

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

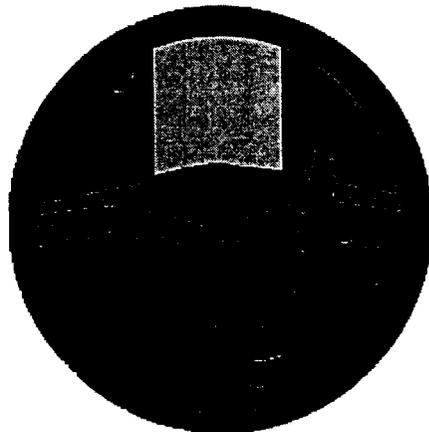
BUILDING: 295

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
HEALTH CLINIC
BUILDING 295**

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Fort McClellan



Staying Beautiful

Conducted and Prepared by:

REISZ ENGINEERING
P.O. BOX 1349
HUNTSVILLE, ALABAMA 35807

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
HEALTH CLINIC
BUILDING 295**

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Prepared For:

DIRECTORATE OF ENVIRONMENT
FORT McCLELLAN

APPROVED FOR TRANSMITTAL BY
JOSEPH L. HILLERICH

Conducted and Prepared by:

REISZ ENGINEERING

June, 1998

TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE OF SERVICES.....	1
2.0	REGULATORY STANDARDS.....	2
3.0	PROJECT CHARACTERISTICS.....	3
4.0	SURVEY METHODOLOGY.....	4
5.0	LABORATORY ANALYSIS	5
6.0	SUSPECT MATERIALS.....	5
7.0	ASBESTOS INSPECTION AND SAMPLING RESULTS.....	6
	FRIABLE ACM.....	7
	NON FRIABLE ACM.....	7
	INACCESSIBLE MATERIAL.....	8
8.0	CONCLUSIONS AND RECOMMENDATIONS.....	8
9.0	ASSUMPTIONS AND LIMITATIONS.....	8

APPENDICES

APPENDIX A - REPORT OF LABORATORY ANALYSIS

APPENDIX B - SUMMARY TABLE OF ACM

APPENDIX C - SAMPLE LOCATIONS PLANS

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Building 295 located at Fort McClellan, Alabama. Pursuant to the Contract, REISZ Engineering was required to provide the survey in accordance with AHERA (40 CFR Part 763 Subpart E) protocol. AHERA is applicable to interior building products installed prior to October 12, 1988. AHERA does not apply to the exterior of buildings and does not apply to non-building materials (e.g. cabinetry, special equipment and chalkboards). REISZ Engineering has included as part of the survey those readily accessible, suspect friable interior non-building materials (e.g. vibration dampers); but has not included certain items (e. g. interior linings of equipment and special supplies, some non-friables such as transite, ect.). Exterior building materials were not sampled as part of this contract unless those materials were suspected to be of friable nature and continuous with indoor materials (e.g. piping insulation). Specifically, REISZ Engineering was contracted to provide the following services:

1. Identify and collect samples of accessible suspect friable building materials within the referenced project area.
2. Perform a visual inspection to provide information on material condition, material quantities, material locations, and building use.
3. Analysis of all bulk samples for asbestos content utilizing Polarized Light Microscopy and Dispersion Staining Techniques performed in accordance with EPA Bulk Analysis Method EPA 600/M4-82-020.
4. Make recommendations as to response actions pertaining to those materials identified as asbestos containing.
5. Compilation of a final report (contained herein) which details all sample results, identifies sample locations, and provides recommendations based upon the results.
6. Preparation of a Building specific Operations & Maintenance (O&M) Plan for buildings

containing friable asbestos materials.

2.0 REGULATORY STANDARDS

The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires the Owner or Operator of a facility to determine the presence or non-presence of asbestos containing materials prior to conducting renovation or demolition activities. The NESHAP Standard for asbestos (40CFR Part 61 Sub-part M) requires the use of engineered control procedures for removal of asbestos materials that are or will become friable during renovation or demolition. The removal must occur before renovation or demolition activities impact those materials.

On October 11, 1994 an OSHA promulgated regulation (29 CFR Part 1926.1101) became effective. This Standard is related to asbestos exposure in construction, renovation and building maintenance work places. Building owners are required, pursuant to the Standard, to notify employees, tenants and prospective employers (contractors) of the presence, location and quantities of ACM in the building. Implementation of the "communication of hazards" provisions in the Standard were originally to be not later than April 10, 1995 but was extended to July 10, 1995 and is now in effect. The OSHA Standard does not apply to work performed by employees of State agencies in states without state run OSHA programs (e. g. Alabama).

In October 1986, the Asbestos Hazard Emergency Response Act (AHERA) was signed into law. Included in this act are provisions directing E.P.A. to establish rules and regulations (40CFR Part 763) addressing asbestos-containing materials in schools. Specifically, the E.P.A. was directed to address the issues of: 1) identifying, 2) evaluating, and 3) controlling asbestos containing materials (ACM) in schools. AHERA requires schools to perform building inspections and to prepare management plans for ACM control. Although the AHERA regulation does not specifically apply to this project it is generally

accepted as the industry standard and was cited by Fort McClellan in the Asbestos Survey Request as the basis of survey methodology. The AHERA inspections must be conducted using specific guidelines which include a minimum number of samples per material type. This survey was conducted in accordance with those guidelines per the Contract requirements.

On November 28, 1992 a law became effective which extended the EPA's Model Accreditation Plan to all public and commercial buildings. Currently the rule extends the accreditation requirements of persons performing asbestos work (inspectors, project designers, abatement supervisors, and workers) in public and commercial buildings, but does not extend the other aspects of AHERA. This project was conducted utilizing EPA accredited personnel.

3.0 PROJECT CHARACTERISTICS

During the month of September 1997, Reisz Engineering accredited asbestos Inspectors performed inspections of Building 295 for the purpose of identifying building materials suspected to contain asbestos. This building is a multi-use facility which is comprised of 2 floors and a basement containing approximately 11,964 sq. ft. of floor space. Based on information provided by Fort McClellan representatives, our observations, and tests results, it appears that the entire structure was built in 1962.

4.0 SURVEY METHODOLOGY

The building was visually inspected for the presence of material suspected to contain asbestos. Those suspect materials were identified, bulk samples were obtained and placed into individual vials for transportation to the University of Alabama in Huntsville. General areas for sample locations were selected on a random basis with a preference for exact positioning at existing damage. Each sample location is represented by a number on the plans in Appendix

C. Those numbers directly correspond with the numbers listed elsewhere in this report.

If any additional suspect materials are identified during renovation or demolition they should be analyzed for asbestos content. Materials visibly identifiable as non-asbestos (fiberglass, foam rubber, wood, etc.) were not sampled. Materials installed after October 12, 1988 (as reported by Fort McClellan staff) were not sampled.

Hazard Assessment Factors

Each time suspect ACM was sampled, it was classified as either a friable or a non-friable material. Friable material may be crumbled, pulverized, or reduced to powder by hand pressure. Friable ACM is more hazardous than non-friable ACM because friable material can release airborne asbestos fibers more easily. In assessing the fiber release potential, the current condition of all ACM identified was noted. Evidence of deterioration, physical damage, water damage, erosion of ACM due to its' proximity to an air plenum, high vibration, or contact potential was also noted.

