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## ASBESTOS SURVEY REPORT

### Army Reserve Dormitory (ID: Building155)

NASA-AMES (PAI CORPORATION)  
Moffett Field  
Mountain View, CA 94035

BUILDING INSPECTIONS

ENVIRONMENTAL ENGINEERING

SPECIALIZED TRAINING

CONTRACT MANAGEMENT

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


Prepared by:  
Benchmark Environmental Engineering  
July 19, 2002  
Project Number: **E01-612-A-SU**

Prepared By:



Terri MacFarlane  
a California Certified Asbestos Consultant  
90-2747

Reviewed By:



Terri MacFarlane  
a California Certified Asbestos Consultant  
90-2747

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## 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 Army Reserve Dormitory (Building ID: Building155), to determine the locations of accessible and to the extent feasible, inaccessible friable and non-friable asbestos containing building materials (ACBM).

This inspection included interior and exterior areas. Pre-existing survey data was used to help Provide a picture of existing conditions 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 previously 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 Tile
- Mastic
- 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 Army Reserve Dormitory located at Moffett Field, Mountain 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 included interior and exterior areas. Pre-existing survey data was used to help Provide a picture of existing conditions 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 previously 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, November 5, 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 Corporation), 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: 3

Year Built: 1953

Total Square Footage: 9,285

Exterior Wall construction components consist of: Concrete

Interior Wall construction components consist of: Drywall  
Plaster

Interior ceiling components consist of: Ceiling Tile

### Building Description/Comments:

This facility, built in 1953, is a two-story 9,285 square foot structure with a basement. The building construction is concrete over a concrete foundation and with a flat composite roof. The concrete exterior is tan.

### Comments:

Tetra Tech, Inc. conducted an asbestos survey on January 19, 1993.

### 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*

**Army Reserve Dormitory (Site ID: 3-15 Yrs.)**  
Moffett Field  
Mountain View, CA 94035

*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, November 5, 2001

*Job Number*

E01-612-A-SU

| <i>Suspect Material</i>      | <i>Category</i> | <i>HM Number</i> | <i>Material Location(s)</i>       | <i>Asbestos Present?</i> |
|------------------------------|-----------------|------------------|-----------------------------------|--------------------------|
| Roofing Material             | Roofing         | RM-1             | EXTERIOR                          | Yes                      |
| 12" Tan Floor Tile           | Flooring        | FT-2             | THROUGHOUT                        | No                       |
| Coving Mastic                | Miscellaneous   | MASTIC-3         | THROUGHOUT                        | No                       |
| 2' x 4' Pinhole Ceiling Tile | Ceilings        | CT-4             | THROUGHOUT                        | No                       |
| Wallboard                    |                 | WLBD-5           | THROUGHOUT                        | No                       |
| Plaster                      | Surfacing       | PL-6             | CENTER                            | No                       |
| 1" Pipe Insulation TSI       | TSI             | PI-7             | THROUGHOUT AND BASEMENT           | Yes                      |
| 1" Pipe Elbows TSI           | TSI             | PE-8             | THROUGHOUT                        | Yes                      |
| 2" Pipe Insulation TSI       | TSI             | PI-9             | THROUGHOUT                        | Yes                      |
| 2" Pipe Elbows TSI           | TSI             | PE-10            | THROUGHOUT                        | Yes                      |
| Brown Floor Tile             | Flooring        | FT-11            | CENTER                            | Yes                      |
| Fire Door                    | Miscellaneous   | FD-12            | CENTER                            | Yes                      |
| Floor Tile Mastic            | Miscellaneous   | MASTIC-13        | THROUGHOUT                        | Yes                      |
| Sink Undercoating            | Miscellaneous   | SK-14            | CENTER                            | Yes                      |
| 12" x 12" Tan Floor Tile     | Flooring        | FT-16            | ROOM 002 BELOW 9" X 9" FLOOR TILE | Yes                      |

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Survey Performed By

Benchmark Environmental  
Engineering

Inspection Date

Monday, November 5, 2001

| <i>Suspect Material</i>                   | <i>Category</i> | <i>HM Number</i> | <i>Material Location(s)</i> | <i>Asbestos Present?</i> |
|-------------------------------------------|-----------------|------------------|-----------------------------|--------------------------|
| Stair Covering Resilient Flooring - Sheet | Flooring        | RS-15            |                             | No                       |



## Section 4 Material Information Tables

*Site Information*

**Army Reserve Dormitory (Site ID: 3-15 Yrs.)**  
 Moffett Field  
 Mountain View, CA 94035

*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, November 5, 2001

*Job Number*

E01-612-A-SU

*Material Description*

**Roofing Material**

*Material Number*

**RM-1**

*Asbestos Present?*

**Yes**

*Material Category*

Roofing

*Frable Classification*

Non-Friable

*EPA Category*

Category I

*Total Quantity*

16,013

*Unit of Measure*

Square Feet

*General Condition*

*Damage Category*

*Overall Material Assessment*

Not Assessed under AHERA

*Recommended Response*

*General Material Comments*

*Material Location(s)*

EXTERIOR

| Sample ID(s)       | Sample Location(s) | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab        | Results by Layer |
|--------------------|--------------------|-------|----------|----------------|---------------------------------|------------------|
| rm-1-02-7218-155-1 | West Roof          | Roof  | Yes      | 0%             | 1) Roofing core<br>2)<br>3)     | Non Detected     |
| rm-1-02-7219-155-2 | East Roof          | Roof  | Yes      | 0%             | 1) Roofing core<br>2)<br>3)     | Non Detected     |
| rm-1-02-7220-155-3 | Middle             | Roof  | Yes      | 0%             | 1) Roofing material<br>2)<br>3) | Non Detected     |
| rm-1-02-7221-155-4 | South Side Roof    | Roof  | Yes      | 0%             | 1) Roof penetration<br>2)<br>3) | Non Detected     |
| rm-1-02-7222-155-5 | North Side Roof    | Roof  | Yes      | 10%            | 1) Roof penetration<br>2)<br>3) | 10 % Chrysotile  |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Inspection Date

