOOR TILE MASTIC	01-4470-149-10	12x12 TAN FLOOR TILE w/ SAMPLE 1	
		01-4471-149-11	4x9 RED/BROWN FT w/ SAMPLE #9	
		01-4472-149-12	STONE COUNTERTOP 9x9 FT w/ SAMPLE 13	
15	9x9 RED/BROWN FLOOR TILE	01-4473-149-13	BELOW TILE, NORTH ENTRY NOOR DINING	
		01-4474-149-14	BELOW 12x12 TAN TILE ONLY (FIRST FLOOR DINING)	
		01-4475-149-15	BELOW 12x12 TAN TILE ONLY (2 <sup>nd</sup> FLOOR HALL AT RM 210)	
Relinquished By:		Received By:		Date/Time Received
T. McFarlane		J. Mitchell FX 8279 4214 5578 (B)		7/6 10 <sup>00</sup>



# BENCHMARK

Sample Location Worksheet  
Chain Of Custody

3680 Charter Park Dr Suite E San Jose, CA 95136  
(408) 448-7594 (408) 448-3849 (fax)

- pg 2

Project Number: 01-448

Date: 7/2/01

Technician: T. McFarlane

Project Location: NASA

BLDG. 149

Client Name: K. McGLATHLIN

Company: PAI

Project Type	Type Of Analysis	Turnaround Time
<u>Asbestos</u>	<u>PLM/Bulk (EPA 600)</u>	Same Day 3 Hr 6 Hr
Lead-based Paint	EPA SW846-7420, FLAA	<u>24 Hour</u>
Lead Risk Assessment	Dust Wipes, Paint Chips	48 Hour
Lead (water)	Air, Soil	72 Hour
Mold/Fungus/Bacteria	SM313B, GFAA, Water	5 Day
Indoor Air Quality	TEM/Bulk (Chatfield)	Other: _____
Other: _____	Other: _____	<del>TFP - Test Till Positive</del>

Homogenous Material Group	Material / Component	Sample Number	Location Of Samples	Analysis Specification
07	1" PIPE RUN	01-4476-149-16	DUTY OFFICE, EAST	ANALYZE ALL SUBMITTOS
	↓	01-4477-149-17	SOUTH HALLWAY, ENTRY DOOR	
08	1" PIPE ELBOW	01-4478-149-18	DUTY OFFICE, S/W CORNER	
	↓	01-4479-149-19	1ST FLOOR LAUNDRY	
09	2" PIPE RUN	01-4480-149-20	DUTY OFFICE EAST	
	↓	01-4481-149-21	FIRST FLOOR HALLWAY NEAR BATHROOM	
10	2" PIPE ELBOW	01-4482-149-22	DUTY OFFICE EAST	
	↓	01-4483-149-23	FIRST FLOOR HALLWAY NEAR BATHROOM	
01	ROOFING	01-4484-149-24		
		01-4485-149-25		
		01-4486-149-26		
		01-4487-149-27		
		01-4488-149-28		
		01-4489-149-29		
		01-4490-149-30		
Relinquished By:		Received By:		Date/Time Received
<u>T. McFarlane</u>		<u>[Signature]</u>		<u>FX 8279 4214 5578 (S) 7-6 10<sup>00</sup></u>

NOT SUBMITTED

# SCHNEIDER LABORATORIES INCORPORATED

2512 W. Cary Street • Richmond, Virginia • 23220-5117  
804-353-6778 • 800-785-LABS (5227) • (FAX) 804-353-6928  
*Excellence in Service and Technology*