5.0 LABORATORY ANALYSIS METHODOLOGY

All bulk samples were analyzed at UAH by polarized light microscopy utilizing dispersion staining or Becke line techniques, in accordance with the EPA's "Interim Method for Determination of Asbestos in Bulk Insulation Samples" (EPA 600/m4-82-020). Quality control samples were taken as duplicates at a rate of 1 to 20 and were sent to a second accredited laboratory. This type of analysis requires the microscopist to take a portion of the bulk sample and treat it with an oil of specific refractive index. This prepared slide is then subjected to a variety of optical tests.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation. Even

though this is an estimation, any material that contains greater than one percent of any type of fibrous asbestos is considered ACM and must be handled according to OSHA and EPA regulations if disturbed during maintenance, renovation, demolition or removal.

The UAH laboratory participates in the American Industrial Hygiene Association (AIHA) quality assurance program for polarized light microscopy and is accredited by the AIHA through their voluntary program.

6.0 SUSPECT MATERIALS

The following is a general list of building materials that were suspected to contain asbestos. A complete and more detailed description of these substances can be found in Appendix B.

Surfacing

- None

Thermal System Insulation

- White chalky pipe insulation

Miscellaneous Material

- None

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of six bulk samples were collected and analyzed. Details of all laboratory results can be found in Appendix A. A listing of all suspect materials, their corresponding sample numbers, general location, and asbestos content are indicated in Appendix B. A narrative description of all "Friable Asbestos Containing Material" identified during the survey, is given below.

FRIABLE ACM

Laboratory analysis determined asbestos is present in the white chalky pipe insulation found in the basement.

INACCESSIBLE MATERIAL

Insulation and spray-on compounds associated with inaccessible crawl space and tunnel areas are assumed to be "like" materials corresponding to materials sampled within the building.

8.0 CONCLUSIONS AND RECOMMENDATIONS

None of the materials identified within this report are damaged to the extent that significant asbestos fiber release is likely under normal conditions. However, some of the asbestos containing materials, are subject to routine maintenance activities that could involve significant disturbance. Those materials include the pipe fitting insulations and ceiling tiles. Based upon the aforementioned conditions no action is recommended at this time. Reisz Engineering has written a Building Operations & Maintenance Plan for Building 295 and we suggest that recommendations included in this plan be followed.

9.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions and recommendations expressed in this report are based only on conditions which were observed during the inspections of Building 295 during September 1997. Reisz Engineering and this report make no representation or assumptions as to past conditions or future occurrences.

Our inspection was generally non-destructive in nature. Any conditions or material which were not visible on the surface were not inspected and may differ from those observed. It was not within the scope of this investigation to remove surface materials to investigate portions of the structure or materials which lay beneath the surface. Our selection of sample locations and frequency is based upon our observations and the assumption that all materials in the same area are homogeneous.

This report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos abatement contractors in locating ACM. Under no circumstances is this report to be utilized as a bidding document or as a project specification document.

APPENDIX A

REPORT OF LABORATORY ANALYSIS FOR ASBESTOS

UAH

The University of Alabama in Huntsville

Environmental Laboratory
Kenneth E. Johnson Research Center

Huntsville, Alabama 35899
Phone: (205) 890-6391
Fax: (205) 890-6376

Re : Bulk Asbestos Analysis
EPA 600/R-931116

Receipt Date : 09-11-97

AIHA: 023601

Sample Date : 09/09197

Client: Reisz Engineering
Building 32 Suite, A2
3322 Memorial Parkway South
Huntsville, AL 35801

Microscopist : Tom Carrington

Sample/Description	Asbestos Fibers (%)				Non-Asbestos Material (%)				
	Chry	Amos	Croc	Othr	Cell	Fbgl	MW	CaSO4	Othr
B295-01 I S" pipe TSI run white powder	25	55				5			15
B295-02 /150 gas boiler tank white powder	75	5							20
B295-03 / 6" pipe TSI run white powder	10	70							20
B295-04 / 12" pipe TSI run white powder		80							20
B295-05 14" pipe TSI- elbow white powder	45					15			40
B295-06 / 8" pipe Bl- run white, powder	30	50							20

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

MW = Mineral Wool
Ca S04 = Calcium Sulfate
Fbgl = Fiberglass

APPENDIX B

ASBESTOS CONTAINING MATERIALS

**SUMMARY TABLE
ASBESTOS CONTAINING MATERIALS
HEALTH CLINIC
BUILDING 295
FORT McCLELLAN, ALABAMA**

SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)
B295-01	White powder TSI	8" pipe, basement	15 linear feet
B295-02	White powder TSI	150 gal boiler tank in basement mech. room	80 square feet
B295-03	White powder TSI	6" pipe, basement	25 linear feet
B295-04	White powder TSI	12" pipe, basement	15 linear feet
B295-05	White powder TSI	4" pipe, basement	4 linear feet
B295-06	White powder TSI	8" pipe, basement	15 linear feet