Monday, November 5, 2001

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

General Material Comments

Material Location(s)  
THROUGHOUT

| Sample ID(s)       | Sample Location(s) | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab  | Results by Layer |
|--------------------|--------------------|-------|----------|----------------|---------------------------|------------------|
| ft-2-02-6958-155-1 | Room 102           |       | Yes      | 0              | 1) Floor Tile<br>2)<br>3) | Non Detected     |
| ft-2-02-6959-155-2 | S101               |       | Yes      | 0              | 1) Floor Tile<br>2)<br>3) | Non Detected     |
| ft-2-02-6960-155-3 | C102 at Room 121   |       | Yes      | 0              | 1) Floor Tile<br>2)<br>3) | Non Detected     |
| ft-2-02-6961-155-4 | C201 at Room 202   |       | Yes      | 0              | 1) Floor Tile<br>2)<br>3) | Non Detected     |
| ft-2-02-6962-155-5 | C201 at Room 215   |       | Yes      | 0              | 1) Floor Tile<br>2)<br>3) | Non Detected     |

|                                              |                                              |                                                                   |                                    |                                       |
|----------------------------------------------|----------------------------------------------|-------------------------------------------------------------------|------------------------------------|---------------------------------------|
| <b>Material Description</b><br>Coving Mastic |                                              |                                                                   | <b>Material Number</b><br>MASTIC-3 | <b>Asbestos Present?</b><br>No        |
| <b>Material Category</b><br>Miscellaneous    | <b>Friable Classification</b><br>Non-Friable | <b>EPA Category</b><br>Category II                                | <b>Total Quantity</b><br>665       | <b>Unit of Measure</b><br>Square Feet |
| <b>General Condition</b>                     | <b>Damage Category</b>                       | <b>Overall Material Assessment</b><br>No Assessment, Non-asbestos | <b>Recommended Response</b>        |                                       |

General Material Comments

Material Location(s)  
THROUGHOUT

| Sample ID(s)            | Sample Location(s) | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab        | Results by Layer |
|-------------------------|--------------------|-------|----------|----------------|---------------------------------|------------------|
| MASTIC-3-02-6977-155-20 | Room 102           |       | Yes      | 0              | 1) Base Cove mastic<br>2)<br>3) | Non Detected     |
| MASTIC-3-02-6978-155-21 | C102 at Room 111   |       | Yes      | 0              | 1) Base Cove mastic<br>2)<br>3) | Non Detected     |
| MASTIC-3-02-6979-155-22 | C201 at Room 202   |       | Yes      | 0              | 1) Base Cove mastic<br>2)<br>3) | Non Detected     |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

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Monday, November 5, 2001

|                                                                    |                                                |                                                                          |                                       |                                              |
|--------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------|----------------------------------------------|
| <i>Material Description</i><br><b>2' x 4' Pinhole Ceiling Tile</b> |                                                |                                                                          | <i>Material Number</i><br><b>CT-4</b> | <i>Asbestos Present?</i><br><b>No</b>        |
| <i>Material Category</i><br><b>Ceilings</b>                        | <i>Frable Classification</i><br><b>Friable</b> | <i>EPA Category</i><br><b>Friable</b>                                    | <i>Total Quantity</i><br><b>3,050</b> | <i>Unit of Measure</i><br><b>Square Feet</b> |
| <i>General Condition</i>                                           | <i>Damage Category</i>                         | <i>Overall Material Assessment</i><br><b>No Assessment, Non-asbestos</b> | <i>Recommended Response</i>           |                                              |

*General Material Comments*

*Material Location(s)*

THROUGHOUT

| <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> |
|---------------------|---------------------------|--------------|-----------------|-----------------------|---------------------------------|-------------------------|
| ct-4-155-H04-A      |                           |              | Yes             | 0                     | 1) Ceiling Tile<br>2)<br>3)     | Non Detected            |
| ct-4-155-H04-B      |                           |              | Yes             | 0                     | 1) Ceiling Tile<br>2)<br>3)     | Non Detected            |
| ct-4-155-H04-C      |                           |              | Yes             | 0                     | 1) Ceiling Tile<br>2)<br>3)     | Non Detected            |
| ct-4-155-H04-D      |                           |              | Yes             | 0                     | 1) Ceiling Tile<br>2)<br>3)     | Non Detected            |
| ct-4-155-H04-E      |                           |              | Yes             | 0                     | 1) Ceiling Tile<br>2)<br>3)     | Non Detected            |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

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Monday, November 5, 2001

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

*Material Location(s)*  
THROUGHOUT

| <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> |
|---------------------|---------------------------|--------------|-----------------|-----------------------|---------------------------------|-------------------------|
| WLBD-5-155-H05-A    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-B    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-C    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-D    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-E    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-F    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-G    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-H    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-I    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |
| WLBD-5-155-H05-J    |                           |              | Yes             | 0                     | 1) Wallboard<br>2)<br>3)        | Non Detected            |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Inspection Date

Monday, November 5, 2001

|                           |                        |                             |                      |                   |
|---------------------------|------------------------|-----------------------------|----------------------|-------------------|
| Material Description      |                        |                             | Material Number      | Asbestos Present? |
| Plaster                   |                        |                             | PL-6                 | No                |
| Material Category         | Friable Classification | EPA Category                | Total Quantity       | Unit of Measure   |
| Surfacing                 | Friable                | Friable                     | 6,900                | Square Feet       |
| General Condition         | Damage Category        | Overall Material Assessment | Recommended Response |                   |
|                           |                        | No Assessment, Non-asbestos |                      |                   |
| 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-6-155-H06-A |                    |       | Yes      | 0              | 1) Plaster<br>2)<br>3)   | Non Detected     |
| pl-6-155-H06-B |                    |       | Yes      | 0              | 1) Plaster<br>2)<br>3)   | Non Detected     |
| pl-6-155-H06-C |                    |       | Yes      | 0              | 1) Plaster<br>2)<br>3)   | Non Detected     |
| pl-6-155-H06-D |                    |       | Yes      | 0              | 1) Plaster<br>2)<br>3)   | Non Detected     |
| pl-6-155-H06-E |                    |       | Yes      | 0              | 1) Plaster<br>2)<br>3)   | Non Detected     |
| pl-6-155-H06-F |                    |       | Yes      | 0              | 1) Plaster<br>2)<br>3)   | Non Detected     |
| pl-6-155-H06-G |                    |       | Yes      | 0              | 1) Plaster<br>2)<br>3)   | Non Detected     |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Inspection Date

Monday, November 5, 2001

|                             |                               |                                    |                             |                          |
|-----------------------------|-------------------------------|------------------------------------|-----------------------------|--------------------------|
| <i>Material Description</i> |                               |                                    | <i>Material Number</i>      | <i>Asbestos Present?</i> |
| 1" Pipe Insulation TSI      |                               |                                    | PI-7                        | Yes                      |
| <i>Material Category</i>    | <i>Friable Classification</i> | <i>EPA Category</i>                | <i>Total Quantity</i>       | <i>Unit of Measure</i>   |
| TSI                         | Friable                       | Friable                            | 1,350                       | Linear Feet              |
| <i>General Condition</i>    | <i>Damage Category</i>        | <i>Overall Material Assessment</i> | <i>Recommended Response</i> |                          |
|                             |                               |                                    | Abate Prior to Demolition   |                          |

General Material Comments

Material Location(s)