AIHA/ELLAP 100527, NVLAP 1150, NYELAP 11413, CAELAP 2078, NC 593, SC 93003

## LABORATORY ANALYSIS REPORT

Asbestos Identification by EPA Method 600/R-93/116

**ACCOUNT:** 2541-01-334  
**CLIENT:** Benchmark  
**ADDRESS:** 3732 Charter Park Drive Suite A  
San Jose, CA 95136

**PO NO.:**  
**PROJECT NAME:** Bldg. 149  
**PROJECT NO.:** E01-448  
**JOB LOCATION:**

**DATE COLLECTED:**  
**DATE RECEIVED:** 12/ 7/2001  
**DATE ANALYZED:** 12/ 7/2001  
**DATE REPORTED:** 12/10/2001

Client Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	Asbestos Detected (Yes/No)	Sample Description
01-6603-149-1 ✓	2116975 Layer 1: 100% Non-Asbestos	Core east Core	No	Black, Bituminous CELLULOSE FIBER 45%, NON FIBROUS MATERIAL 55%
01-6604-149-2 ✓	2118976 Layer 1: 100% Non-Asbestos	Core north Core	No	Black, Bituminous CELLULOSE FIBER 40%, NON FIBROUS MATERIAL 60%
01-6605-149-3 ✓	2116977 Layer 1: 100% Non-Asbestos	Patch south Patch	No	Black, Bituminous NON FIBROUS MATERIAL 100%
01-6606-149-4 ✓	2116978 Layer 1: 12% Asbestos 88% Non-Asbestos	Penetration N/E Penetration	Yes	Black, Bituminous CHRYBOTILE 12% NON FIBROUS MATERIAL 88%
01-6607-149-5 ✓	2116979 Layer 1: 15% Asbestos 85% Non-Asbestos	Penetration S/E Penetration	Yes	Black, Bituminous CHRYBOTILE 15% NON FIBROUS MATERIAL 85%

**ANALYST:** SAMI A. HOSN  
Total no. of pages in report = 1

*Jean L. Mayes*  
**REVIEWED BY** Jean L. Mayes, Analyst

*Samples analyzed by the EPA Test Method are subject to the inherent limitations of light microscopy including interference by matrix components. Gravimetric reduction and correlative analyses are recommended for all non-friable, organically bound materials. For calibrated visual estimate, 1% is the concentration at which there is a quantitative uncertainty. This report relates only to the items tested, must not be reproduced except in full with the approval of the lab, and must not be used to claim NVLAP or other government agency endorsement.*



Appendix D  
**Summary of Regulatory Requirements**

## **Appendix D Summary of Regulatory Requirements**

This appendix provides a summary of building owner and manager requirements under various asbestos regulations promulgated by the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) to protect building occupants and employees from exposure to asbestos.

### **Survey Requirements**

Prior to any renovation activity, OSHA and EPA regulations require that a complete asbestos survey be performed to determine if asbestos is present in any suspect asbestos containing material that will be present in the construction or work area. This survey report addresses accessible materials. It is recommended that prior to renovation activities, inaccessible areas that could contain asbestos materials be inspected.

### **Notification and Posting Requirements**

Regulatory agencies feel that the building owner or manager should be responsible for knowing and communicating the locations of asbestos in their buildings to building employees, outside contractors and tenants to prevent exposure to asbestos.

Under the California Health and Safety Code, building owners and managers are required to provide annual notifications regarding known asbestos containing materials in their buildings to building employees, tenants, vendors and outside contractors. Therefore, specific information contained in this survey report is required to be included in the notification.

OSHA requires building employees, outside contractors, vendors and construction contractors bidding on or performing work in buildings be provided with notification regarding asbestos containing materials in their work areas. OSHA also requires that asbestos warning signs be posted in mechanical rooms.

### **Removal Requirements**

Under EPA regulations, asbestos containing materials must be properly removed by licensed asbestos abatement contractors prior to renovation or demolition activities that would disturb friable materials or cause non-friable materials to become friable and a regulated material.

### **Repair of Damaged Materials and Cleanup of Debris**

OSHA requires that asbestos containing debris be immediately cleaned up. It is recommended that damaged materials that may release fibers be repaired as soon as possible to prevent fiber release and potential exposures.

### **Training Requirements**

OSHA requires employers whose employees are likely to or required to disturb asbestos to receive an asbestos training course. Refresher training is required to be provided annually.