APPENDIX C

SAMPLE LOCATIONS PLANS

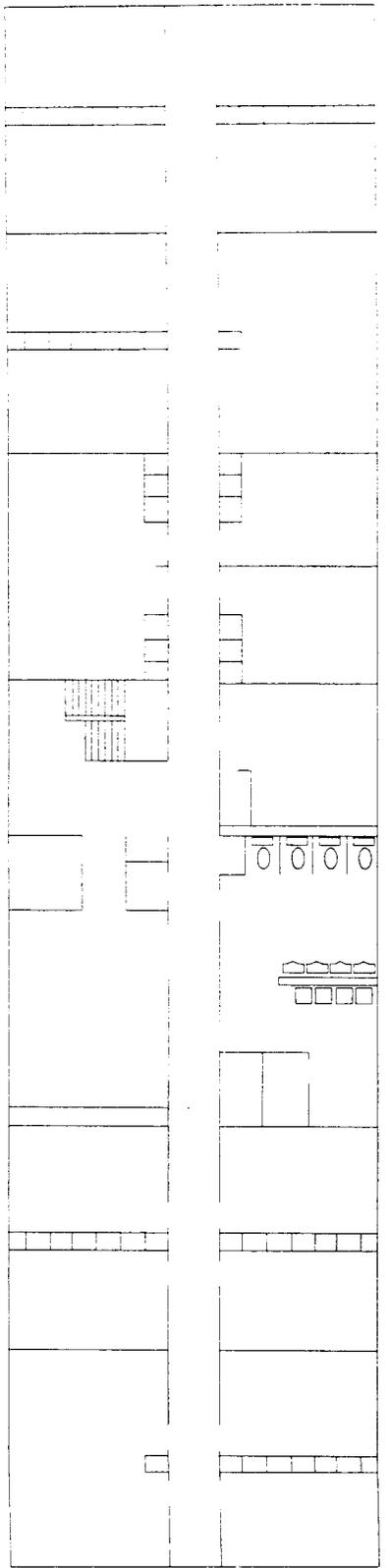


FIG. 1

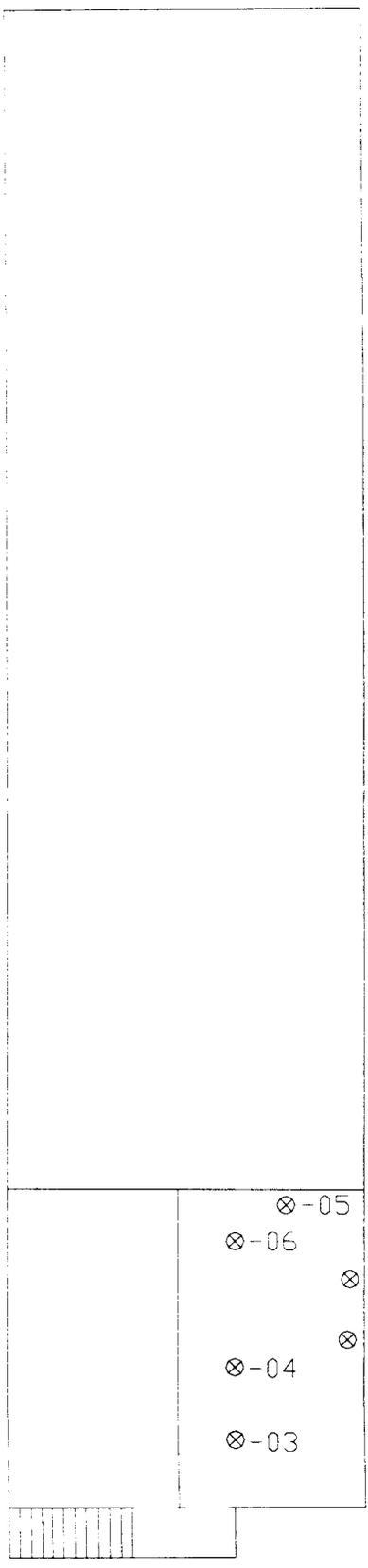


FIG. 2

- ⊗ Negative Sample Locations
- ⊗ Positive Sample Locations

BUILDING 295

FIG. 1 FIRST FLOOR
FIG. 2 BASEMENT

ASBESTOS SURVEY
DAB102-96-D-0005
FM/05

REISZ ENGINEERING

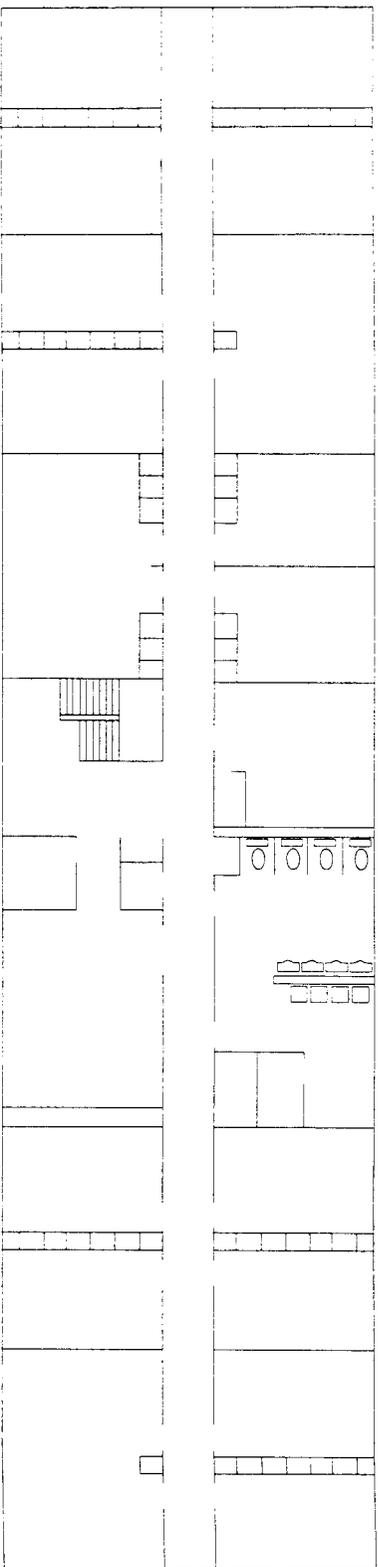


FIG. 3

- ⊗ Negative Sample Locations
- ⊠ Positive Sample Locations

BUILDING 295

FIG. 3 SECOND FLOOR

ASBESTOS SURVEY
 DAB102 96 D 0005
 FM/05

REISZ ENGINEERING

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

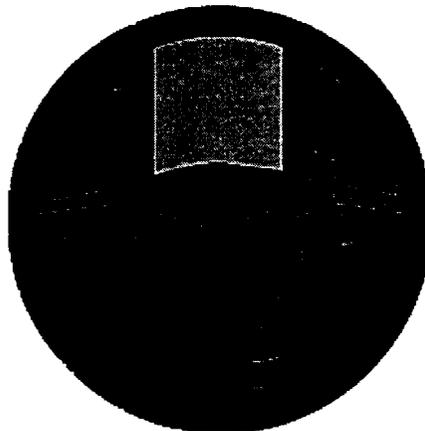
BUILDING(S): 500, 501, 502, 503, 504, 505

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS
BUILDINGS 500-505**

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Fort McClellan



Staying Beautiful

Conducted and Prepared by:

REISZ ENGINEERING
P.O. BOX 1349

HUNTSVILLE, ALABAMA 35807
ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS
BUILDINGS 500-505

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Prepared For:

DIRECTORATE OF ENVIRONMENT
FORT McCLELLAN

APPROVED FOR TRANSMITTAL BY
JAMES R. WRIGHT

Conducted and Prepared by:

REISZ ENGINEERING

June, 1998

TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE OF SERVICES.....	1
2.0	REGULATORY STANDARDS.....	2
3.0	PROJECT CHARACTERISTICS.....	3
4.0	SURVEY METHODOLOGY.....	4
5.0	LABORATORY ANALYSIS	5
6.0	SUSPECT MATERIALS.....	5
7.0	ASBESTOS INSPECTION AND SAMPLING RESULTS.....	6
	FRIABLE ACM.....	7
	NON FRIABLE ACM.....	7
	INACCESSIBLE MATERIAL.....	8
8.0	CONCLUSIONS AND RECOMMENDATIONS.....	8
9.0	ASSUMPTIONS AND LIMITATIONS.....	8

APPENDICES

APPENDIX A - REPORT OF LABORATORY ANALYSIS
APPENDIX B - SUMMARY TABLE OF ACM
APPENDIX C - SAMPLE LOCATIONS PLANS

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Buildings 500-505 located at Fort McClellan, Alabama. Pursuant to the Contract, REISZ Engineering was required to provide the survey in accordance with AHERA (40 CFR Part 763 Subpart E) protocol. AHERA is applicable to interior building products installed prior to October 12, 1988. AHERA does not apply to the exterior of buildings and does not apply to non-building materials (e.g. cabinetry, special equipment and chalkboards). REISZ Engineering has included as part of the survey those readily accessible, suspect friable interior non-building materials (e.g. vibration dampers); but has not included certain items (e. g. interior linings of equipment and special supplies, some non-friable materials such as transite, etc.). Exterior building materials were not sampled as part of this contract unless those materials were suspected to be of friable nature and continuous with indoor materials (e.g. piping insulation). Specifically, REISZ Engineering was contracted to provide the following services:

1. Identify and collect samples of accessible suspect friable building materials within the referenced project area.
2. Perform a visual inspection to provide information on material condition, material quantities, material locations, and building use.
3. Analysis of all bulk samples for asbestos content utilizing Polarized Light Microscopy and Dispersion Staining Techniques performed in accordance with EPA Bulk Analysis Method
EPA 600/M4-82-020.
4. Make recommendations as to response actions pertaining to those materials identified as asbestos containing.

5. Compilation of a final report (contained herein) which details all sample results, identifies sample locations, and provides recommendations based upon the results.
6. Preparation of a Building specific Operations & Maintenance (O&M) Plan for buildings containing friable asbestos materials.

2.0 REGULATORY STANDARDS

The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires the Owner or Operator of a facility to determine the presence or non-presence of asbestos containing materials prior to conducting renovation or demolition activities. The NESHAP Standard for asbestos (40CFR Part 61 Sub-part M) requires the use of engineered control procedures for removal of asbestos materials that are or will become friable during renovation or demolition. The removal must occur before renovation or demolition activities impact those materials.