THROUGHOUT AND BASEMENT

| <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>              |
|---------------------|---------------------------|--------------|-----------------|-----------------------|------------------------------------------------|--------------------------------------|
| pi-7-155-H07-A      |                           |              | Yes             | 20%                   | 1) Pipe Insulation<br>2) Pipe Insulation<br>3) | 10-20 % Chrysotile<br>5-10 % Amosite |
| pi-7-155-H07-B      |                           |              | No              | Not Avail.            | 1) Pipe Insulation<br>2)<br>3)                 |                                      |
| pi-7-155-H07-C      |                           |              | No              | Not Avail.            | 1) Pipe Insulation<br>2)<br>3)                 |                                      |
| pi-7-02-6969-155-12 | Room 109                  |              | Yes             | 35%                   | 1) Pipe Insulation<br>2) Pipe Insulation<br>3) | 5 % Amosite<br>35 % Chrysotile       |
| pi-7-02-6970-155-13 | Room 109                  |              | Yes             | 20%                   | 1) Pipe Insulation<br>2) Pipe Insulation<br>3) | 5 % Amosite<br>20 % Chrysotile       |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

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|                                                   |                                         |                                    |                                                          |                                       |
|---------------------------------------------------|-----------------------------------------|------------------------------------|----------------------------------------------------------|---------------------------------------|
| <b>Material Description</b><br>1" Pipe Elbows TSI |                                         |                                    | <b>Material Number</b><br>PE-8                           | <b>Asbestos Present?</b><br>Yes       |
| <b>Material Category</b><br>TSI                   | <b>Frable Classification</b><br>Friable | <b>EPA Category</b><br>Friable     | <b>Total Quantity</b><br>215                             | <b>Unit of Measure</b><br>Linear Feet |
| <b>General Condition</b>                          | <b>Damage Category</b>                  | <b>Overall Material Assessment</b> | <b>Recommended Response</b><br>Abate Prior to Demolition |                                       |

General Material Comments

**Material Location(s)**  
THROUGHOUT

| Sample ID(s)        | Sample Location(s) | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab           | Results by Layer                      |
|---------------------|--------------------|-------|----------|----------------|------------------------------------|---------------------------------------|
| pe-8-155-H08-A      |                    |       | Yes      | 20%            | 1) TSI Elbow<br>2) TSI Elbow<br>3) | 10-20 % Amosite<br>10-20 % Chrysotile |
| pe-8-155-H08-B      |                    |       | No       | Not Avail.     | 1) TSI Elbow<br>2)<br>3)           |                                       |
| pe-8-155-H08-C      |                    |       | No       | Not Avail.     | 1) TSI Elbow<br>2)<br>3)           |                                       |
| pe-8-02-6971-155-14 | Room 109           |       | Yes      | 10%            | 1) TSI Elbow<br>2) TSI Elbow<br>3) | 5 % Amosite<br>10 % Chrysotile        |
| pe-8-02-6972-155-15 | Room 109           |       | Yes      | 25%            | 1) TSI Elbow<br>2) TSI Elbow<br>3) | 5 % Amosite<br>25 % Chrysotile        |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Inspection Date

Monday, November 5, 2001

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

General Material Comments

Material Location(s)

THROUGHOUT

| Sample ID(s)        | Sample Location(s) | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab                       | Results by Layer                      |
|---------------------|--------------------|-------|----------|----------------|------------------------------------------------|---------------------------------------|
| pi-9-155-H09-A      |                    |       | Yes      | 20%            | 1) Pipe Insulation<br>2) Pipe Insulation<br>3) | 10-20 % Amosite<br>10-20 % Chrysotile |
| pi-9-155-H09-B      |                    |       | No       | Not Avail.     | 1) Pipe Insulation<br>2)<br>3)                 |                                       |
| pi-9-155-H09-C      |                    |       | No       | Not Avail.     | 1) Pipe Insulation<br>2)<br>3)                 |                                       |
| pi-9-02-6973-155-16 | S201               |       | Yes      | 15%            | 1) Pipe Insulation<br>2) Pipe Insulation<br>3) | 5 % Amosite<br>15 % Chrysotile        |
| pi-9-02-6974-155-17 | S201               |       | Yes      | 20%            | 1) Pipe Insulation<br>2) Pipe Insulation<br>3) | 5 % Amosite<br>20 % Chrysotile        |



## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Inspection Date

Monday, November 5, 2001

|                                                   |                                          |                                    |                                                          |                                       |
|---------------------------------------------------|------------------------------------------|------------------------------------|----------------------------------------------------------|---------------------------------------|
| <b>Material Description</b><br>2" Pipe Elbows TSI |                                          |                                    | <b>Material Number</b><br>PE-10                          | <b>Asbestos Present?</b><br>Yes       |
| <b>Material Category</b><br>TSI                   | <b>Friable Classification</b><br>Friable | <b>EPA Category</b><br>Friable     | <b>Total Quantity</b><br>11                              | <b>Unit of Measure</b><br>Linear Feet |
| <b>General Condition</b>                          | <b>Damage Category</b>                   | <b>Overall Material Assessment</b> | <b>Recommended Response</b><br>Abate Prior to Demolition |                                       |

General Material Comments

Material Location(s)  
THROUGHOUT

| Sample ID(s)         | Sample Location(s) | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab           | Results by Layer                    |
|----------------------|--------------------|-------|----------|----------------|------------------------------------|-------------------------------------|
| pe-10-155-H10-A      |                    |       | Yes      | 30%            | 1) TSI Elbow<br>2) TSI Elbow<br>3) | 20-30 % Chrysotile<br>1-5 % Amosite |
| pe-10-155-H10-B      |                    |       | No       | Not Avail.     | 1) TSI Elbow<br>2)<br>3)           |                                     |
| pe-10-155-H10-C      |                    |       | No       | Not Avail.     | 1) TSI Elbow<br>2)<br>3)           |                                     |
| pe-10-02-6975-155-18 | S201               |       | Yes      | 20%            | 1) TSI Elbow<br>2) TSI Elbow<br>3) | 10 % Amosite<br>20 % Chrysotile     |
| pe-10-02-6976-155-19 | S201               |       | Yes      | 20%            | 1) TSI Elbow<br>2) TSI Elbow<br>3) | 10 % Amosite<br>20 % Chrysotile     |

|                                                 |                                              |                                                                |                                                          |                                       |
|-------------------------------------------------|----------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------|---------------------------------------|
| <b>Material Description</b><br>Brown Floor Tile |                                              |                                                                | <b>Material Number</b><br>FT-11                          | <b>Asbestos Present?</b><br>Yes       |
| <b>Material Category</b><br>Flooring            | <b>Friable Classification</b><br>Non-Friable | <b>EPA Category</b><br>Category I                              | <b>Total Quantity</b><br>400                             | <b>Unit of Measure</b><br>Square Feet |
| <b>General Condition</b>                        | <b>Damage Category</b>                       | <b>Overall Material Assessment</b><br>Not Assessed under AHERA | <b>Recommended Response</b><br>Abate Prior to Demolition |                                       |