Appendix E  
**AHERA Building Inspector Certifications**

State of California  
Division of Occupational Safety and Health

**Certified Asbestos Consultant**

**Terri A. MacFarlane**



Name

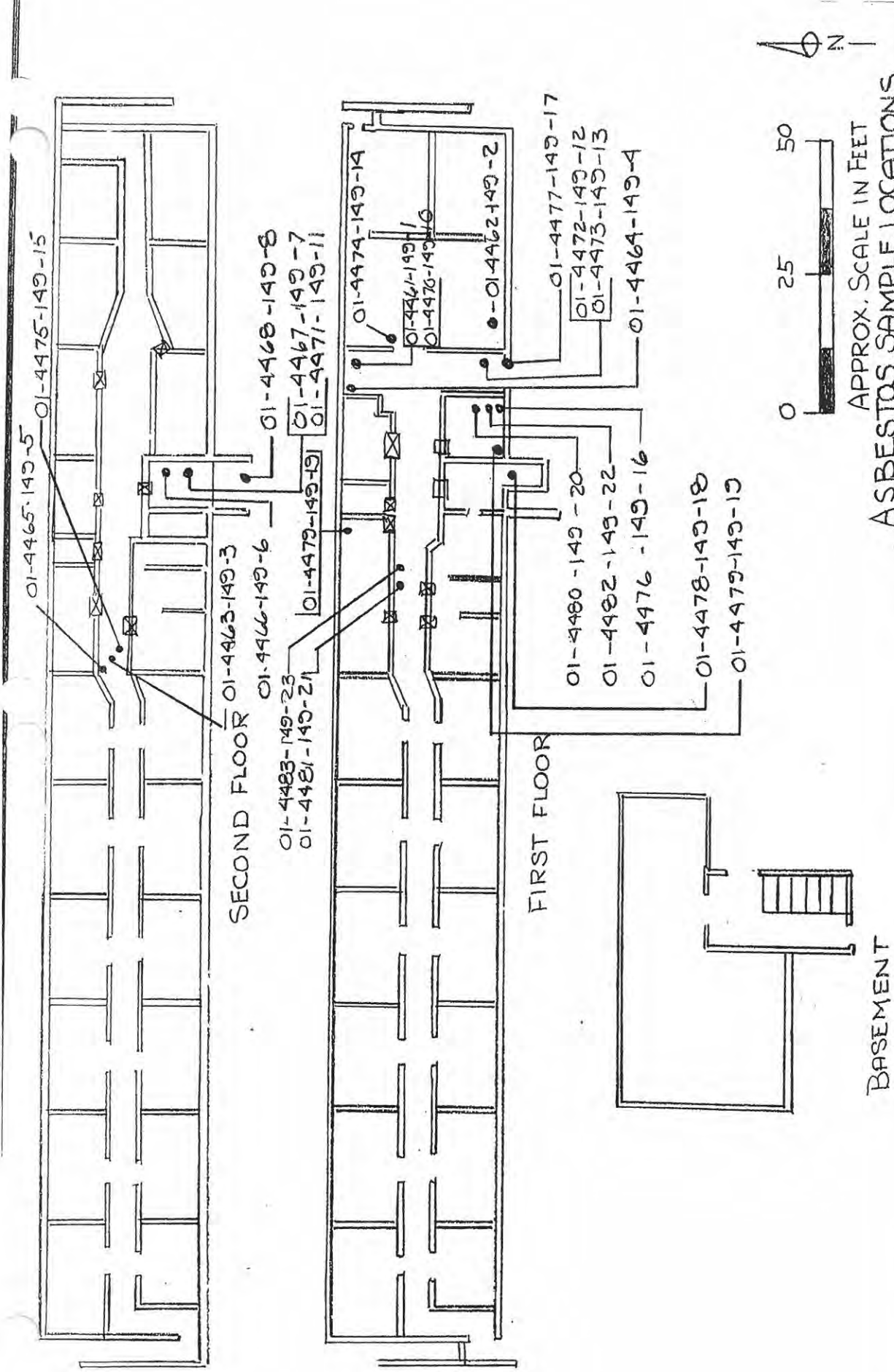
Certification No. 90-2747

Expires on 5/3/2002

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code



Appendix F  
**Drawings Indicating Sampling Locations**



APPROX. SCALE IN FEET  
 ASBESTOS SAMPLE LOCATIONS

	PROJECT NAME: <b>BUILDING-149</b> <b>NASA · AMES</b>		DRAFT PERSON: <b>RJM</b>	DATE: <b>12/30 01</b>	DWG. No. <b>01</b>
	Property Inspections - Environmental Engineering Specialized Training - Contract Management 3732 - A Charter Park Drive San Jose, CA 951366 Phone: (408) 448-7594 - Fax: (408) 448-3849			PROJECT No. <b>01</b>	