On October 11, 1994 an OSHA promulgated regulation (29 CFR Part 1926.1101) became effective. This Standard is related to asbestos exposure in construction, renovation and building maintenance work places. Building owners are required, pursuant to the Standard, to notify employees, tenants and prospective employers (contractors) of the presence, location and quantities of ACM in the building. Implementation of the "communication of hazards" provisions in the Standard were originally to be not later than April 10, 1995 but was extended to July 10, 1995 and is now in effect. The OSHA Standard does not apply to work performed by employees of State agencies in states without state run OSHA programs (e.g. Alabama).

In October 1986, the Asbestos Hazard Emergency Response Act (AHERA) was signed into law. Included in this act are provisions directing E.P.A. to establish rules and regulations (40CFR Part 763) addressing asbestos-containing materials in schools. Specifically, the E.P.A.

was directed to address the issues of: 1) identifying, 2) evaluating, and 3) controlling asbestos containing materials (ACM) in schools. AHERA requires schools to perform building inspections and to prepare management plans for ACM control. Although the AHERA regulation does not specifically apply to this project it is generally accepted as the industry standard and was cited by Fort McClellan in the Asbestos Survey Request as the basis of survey methodology. The AHERA inspections must be conducted using specific guidelines that include a minimum number of samples per material type. This survey was conducted in accordance with those guidelines per the Contract requirements.

On November 28, 1992 a law became effective which extended the EPA's Model Accreditation Plan to all public and commercial buildings. Currently the rule extends the accreditation requirements of persons performing asbestos work (inspectors, project designers, abatement supervisors, and workers) in public and commercial buildings, but does not extend the other aspects of AHERA. This project was conducted utilizing EPA accredited personnel.

3.0 PROJECT CHARACTERISTICS

During the month of June 1997, Reisz Engineering accredited Asbestos Inspectors performed inspections of these buildings for the purpose of identifying building materials suspected to contain asbestos. Buildings 500-505 are office/administration, barracks, mess hall & warehouse facilities. Based on information provided by Fort McClellan representatives the buildings were constructed at various times. Various renovations may have taken place since the buildings were originally constructed but no building plans have been found which can be used to verify specific dates and activities. The dominant flooring condition existing in the buildings are 12x12 vinyl floor tile.

4.0 SURVEY METHODOLOGY

The buildings were visually inspected for the presence of material suspected to contain asbestos. Those suspect materials were identified, bulk samples were obtained and placed into individual vials for transportation to the University of Alabama in Huntsville. General areas for sample locations were selected on a random basis with a preference for exact positioning at existing damage. Each sample location is represented by a number on the floor plans in Appendix C. Those numbers directly correspond with the numbers listed elsewhere in this report.

If any additional suspect materials are identified during renovation or demolition they should be analyzed for asbestos content. Materials visibly identifiable as non-asbestos (fiberglass, foam rubber, wood, etc.) were not sampled. Materials installed after October 12, 1988 (as reported by Fort McClellan staff) were not sampled.

Hazard Assessment Factors

Each time suspect ACM was sampled, it was classified as either a friable or a non-friable material. Friable material may be crumbled, pulverized, or reduced to powder by hand pressure. Friable ACM is more hazardous than non-friable ACM because friable material can release airborne asbestos fibers more easily. In assessing the fiber release potential, the current condition of all ACM identified was noted. Evidence of deterioration, physical damage, water damage, erosion of ACM due to its' proximity to an air plenum, high vibration, or contact potential was also noted.

5.0 LABORATORY ANALYSIS METHODOLOGY

All bulk samples were analyzed at UAH by polarized light microscopy utilizing dispersion staining or Becke line techniques, in accordance with the EPA's "Interim Method for Determination of Asbestos in Bulk Insulation Samples" (EPA 600/m4-82-020). Quality control samples were taken as duplicates at a rate of 1 to 10 and were sent to a second accredited laboratory. This type of analysis requires the microscopist to take a portion of the bulk sample and treat it with an oil of specific refractive index. This prepared slide is then subjected to a variety of optical tests.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation. Even though this is an estimation, any material that contains greater than one percent of any type of fibrous asbestos is considered ACM and must be handled according to OSHA and EPA regulations if disturbed during maintenance, renovation, demolition or removal.

The UAH laboratory participates in the American Industrial Hygiene Association (AIHA) quality assurance program for polarized light microscopy and is accredited by the AIHA through their voluntary program.

6.0 SUSPECT MATERIALS

The following is a general list of building materials that were suspected to contain asbestos. A complete and detailed description of these materials can be found in Appendix B.

Surfacing

- None

Thermal System Insulation

- Air handler flex connector
- White cementitious pipe fitting insulation
- Pipe insulation wrap
- Straight run pipe insulation

Miscellaneous Material

- 12x12 vinyl floor tile in all buildings excluding B504
- Vinyl flooring mastics
- Transite panels on cooling tower of B503

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 7 bulk samples were collected and analyzed. Details of all laboratory results can be found in Appendix A. A listing of all suspect materials, their corresponding sample numbers, general location, and approximate quantity are indicated in Appendix B. A narrative description of all "Friable Asbestos Containing Material" and "Non-Friable ACM" identified during the survey, is given below.

FRIABLE ACM

Laboratory analysis determined asbestos is present in one type of friable material: 1) pipe tape (wrapping) in mechanical room of Building 505.

- 1) An asbestos containing pipe tape (wrapping) is found on approximately 10 linear feet of pipe in the mechanical room of Building 505. The remaining piping in all buildings are either bare or insulated with fiberglass. The material was found to be in generally Good condition.

NON FRIABLE ACM

Three types of non-friable PACM were found in the majority of the buildings. 1) transite panels are located on the cooling tower at Building 503, 2) 12x12 inch floor tile is found in all buildings excluding B504, and 3) mastics associated with 12x12 vinyl floor tile.

- 1) Asbestos containing transite panels can be found on the cooling tower at Building 503.
- 2) Presumed asbestos containing 12x12 inch floor tile is found in all buildings excluding B504.
- 3) Black, presumed asbestos containing mastics are present below vinyl floor tiles found in all of the buildings.

INACCESSIBLE MATERIAL

Insulation and spray-on compounds associated with inaccessible crawl-space and tunnel areas may should be assumed as "like" materials corresponding to materials sampled within the building.

8.0 CONCLUSIONS AND RECOMMENDATIONS

None of the materials identified within this report are damaged to the extent that significant asbestos fiber release may be likely under normal conditions. The asbestos containing materials may be subject to routine maintenance activities that could involve significant disturbance. Proper management of the material in-place may be acceptable assuming the proper precautions are taken to eliminate exposure of personnel to any airborne asbestos. Reisz Engineering has written a Building Operations & Maintenance Plan for the buildings and we suggest that recommendations included in this plan be followed.

9.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions and recommendations expressed in this report are based only on conditions that were observed during the inspections of Buildings 500-505 during June, 1997. Reisz Engineering and this report make no representation or assumptions as to past conditions or future occurrences.

Our inspection was generally non-destructive in nature. Any conditions or materials that were not visible on the surface were not inspected and may differ from those observed. It was not within the scope of this investigation to remove surface materials to investigate portions of the structure or materials that may lie beneath the surface. Our selection of sample locations and frequency is based upon our observations and the assumption that all materials in the same area are homogeneous.

This report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos abatement contractors in locating ACM. Under no circumstances is this report to be utilized as a bidding document or as a project specification document.