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-11-02-6963-155-6 | Room 002           |       | Yes      | 5%             | 1) Floor Tile<br>2)<br>3) | 5 % Chrysotile   |
| ft-11-02-6964-155-7 | Room 002           |       | Yes      | 5%             | 1) Floor Tile<br>2)<br>3) | 5 % Chrysotile   |
| ft-11-02-6965-155-8 | C001               |       | Yes      | 5%             | 1) Floor Tile<br>2)<br>3) | 5 % Chrysotile   |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Inspection Date

Monday, November 5, 2001

|                                           |                                              |                                                                |                                                          |                                           |                                 |                         |
|-------------------------------------------|----------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------|---------------------------------|-------------------------|
| <b>Material Description</b><br>Fire Door  |                                              |                                                                | <b>Material Number</b><br>FD-12                          | <b>Asbestos Present?</b><br>Yes (assumed) |                                 |                         |
| <b>Material Category</b><br>Miscellaneous | <b>Friable Classification</b><br>Non-Friable | <b>EPA Category</b><br>Category II                             | <b>Total Quantity</b><br>400                             | <b>Unit of Measure</b><br>Square Feet     |                                 |                         |
| <b>General Condition</b>                  | <b>Damage Category</b>                       | <b>Overall Material Assessment</b><br>Not Assessed under AHERA | <b>Recommended Response</b><br>Abate Prior to Demolition |                                           |                                 |                         |
| <b>General Material Comments</b>          |                                              |                                                                |                                                          |                                           |                                 |                         |
| <b>Material Location(s)</b><br>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><br>Floor Tile Mastic |                                              |                                                                | <b>Material Number</b><br>MASTIC-13                      | <b>Asbestos Present?</b><br>Yes       |
| <b>Material Category</b><br>Miscellaneous        | <b>Friable Classification</b><br>Non-Friable | <b>EPA Category</b><br>Category II                             | <b>Total Quantity</b><br>4,650                           | <b>Unit of Measure</b><br>Square Feet |
| <b>General Condition</b>                         | <b>Damage Category</b>                       | <b>Overall Material Assessment</b><br>Not Assessed under AHERA | <b>Recommended Response</b><br>Abate Prior to Demolition |                                       |
| <b>General Material Comments</b>                 |                                              |                                                                |                                                          |                                       |
| <b>Material Location(s)</b><br>THROUGHOUT        |                                              |                                                                |                                                          |                                       |

| Sample ID(s)             | Sample Location(s)                | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab | Results by Layer |
|--------------------------|-----------------------------------|-------|----------|----------------|--------------------------|------------------|
| MASTIC-13-02-6980-155-23 | Room 102                          |       | Yes      | 0              | 1) Mastic<br>2)<br>3)    | Non Detected     |
| MASTIC-13-02-6981-155-24 | S101                              |       | Yes      | 0              | 1) Mastic<br>2)<br>3)    | Non Detected     |
| MASTIC-13-02-6982-155-25 | C201at Room 202                   |       | Yes      | 0              | 1) Mastic<br>2)<br>3)    | Non Detected     |
| MASTIC-13-02-6983-155-26 | Room 002                          |       | Yes      | 0              | 1) Mastic<br>2)<br>3)    | Non Detected     |
| MASTIC-13-02-6984-155-27 | Room 002 below 9" x 9" Floor Tile |       | Yes      | 12%            | 1) Mastic<br>2)<br>3)    | 12 % Chrysotile  |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Inspection Date

Monday, November 5, 2001

|                             |                               |                                    |                             |                          |
|-----------------------------|-------------------------------|------------------------------------|-----------------------------|--------------------------|
| <i>Material Description</i> |                               |                                    | <i>Material Number</i>      | <i>Asbestos Present?</i> |
| <b>Sink Undercoating</b>    |                               |                                    | <b>SK-14</b>                | <b>Yes</b>               |
| <i>Material Category</i>    | <i>Friable Classification</i> | <i>EPA Category</i>                | <i>Total Quantity</i>       | <i>Unit of Measure</i>   |
| Miscellaneous               | Non-Friable                   | Category I                         | 5                           | 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   |                          |

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 |
|-----------------|--------------------|-------|----------|----------------|----------------------------------|------------------|
| sk-14-155-H14-A |                    |       | Yes      | 5%             | 1) Sink Undercoating<br>2)<br>3) | 1-5 % Chrysotile |

|                                                  |                               |                                    |                             |                          |
|--------------------------------------------------|-------------------------------|------------------------------------|-----------------------------|--------------------------|
| <i>Material Description</i>                      |                               |                                    | <i>Material Number</i>      | <i>Asbestos Present?</i> |
| <b>Stair Covering Resilient Flooring - Sheet</b> |                               |                                    | <b>RS-15</b>                | <b>No</b>                |
| <i>Material Category</i>                         | <i>Friable Classification</i> | <i>EPA Category</i>                | <i>Total Quantity</i>       | <i>Unit of Measure</i>   |
| Flooring                                         | Non-Friable                   | Category I                         | 95                          | Square Feet              |
| <i>General Condition</i>                         | <i>Damage Category</i>        | <i>Overall Material Assessment</i> | <i>Recommended Response</i> |                          |
|                                                  |                               | No Assessment, Non-asbestos        |                             |                          |

General Material Comments

Material Location(s)

| Sample ID(s)         | Sample Location(s) | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab   | Results by Layer |
|----------------------|--------------------|-------|----------|----------------|----------------------------|------------------|
| rs-15-02-6966-155-9  |                    |       | Yes      | 0              | 1) Sheet Vinyl<br>2)<br>3) | Non Detected     |
|                      | S101               |       |          |                |                            |                  |
| rs-15-02-6967-155-10 |                    |       | Yes      | 0              | 1) Sheet Vinyl<br>2)<br>3) | Non Detected     |
|                      | S101               |       |          |                |                            |                  |
| rs-15-02-6968-155-11 |                    |       | Yes      | 0              | 1) Sheet Vinyl<br>2)<br>3) | Non Detected     |
|                      | S201               |       |          |                |                            |                  |

## Section 4 Material Information Tables

Site Information

Army Reserve Dormitory (Site ID: 3-15 Yrs.)