APPENDIX A

REPORT OF LABORATORY ANALYSIS FOR ASBESTOS

UAH

Environmental Laboratory
Kenneth E. Johnson Research
Center

The University of Alabama in Huntsville

Huntsville, Alabama 35899
Phone: (205) 895-6391
Fax: (205) 895-6376

Re Bulk Asbestos
Analysis EPA
600/R-93/116
AIHA: 023601

Receipt Date, : 06-06-97

Sample Date : 06/03/97

Client: Reisz Engineering
Building 32 Suite A2
3322 Memorial Parkway
South Huntsville, AL
35801

Microscopist: Tom Can-ington

Sample/Description	Asbestos Fibers (%)				Non-Asbestos Material (%)				
	Chry	Amos	Croc	Othr	Cell	Fbgl	MW	CaSO4	Othr
B500-01 / floor tile					10				90
B500-02 / mastic- floor tile	10				10				80
B500-03 / air handler connectionjoint						25			75

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other Cell
= Cellulose

MW = Mineral Wool
Ca S04 = Calcium Sulfate
Fbgl = Fiberglass

UAH

The University of Alabama in Huntsville

Environmental Laboratory
Kenneth E. Johnson Research
Center

Huntsville,
Alabama 35899
Phone: (205) 895-
6391 Fax:
(205) 895-6376

Re : Bulk Asbestos
Analysis EPA
600/R-93/116
AIHA: 023601

Receipt Date: 06-06-97

Sample Date : 06/03/97

Client: Reisz Engineering
Building 32 Suite A2
3322 Memorial Parkway
South Huntsville, AL
35801

Microscopist: Tom Canington

Sample/Description	Asbestos Fibers (%)			Non-Asbestos Material (%)		
	Chry	Am6s	Croc Othr	Cell	Fbgl MW	CaSO4 Othr
B503-01 / cooling tower transite board		30				70
B503-02 / pipe TSI white powder under wrap				65		35

Chry = Chrysotile
Am6s = Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

MW = Mineral Wool
Ca SO4 = Calcium Sulfate
Fbgl = Fiberglass

UAH

Environmental Laboratory
Kenneth E. Johnson
Research Center

Huntsville, Alabama 35899
Phone: (205) 895-6391
Fax: (205) 895-6376

Re Bulk Asbestos
Analysis EPA
600/R-93/116
AIHA: 023601

Receipt Date: 06-06-97

Sample Date : 06/03/97

Client: Reisz Engineering
Building 32 Suite A2
3322 Memorial Parkway
South Huntsville, AL
35801

Microscopist: Tom Canington

Sample/Description	Asbestos Fibers (%)			Non-Asbestos Material (%)			
	Chry	Amos	Croc Othr	Cell	Fbgl	MW	CaSO4 Othr
B505-01 / pipe tape front R in mech. Room	15			5			80
3505-02/ pipe TSI upper level-mech. Room				10			90

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other Cell
= Cellulose

MW = Mineral Wool
Ca s04 = Calcium Sulfate
Fbgl = Fiberglass

APPENDIX B

ASBESTOS CONTAINING MATERIALS

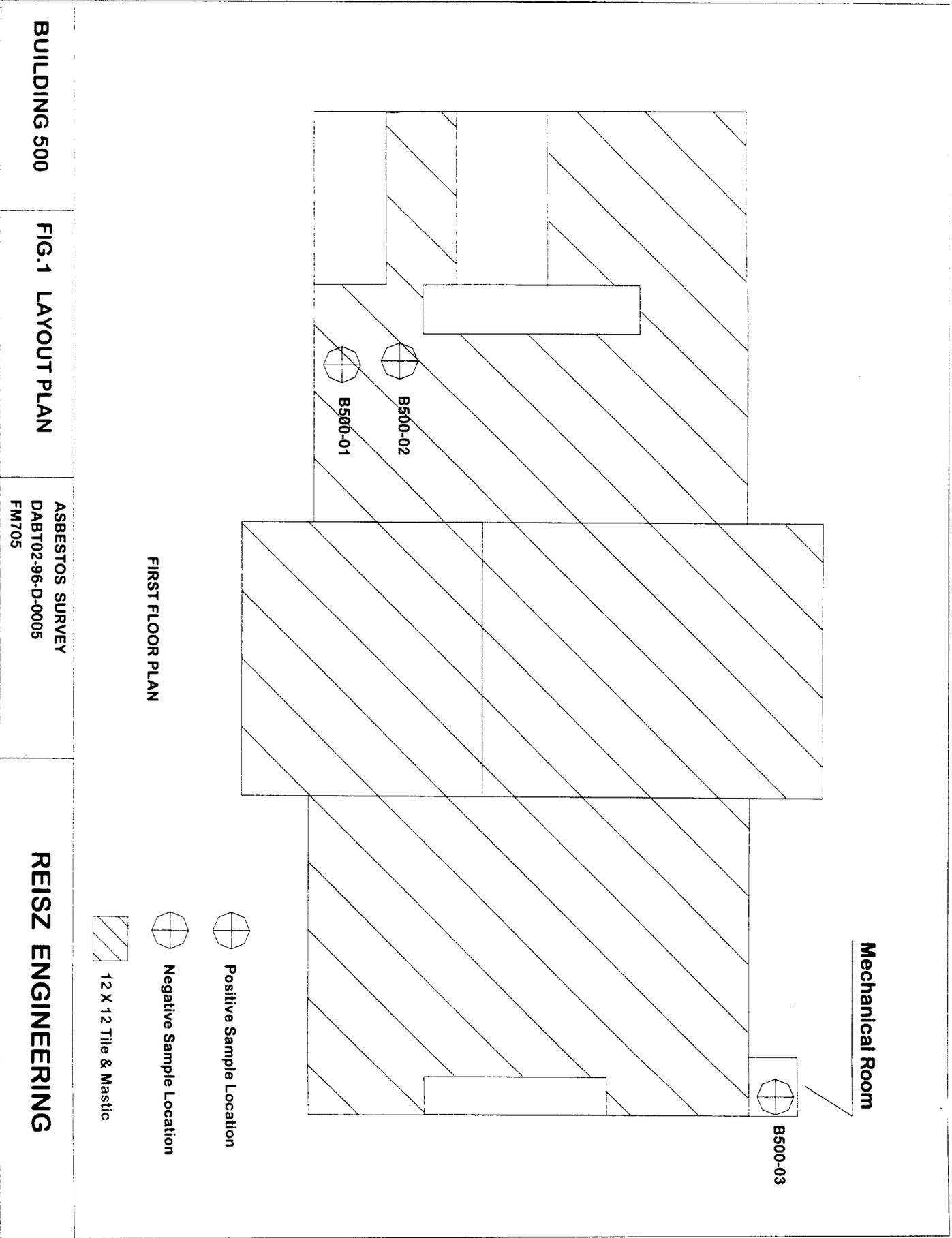
**SUMMARY TABLE
 ASBESTOS CONTAINING MATERIALS
 MISCELLANEOUS
 BUILDINGS 500-505**

FORT McCLELLAN, ALABAMA

SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)
B500-01,02	12x12 floor tile and mastic	Building 500	39,000 sq. ft.
PACM	12x12 floor tile & mastic	Building 501	32,000 sq. ft.
PACM	12x12 floor tile & mastic	Building 502	5,000 sq. ft.
PACM	12x12 floor tile & mastic	Building 503	16,000 sq. ft.
B503-01	Cooling tower transite	Building 503	600 sq. ft.
B505-01	Pipe tape in mechanical room	Building 505 Mechanical room	10 linear ft.
PACM	12x12 floor tile & mastic	Building 505	48,000 sq. ft.