Inspection Date

Monday, November 5, 2001

|                                                                |                                                    |                                                                       |                                                                 |                                              |
|----------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------|
| <i>Material Description</i><br><b>12" x 12" Tan Floor Tile</b> |                                                    |                                                                       | <i>Material Number</i><br><b>FT-16</b>                          | <i>Asbestos Present?</i><br><b>Yes</b>       |
| <i>Material Category</i><br><b>Flooring</b>                    | <i>Frable Classification</i><br><b>Non-Friable</b> | <i>EPA Category</i><br><b>Category I</b>                              | <i>Total Quantity</i><br><b>800</b>                             | <i>Unit of Measure</i><br><b>Square Feet</b> |
| <i>General Condition</i>                                       | <i>Damage Category</i>                             | <i>Overall Material Assessment</i><br><b>Not Assessed under AHERA</b> | <i>Recommended Response</i><br><b>Abate Prior to Demolition</b> |                                              |

General Material Comments

Material Location(s)

ROOM 002 BELOW 9" X 9" FLOOR TILE

| Sample ID(s)         | Sample Location(s)                | Floor | Analyzed | Overall Result | Layer(s) Reported by Lab  | Results by Layer |
|----------------------|-----------------------------------|-------|----------|----------------|---------------------------|------------------|
| ft-16-02-6985-155-28 | Room 002 Below 9" x 9" Floor Tile |       | Yes      | 5%             | 1) Floor Tile<br>2)<br>3) | 5 % Chrysotile   |
| ft-16-02-6986-155-29 | Room 002 Below 9" x 9" Floor Tile |       | Yes      | 5%             | 1) Floor Tile<br>2)<br>3) | 5 % Chrysotile   |
| ft-16-02-6987-155-30 | Room 002 Below 9" x 9" Floor Tile |       | Yes      | 5%             | 1) Floor Tile<br>2)<br>3) | 5 % 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 Army Reserve Dormitory |              |                        |                         | QTY.<br>Units<br>Removal<br>Costs<br>(low to high) |
|---------------------------------|--------------|------------------------|-------------------------|----------------------------------------------------|
| HM                              | EPA Category | Suspect Material       | Material Location       |                                                    |
| 1                               | Category I   | Roofing Material       | EXTERIOR                | 16,013<br>Square Feet<br>\$16013 to \$32026        |
| 7                               | Friable      | 1" Pipe Insulation TSI | THROUGHOUT AND BASEMENT | 1,350<br>Linear Feet<br>\$20250 to \$27000         |
| 8                               | Friable      | 1" Pipe Elbows TSI     | THROUGHOUT              | 215<br>Linear Feet<br>\$4300                       |
| 9                               | Friable      | 2" Pipe Insulation TSI | THROUGHOUT              | 700<br>Linear Feet<br>\$10500 to \$14000           |
| 10                              | Friable      | 2" Pipe Elbows TSI     | THROUGHOUT              | 11<br>Linear Feet<br>\$500                         |
| 11                              | Category I   | Brown Floor Tile       | CENTER                  | 400<br>Square Feet<br>\$600 to \$800               |

|                      | Building     |                          |                                   | QTY.<br>Units<br>Removal<br>Costs<br>(low to high) |
|----------------------|--------------|--------------------------|-----------------------------------|----------------------------------------------------|
| HM                   | EPA Category | Suspect Material         | Material Location                 |                                                    |
| 12                   | Category II  | Fire Door                | CENTER                            | 400<br>Square Feet<br>\$60000                      |
| 13                   | Category II  | Floor Tile Mastic        | THROUGHOUT                        | 4,650<br>Square Feet<br>\$4650 to \$9300           |
| 14                   | Category I   | Sink Undercoating        | CENTER                            | 5<br>Square Feet<br>\$500                          |
| 16                   | Category I   | 12" x 12" Tan Floor Tile | ROOM 002 BELOW 9" X 9" FLOOR TILE | 800<br>Square Feet<br>\$1200 to \$1600             |
| Total Removal Costs: |              |                          | \$118,513                         | to \$150,026                                       |

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:** 2541-02-412  
**CLIENT:** Benchmark  
**ADDRESS:** 3732 Charter Park Drive Suite A  
San Jose, CA 95136

**DATE COLLECTED:**  
**DATE RECEIVED:** 01/31/2002  
**DATE ANALYZED:** 01/31/2002  
**DATE REPORTED:** 01/31/2002

**PO NO.:**  
**PROJECT NAME:**  
**PROJECT NO.:** E01-612  
**JOB LOCATION:** NASA Bldg. 155

| Client Sample No. | SLI Sample/ Layer ID                            | Sample Identification/ Layer Name | Asbestos Detected (Yes/No) | Sample Description                                    |
|-------------------|-------------------------------------------------|-----------------------------------|----------------------------|-------------------------------------------------------|
| 02-6958-155-1     | 2157687<br>Layer 1:<br><b>100% Non-Asbestos</b> | Rm 102<br>Floor Tile              | <b>No</b>                  | Beige, Organically Bound<br>NON FIBROUS MATERIAL 100% |
| 02-6959-155-2     | 2157688<br>Layer 1:<br><b>100% Non-Asbestos</b> | S101<br>Floor Tile                | <b>No</b>                  | Beige, Organically Bound<br>NON FIBROUS MATERIAL 100% |
| 02-6960-155-3     | 2157689<br>Layer 1:<br><b>100% Non-Asbestos</b> | C102 @rm 121<br>Floor Tile        | <b>No</b>                  | Beige, Organically Bound<br>NON FIBROUS MATERIAL 100% |
| 02-6961-155-4     | 2157690<br>Layer 1:<br><b>100% Non-Asbestos</b> | C201 @rm 202<br>Floor Tile        | <b>No</b>                  | Beige, Organically Bound<br>NON FIBROUS MATERIAL 100% |
| 02-6962-155-5     | 2157691<br>Layer 1:<br><b>100% Non-Asbestos</b> | C201 @rm 215<br>Floor Tile        | <b>No</b>                  | Beige, Organically Bound<br>NON FIBROUS MATERIAL 100% |

*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 lo. | SLI Sample/ Layer ID | Sample Identification/ Layer Name | Asbestos Detected (Yes/No) | Sample Description                                                                                                                                    |
|-------------------|----------------------|-----------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 02-6963-155-6     | 2157692<br>Layer 1:  | Rm 002<br>Floor Tile              | <b>Yes</b>                 | Dark Brown, Organically Bound<br>CHRYSTILE 5%<br>NON FIBROUS MATERIAL 95%                                                                             |
| 02-6964-155-7     | 2157693<br>Layer 1:  | Rm 002<br>Floor Tile              | <b>Yes</b>                 | Dark Brown, Organically Bound<br>CHRYSTILE 5%<br>NON FIBROUS MATERIAL 95%                                                                             |
| 02-6965-155-8     | 2157694<br>Layer 1:  | Rm C001<br>Floor Tile             | <b>Yes</b>                 | Dark Brown, Organically Bound<br>CHRYSTILE 5%<br>NON FIBROUS MATERIAL 95%                                                                             |
| 02-6966-155-9     | 2157695<br>Layer 1:  | S101<br>Stair Covering            | <b>No</b>                  | Beige, Organically Bound<br>NON FIBROUS MATERIAL 100%                                                                                                 |
| 02-6967-155-10    | 2157696<br>Layer 1:  | S101<br>Stair Covering            | <b>No</b>                  | Beige, Organically Bound<br>NON FIBROUS MATERIAL 100%                                                                                                 |
| 02-6968-155-11    | 2157697<br>Layer 1:  | S201<br>Stair Covering            | <b>No</b>                  | Beige, Organically Bound<br>NON FIBROUS MATERIAL 100%                                                                                                 |
| 02-6969-155-12    | 2157698<br>Layer 1:  | Rm 109<br>TSI                     | <b>Yes</b>                 | White, Powdery, Fibrous<br>AMOSITE 5%, CHRYSTILE 35%<br>NON FIBROUS MATERIAL 60%                                                                      |
| 02-6970-155-13    | 2157699<br>Layer 1:  | Rm 109<br>TSI/Cover               | <b>Yes</b>                 | White, Powdery, Fibrous<br>AMOSITE 5%, CHRYSTILE 20%<br>CELLULOSE FIBER 20%, NON FIBROUS MATERIAL 55%<br><i>Unable to separate individual layers.</i> |
| 02-6971-155-14    | 2157700<br>Layer 1:  | Rm 109<br>Elbow                   | <b>Yes</b>                 | White, Powdery, Fibrous<br>AMOSITE 5%, CHRYSTILE 10%<br>CELLULOSE FIBER 20%, NON FIBROUS MATERIAL 65%                                                 |

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| Client Sample No. | SLI Sample/ Layer ID                                                  | Sample Identification/ Layer Name | Asbestos Detected (Yes/No) | Sample Description                                                                                      |
|-------------------|-----------------------------------------------------------------------|-----------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------|
| 02-6972-155-15    | 2157701<br>Layer 1:<br><b>30% Asbestos</b><br><b>70% Non-Asbestos</b> | Rm 109<br>Elbow                   | <b>Yes</b>                 | White, Powdery, Fibrous<br>AMOSITE 5%, CHRYSOTILE 25%<br>CELLULOSE FIBER 10%, NON FIBROUS MATERIAL 60%  |
| 02-6973-155-16    | 2157702<br>Layer 1:<br><b>20% Asbestos</b><br><b>80% Non-Asbestos</b> | S201<br>TSI                       | <b>Yes</b>                 | White, Powdery, Fibrous<br>AMOSITE 5%, CHRYSOTILE 15%<br>CELLULOSE FIBER 10%, NON FIBROUS MATERIAL 70%  |
| 02-6974-155-17    | 2157703<br>Layer 1:<br><b>25% Asbestos</b><br><b>75% Non-Asbestos</b> | S201<br>TSI                       | <b>Yes</b>                 | White, Powdery, Fibrous<br>AMOSITE 5%, CHRYSOTILE 20%<br>CELLULOSE FIBER 15%, NON FIBROUS MATERIAL 60%  |
| 02-6975-155-18    | 2157704<br>Layer 1:<br><b>30% Asbestos</b><br><b>70% Non-Asbestos</b> | S201<br>TSI                       | <b>Yes</b>                 | White, Powdery, Fibrous<br>AMOSITE 10%, CHRYSOTILE 20%<br>CELLULOSE FIBER 10%, NON FIBROUS MATERIAL 60% |
| 02-6976-155-19    | 2157705<br>Layer 1:<br><b>30% Asbestos</b><br><b>70% Non-Asbestos</b> | S201<br>TSI                       | <b>Yes</b>                 | White, Powdery, Fibrous<br>AMOSITE 10%, CHRYSOTILE 20%<br>CELLULOSE FIBER 10%, NON FIBROUS MATERIAL 60% |
| 02-6977-155-20    | 2157706<br>Layer 1:<br><b>100% Non-Asbestos</b>                       | Rm 102<br>Mastic                  | <b>No</b>                  | Brown, Brittle<br>NON FIBROUS MATERIAL 97%, WOLLASTONITE 3%                                             |
| 02-6978-155-21    | 2157707<br>Layer 1:<br><b>100% Non-Asbestos</b>                       | C102 @rm 111<br>Mastic            | <b>No</b>                  | Brown, Brittle<br>NON FIBROUS MATERIAL 97%, WOLLASTONITE 3%                                             |
| 02-6979-155-22    | 2157708<br>Layer 1:<br><b>100% Non-Asbestos</b>                       | C201 @202<br>Mastic               | <b>No</b>                  | Brown, Brittle<br>NON FIBROUS MATERIAL 97%, WOLLASTONITE 3%                                             |
| 02-6980-155-23    | 2157709<br>Layer 1:<br><b>100% Non-Asbestos</b>                       | W/sample #1<br>Mastic             | <b>No</b>                  | Yellow, Soft<br>NON FIBROUS MATERIAL 100%                                                               |

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| Client Sample No. | SLI Sample/ Layer ID                                                  | Sample Identification/ Layer Name | Asbestos Detected (Yes/No) | Sample Description                                                   |
|-------------------|-----------------------------------------------------------------------|-----------------------------------|----------------------------|----------------------------------------------------------------------|
| 02-6981-155-24    | 2157710<br>Layer 1:<br><b>100% Non-Asbestos</b>                       | W/sample #2<br>Mastic             | <b>No</b>                  | Yellow, Soft<br>CELLULOSE FIBER < 1%, NON FIBROUS MATERIAL 100%      |
| 02-6982-155-25    | 2157711<br>Layer 1:<br><b>100% Non-Asbestos</b>                       | W/sample #4<br>Mastic             | <b>No</b>                  | Tan, Brittle<br>CELLULOSE FIBER < 1%, NON FIBROUS MATERIAL 100%      |
| 02-6983-155-26    | 2157712<br>Layer 1:<br><b>100% Non-Asbestos</b>                       | W/sample #6<br>Mastic             | <b>No</b>                  | Black, Hard<br>NON FIBROUS MATERIAL 100%                             |
| 02-6984-155-27    | 2157713<br>Layer 1:<br><b>12% Asbestos</b><br><b>88% Non-Asbestos</b> | W/sample @28<br>Mastic            | <b>Yes</b>                 | Black, Bituminous<br>CHRYSTILE 12%<br>NON FIBROUS MATERIAL 88%       |
| 02-6985-155-28    | 2157714<br>Layer 1:<br><b>5% Asbestos</b><br><b>95% Non-Asbestos</b>  | 002 below 9x9<br>Floor Tile       | <b>Yes</b>                 | Beige, Organically Bound<br>CHRYSTILE 5%<br>NON FIBROUS MATERIAL 95% |
| 02-6986-155-29    | 2157715<br>Layer 1:<br><b>5% Asbestos</b><br><b>95% Non-Asbestos</b>  | 002 below 9x9<br>Floor Tile       | <b>Yes</b>                 | Beige, Organically Bound<br>CHRYSTILE 5%<br>NON FIBROUS MATERIAL 95% |
| 02-6987-155-30    | 2157716<br>Layer 1:<br><b>5% Asbestos</b><br><b>95% Non-Asbestos</b>  | 002 below 9x9<br>Floor Tile       | <b>Yes</b>                 | Beige, Organically Bound<br>CHRYSTILE 5%<br>NON FIBROUS MATERIAL 95% |