APPENDIX C

SAMPLE LOCATIONS PLANS



FIRST FLOOR PLAN

-  Positive Sample Location
-  Negative Sample Location
-  12 X 12 Tile & Mastic

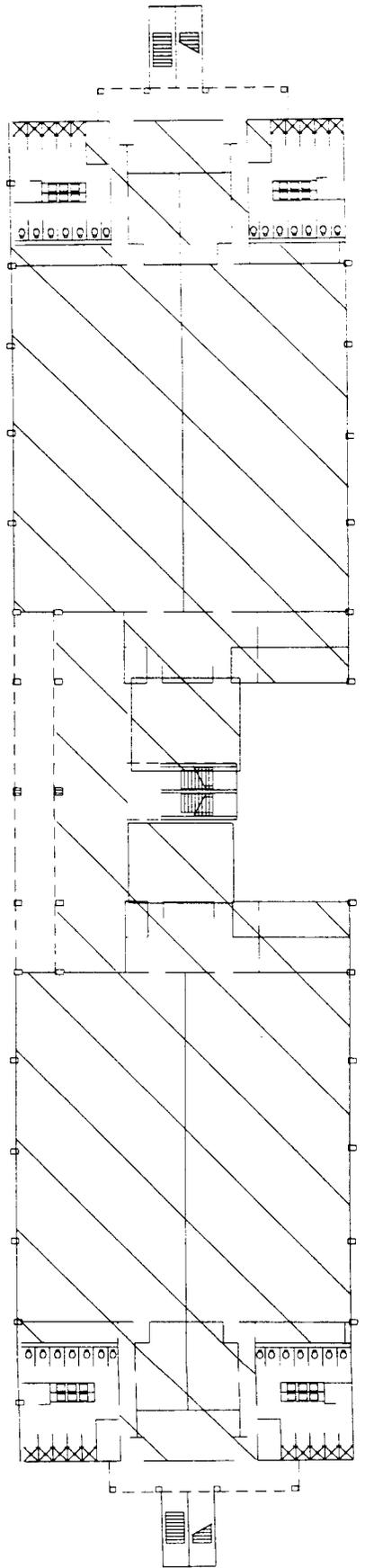
BUILDING 500

FIG. 1 LAYOUT PLAN

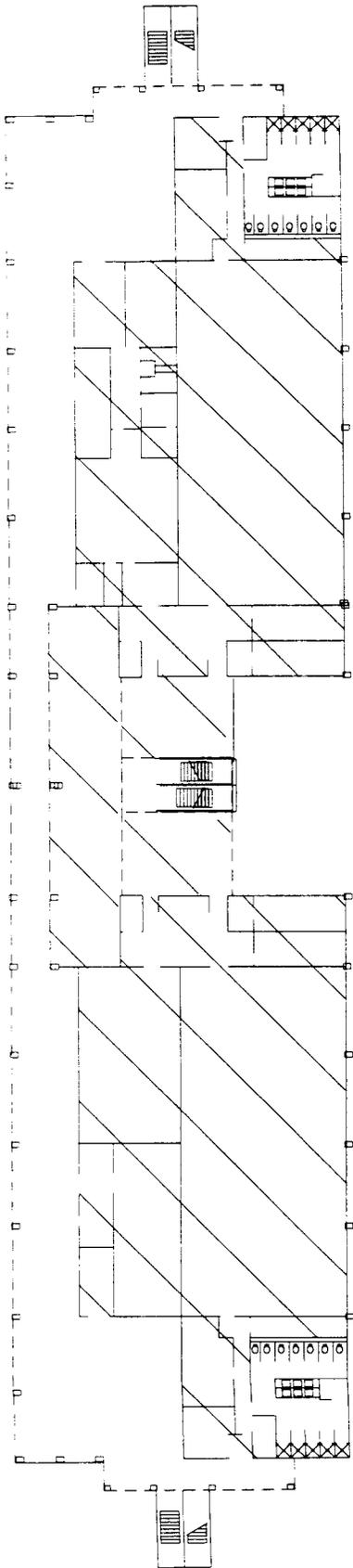
ASBESTOS SURVEY
DABT02-96-D-0005
FM705

REISZ ENGINEERING

SECOND FLOOR PLAN



FIRST FLOOR PLAN

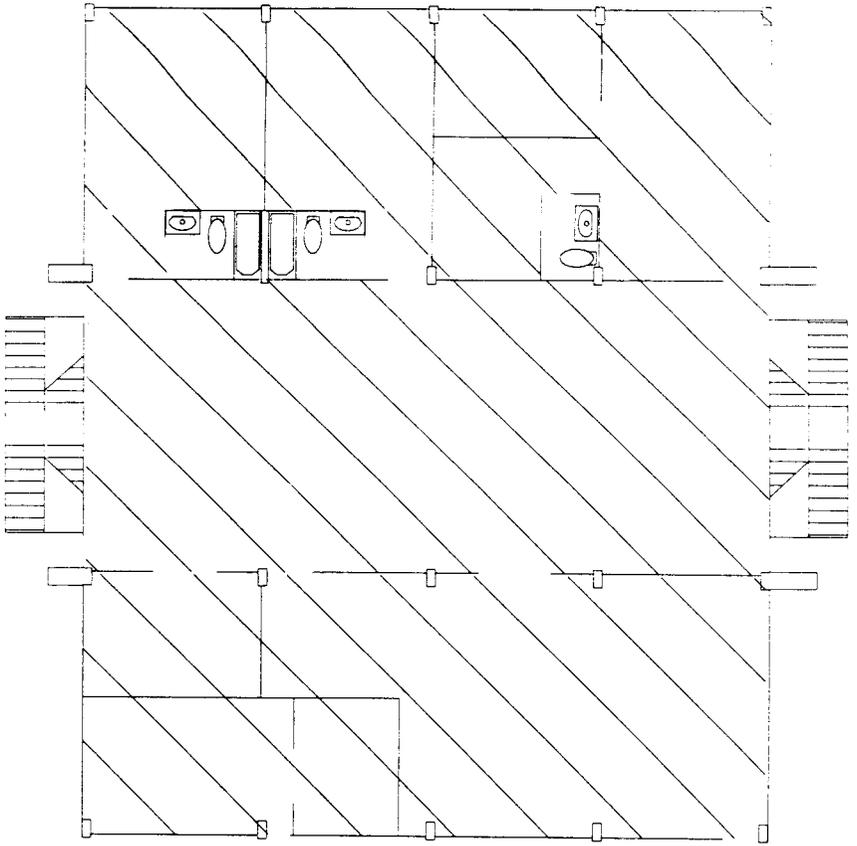


12 X 12 Tile & Mastic

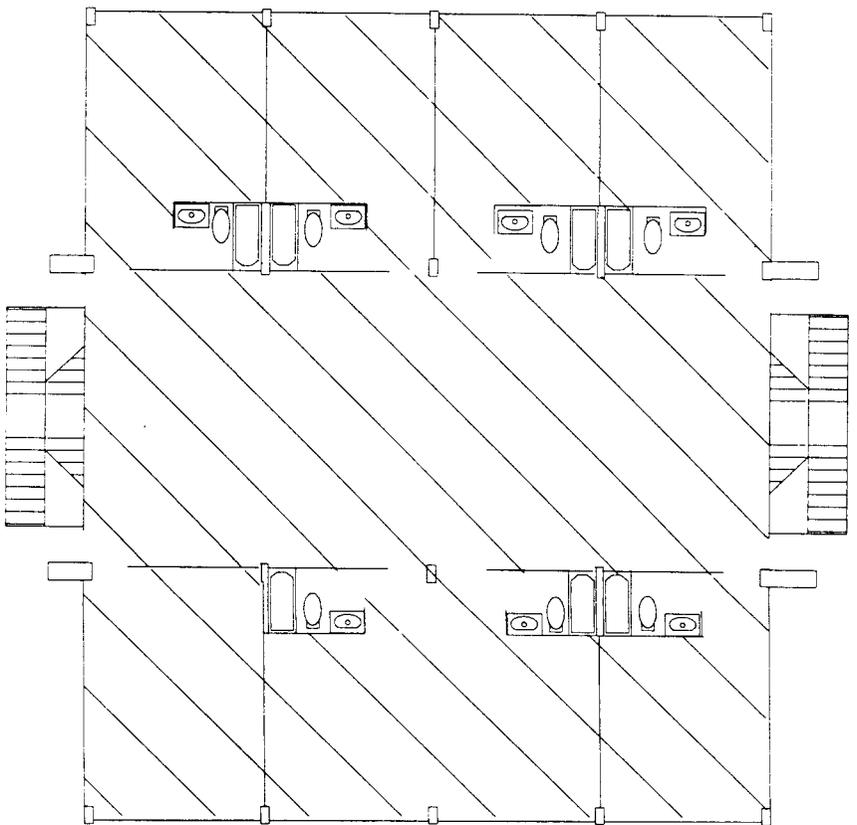
BUILDING 501

ASBESTOS SURVEY
DABT02-96-D-0005
FM705

REISZ ENGINEERING



FIRST FLOOR



SECOND FLOOR

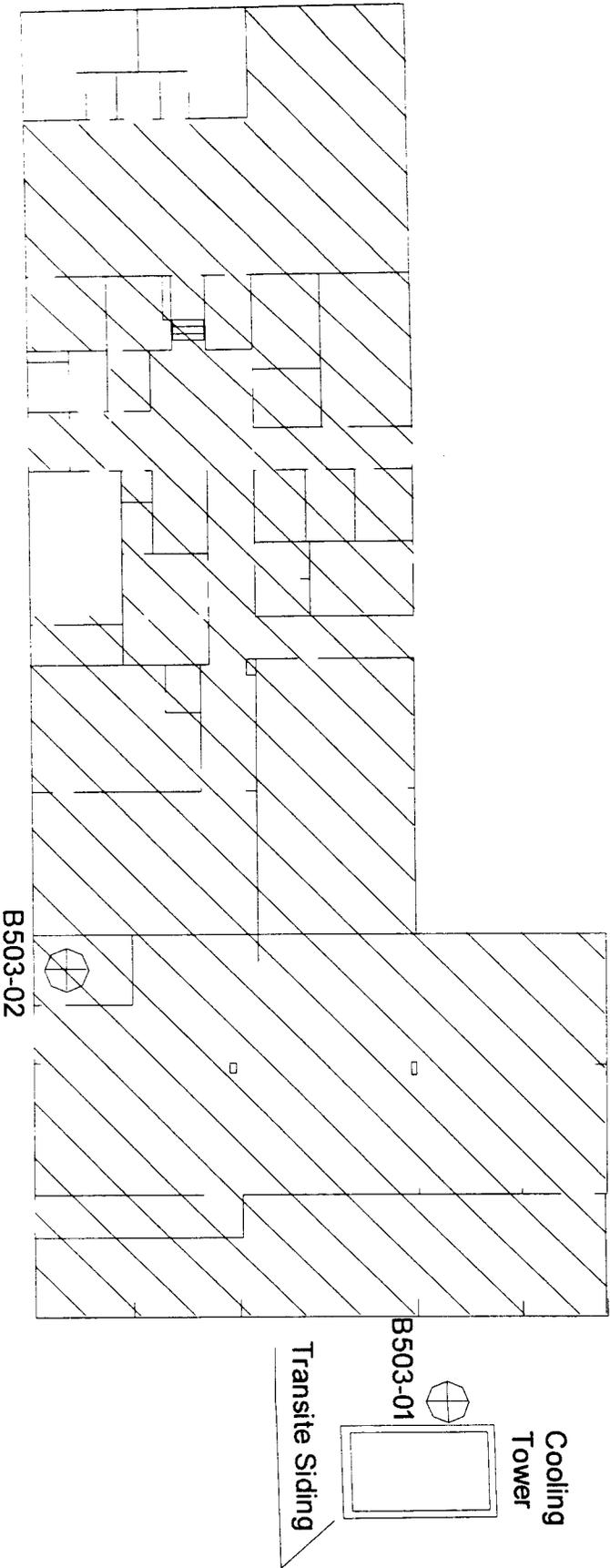
 12 X 12 Tile & Mastic

BUILDING 502

FLOOR PLAN LAYOUT

ASBESTOS SURVEY
DABT02-96-D-005
FM705

REISZ ENGINEERING



Cooling Tower

B503-01

Transite Siding

B503-02



Positive Sample Location



Negative Sample Location



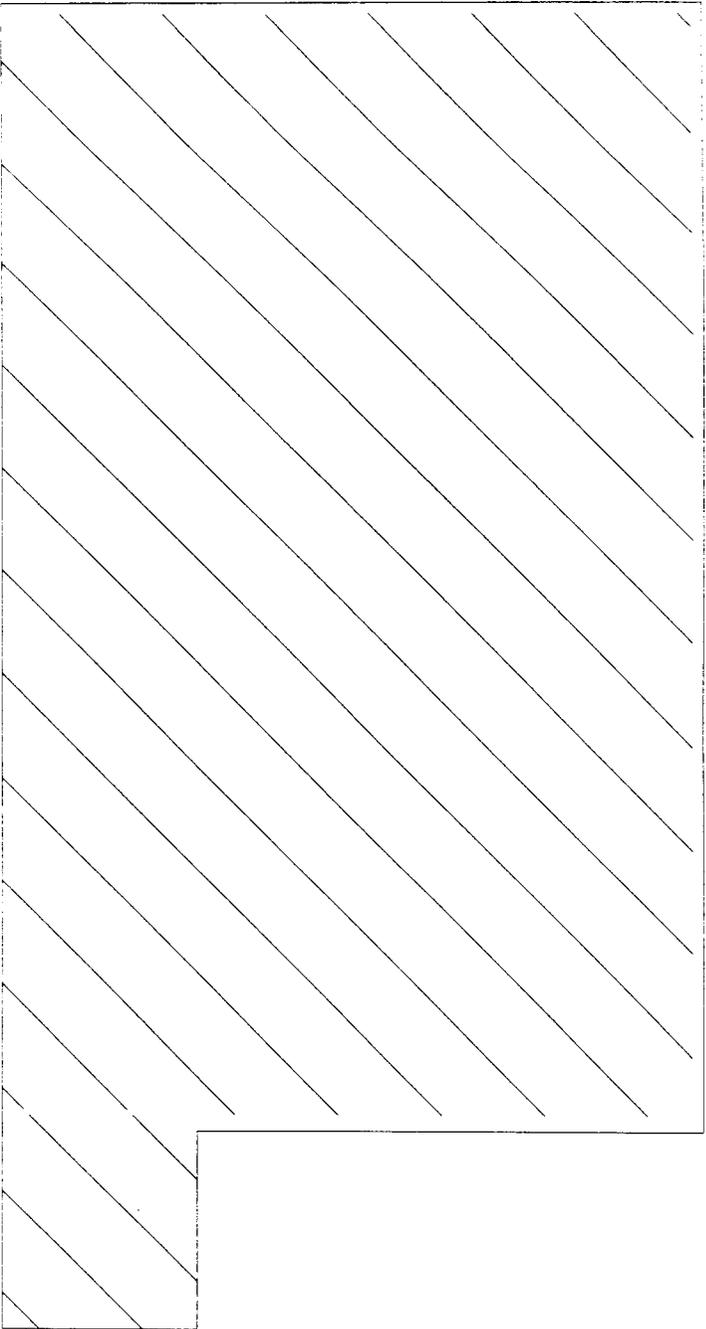
12 x 12 Tile & Mastic

BUILDING 503

LAYOUT PLAN

ASBESTOS SURVEY
DABTO2-96-D-0005
FM705

REISZ ENGINEERING



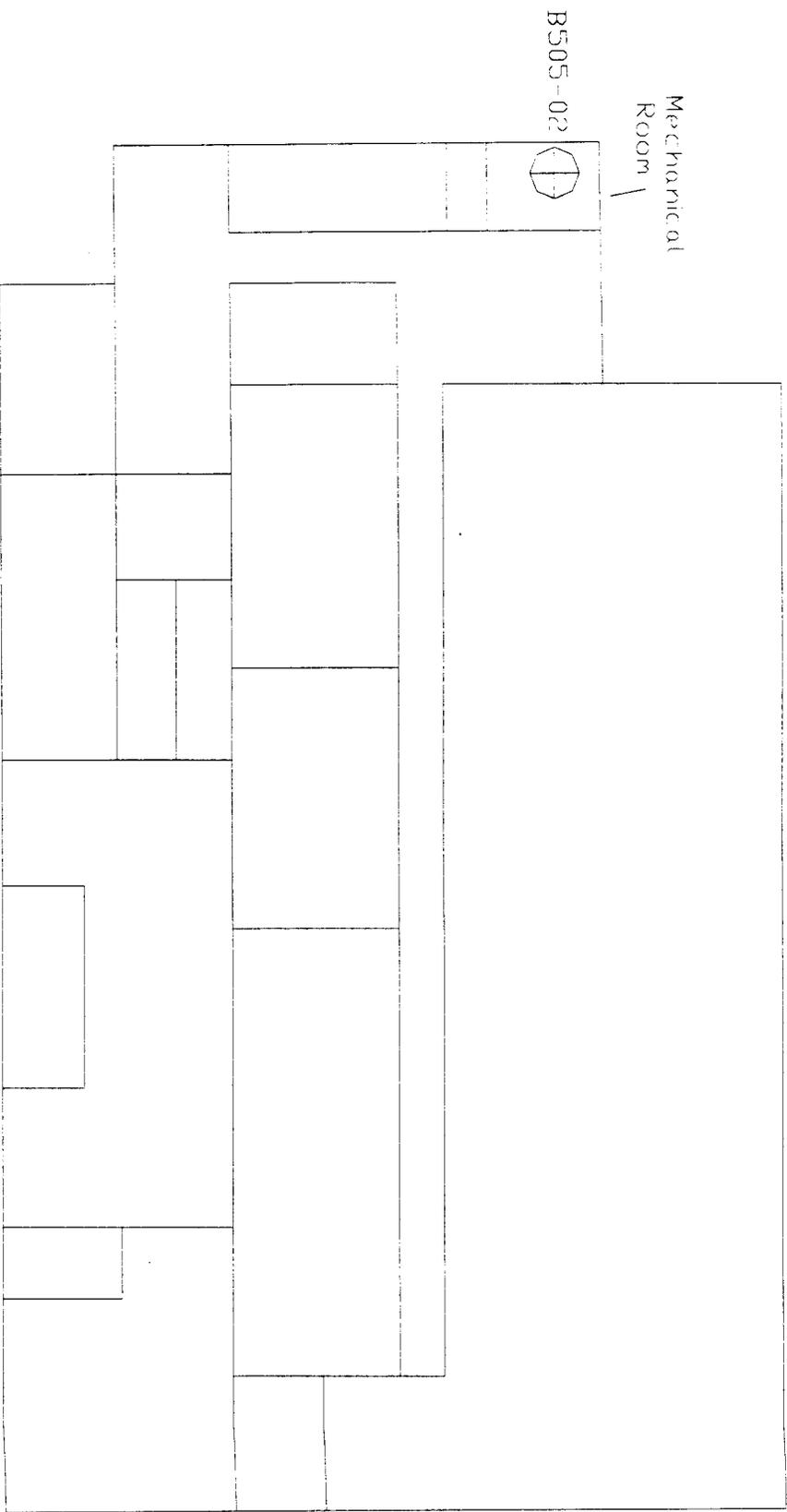
Ceramic Tile

BUILDING 504

LAYOUT PLAN

ASBESTOS SURVEY