ANALYST: KATHERINE M. CHARLES

Total no. of pages in report = 4



REVIEWED BY

Sami A. Hosn, Analyst

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# 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: 2541-02-554  
CLIENT: Benchmark  
ADDRESS: 3732 Charter Park Drive Suite A  
San Jose, CA 95136

DATE COLLECTED: 4/30/2002  
DATE RECEIVED: 5/ 1/2002  
DATE ANALYZED: 5/ 8/2002  
DATE REPORTED: 5/ 9/2002

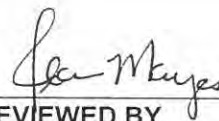
PO NO.:  
PROJECT NAME:  
PROJECT NO.: E01-612  
JOB LOCATION: Bldg 155

| Client Sample No. | SLI Sample/ Layer ID                                    | Sample Identification/ Layer Name | Asbestos Detected (Yes/No) | Sample Description                                                          |
|-------------------|---------------------------------------------------------|-----------------------------------|----------------------------|-----------------------------------------------------------------------------|
| 02-7218-155-1     | 2263970<br>Layer 1:<br>100% Non-Asbestos                | W Roof<br>Roofing                 | No                         | Black, Bituminous, Fibrous<br>CELLULOSE FIBER 35%, NON FIBROUS MATERIAL 65% |
| 02-7219-155-2     | 2263971<br>Layer 1:<br>100% Non-Asbestos                | E Roof<br>Roofing                 | No                         | Black, Bituminous, Fibrous<br>CELLULOSE FIBER 35%, NON FIBROUS MATERIAL 65% |
| 02-7220-155-3     | 2263972<br>Layer 1:<br>100% Non-Asbestos                | Middle<br>Roofing                 | No                         | Black, Bituminous<br>NON FIBROUS MATERIAL 100%                              |
| 02-7221-155-4     | 2263973<br>Layer 1:<br>100% Non-Asbestos                | S Side Roof<br>Roofing            | No                         | Black, Bituminous<br>NON FIBROUS MATERIAL 100%                              |
| 02-7222-155-5     | 2263974<br>Layer 1:<br>10% Asbestos<br>90% Non-Asbestos | N Side Roof<br>Roofing            | Yes                        | Black, Bituminous<br>CHRYSOTILE 10%<br>NON FIBROUS MATERIAL 90%             |

ANALYST: SAMI A. HOSN

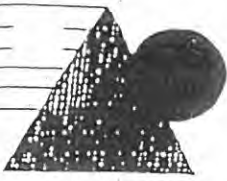
Total no. of pages in report = 1

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.*



# BENCHMARK

2541-02-412

Sample Location Worksheet  
Chain Of Custody

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

Project Number: ED1-612

Date: 1/24/02

Technician: T. McFarlane

Project Location: NASA BLDG. 155

Client Name: K. McGLATHLIN

Company: PAI

### Project Type

- Asbestos
- Lead-based Paint
- Lead Risk Assessment
- Lead (water)
- Mold/Fungus/Bacteria
- Indoor Air Quality
- Other: \_\_\_\_\_

### Type Of Analysis

- PLM/Bulk (EPA 600)
- EPA SW846-7420, FLAA
- Dust Wipes, Paint Chips
- Air, Soil
- SM313B, GFAA, Water
- TEM/Bulk (Chatfield)
- Other: \_\_\_\_\_

### Turnaround Time

- Same Day 3 Hr 6 Hr
- 24 Hour
- 48 Hour
- 72 Hour
- 5 Day
- Other: \_\_\_\_\_
- TTP = Test Till Positive

| Homogenous Material Group | Material / Component      | Sample Number  | Location Of Samples | Analysis Specification |
|---------------------------|---------------------------|----------------|---------------------|------------------------|
| 2                         | 12 x 12<br>TAN FLOOR TILE | 02-6158-155-1  | ROOM 102            |                        |
|                           |                           | 02-6159-155-2  | 5101                |                        |
|                           |                           | 02-6160-155-3  | 6102 AT ROOM 121    | <TILE ONLY>            |
|                           |                           | 02-6161-155-4  | 6201 AT ROOM 202    |                        |
|                           |                           | 02-6162-155-5  | 6201 AT ROOM 215    | <TILE ONLY>            |
| 11                        | 6x9<br>BROWN              | 02-6163-155-6  | ROOM 002            |                        |
|                           |                           | 02-6164-155-7  | ROOM 002            | <TILE ONLY>            |
|                           |                           | 02-6165-155-8  | ROOM 001            | <TILE ONLY>            |
| 15                        | STAIR<br>COVERING         | 02-6166-155-9  | 5101                | <TILE ONLY>            |
|                           |                           | 02-6167-155-10 | 5101                | <TILE ONLY>            |
|                           |                           | 02-6168-155-11 | 5201                | <TILE ONLY>            |
| 07                        | 1" TSI RED                | 02-6169-155-12 | ROOM 109            |                        |
|                           |                           | 02-6170-155-13 | ROOM 109            |                        |
| 08                        | 1" GREEN TSI              | 02-6171-155-14 | ROOM 109            |                        |
|                           |                           | 02-6172-155-15 | ROOM 109            |                        |

Relinquished By:

T. McFarlane

Received By:

Deanne S. [Signature]

Date/Time Received

1-31-02 9:40

WPS

122E2894 2210M3182 [Signature]



# BENCHMARK

Sample Location Worksheet  
Chain Of Custody

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

Project Number: \_\_\_\_\_ Date: \_\_\_\_\_ Technician: \_\_\_\_\_

Project Location: \_\_\_\_\_

Client Name: \_\_\_\_\_ Company: \_\_\_\_\_

| Project Type         | Type Of Analysis        | Turnaround Time          |
|----------------------|-------------------------|--------------------------|
| Asbestos             | PLM/Bulk (EPA 600)      | Same Day 3 Hr 6 Hr       |
| Lead-based Paint     | EPA SW846-7420, FLAA    | 24 Hour                  |
| 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: _____            | TTP = Test Till Positive |

| Homogenous Material Group | Material / Component | Sample Number  | Location Of Samples        | Analysis Specification |
|---------------------------|----------------------|----------------|----------------------------|------------------------|
| 09                        | 2" TSI Row           | 02-0773 155-16 | S201                       |                        |
|                           | +                    | 02-0774 155-17 | S201                       |                        |
| 10                        | 2" TSI Row           | 02-0775 155-18 |                            |                        |
|                           | +                    | 02-0776 155-19 |                            |                        |
| 03                        | Base Coating MASTIC  | 02-0777 155-20 | Room 102                   |                        |
|                           | ↓                    | 02-0778 155-21 | C102 AT Room 111           |                        |
|                           | ↓                    | 02-0779 155-22 | C201 AT 202                |                        |
| 13                        | FLOR TILE MASTIC     | 02-0780 155-23 | w/ Sample #1               |                        |
|                           | ↓                    | 02-0781 155-24 | w/ Sample #2               |                        |
|                           | ↓                    | 02-0782 155-25 | w/ Sample #4               |                        |
|                           | ↓                    | 02-0783 155-26 | w/ Sample #6               |                        |
|                           | ↓                    | 02-0784 155-27 | w/ Sample #28              |                        |
| 16                        | 12x12 Tile           | 02-0785 155-28 | 002 Below 9x9              |                        |
|                           | ↓                    | 02-0786 155-29 | 002 Below 9x9 (TILE ONLY)  |                        |
|                           | ↓                    | 02-0787 155-30 | 5001 Below 9x9 (TILE ONLY) |                        |

Relinquished By:

Received By:

Date/Time Received

J. Holaday

Carroll S. ...

1-31-02 9:40

CPS 122E2899 2210 143182

(Signature)



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

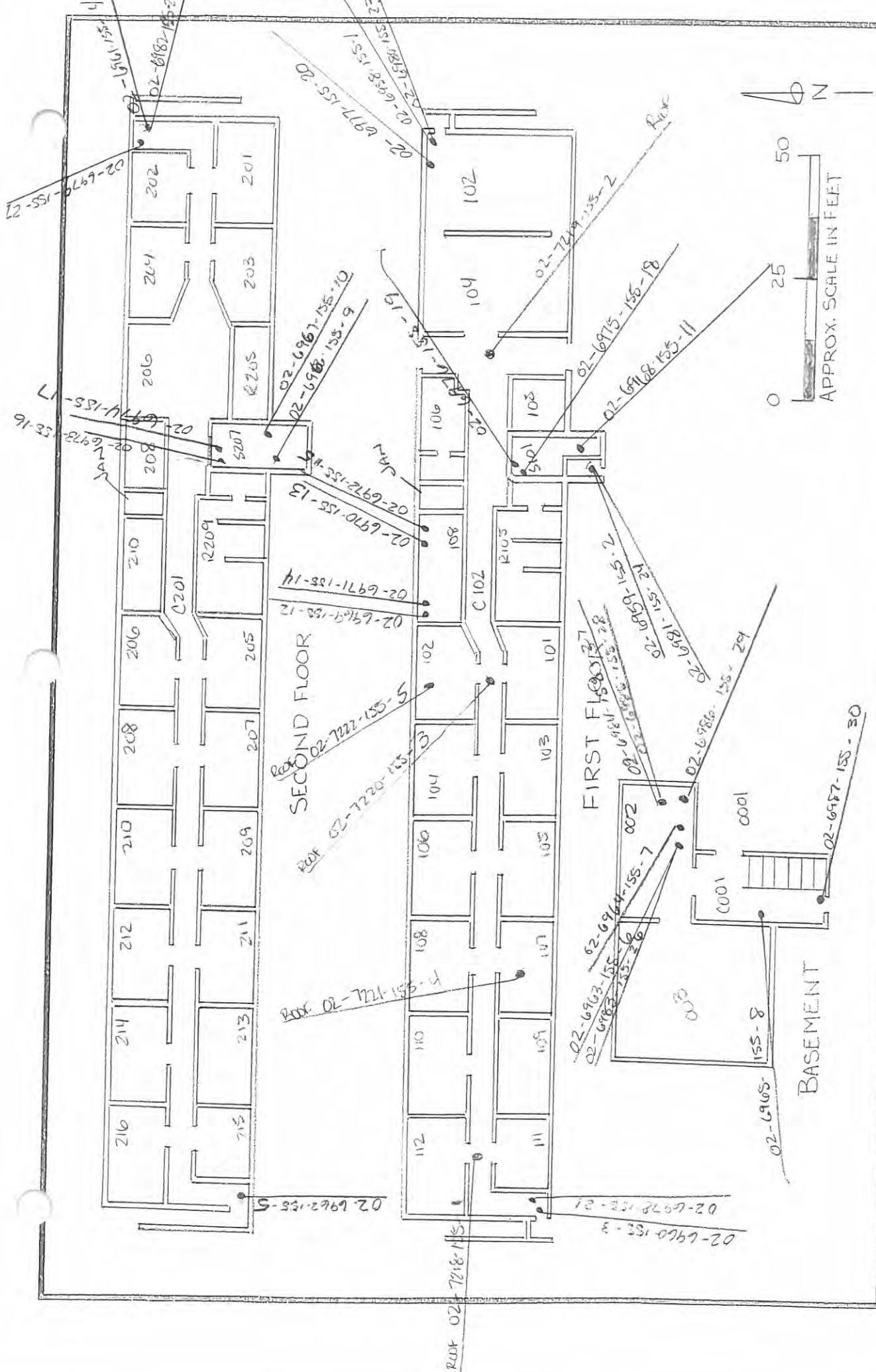
Certification No. 90-2747


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**



|                                                                                       |                                                                                                                                                                                                     |  |                                                                                   |                                     |                  |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------|-------------------------------------|------------------|
|  | Property Inspections - Environmental Engineering<br>Specialized Training - Contract Management<br>3732 - A Charter Park Drive<br>San Jose, CA 951366<br>Phone: (408) 448-7594 - Fax: (408) 448-3849 |  | PROJECT NAME:<br><b>BUILDING 155</b><br><b>NASA-AMES</b><br><b>3-15 Years Out</b> | DRAFT PERSON:<br><br>DATE:<br><br>  | DWG. No.<br><br> |
|                                                                                       | <b>BENCHMARK</b>                                                                                                                                                                                    |  |                                                                                   | PROJECT NO.<br><b>E01-612-AL-SU</b> |                  |