DABTO2-96-D-0005
FM705

REISZ ENGINEERING



Mechanical Room

B505-02

- ⊕ Positive Sample Location
- ⊖ Negative Sample Location

BUILDING 505

SECOND FLOOR

ASBESTOS SURVEY
DAB102-96-D-0005
FM705

REISZ ENGINEERING

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

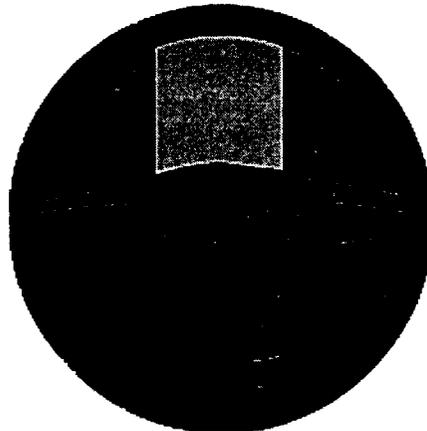
BUILDING(S): 801 - 814

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
OFFICE/CLASSROOM
BUILDINGS 801-814**

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Fort McClellan



Staying Beautiful

Conducted and Prepared by:

REISZ ENGINEERING
P.O. BOX 1349

HUNTSVILLE, ALABAMA 35807
ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
OFFICE/CLASSROOM
BUILDINGS 801-814

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Prepared For:

DIRECTORATE OF ENVIRONMENT
FORT McCLELLAN

APPROVED FOR TRANSMITTAL BY
JAMES R. WRIGHT

Conducted and Prepared by:

REISZ ENGINEERING

June, 1998

TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE OF SERVICES.....	1
2.0	REGULATORY STANDARDS.....	2
3.0	PROJECT CHARACTERISTICS.....	3
4.0	SURVEY METHODOLOGY.....	4
5.0	LABORATORY ANALYSIS	5
6.0	SUSPECT MATERIALS.....	5
7.0	ASBESTOS INSPECTION AND SAMPLING RESULTS.....	6
	FRIABLE ACM.....	7
	NON FRIABLE ACM.....	7
	INACCESSIBLE MATERIAL.....	8
8.0	CONCLUSIONS AND RECOMMENDATIONS.....	8
9.0	ASSUMPTIONS AND LIMITATIONS.....	8

APPENDICES

APPENDIX A - REPORT OF LABORATORY ANALYSIS
APPENDIX B - SUMMARY TABLE OF ACM
APPENDIX C - SAMPLE & ACM LOCATIONS PLANS

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Buildings 801-814 located at Fort McClellan, Alabama. Pursuant to the Contract, REISZ Engineering was required to provide the survey in accordance with AHERA (40 CFR Part 763 Subpart E) protocol. AHERA is applicable to interior building products installed prior to October 12, 1988. AHERA does not apply to the exterior of buildings and does not apply to non-building materials (e.g. cabinetry, special equipment and chalkboards). REISZ Engineering has included as part of the survey those readily accessible, suspect friable interior non-building materials (e.g. vibration dampers); but has not included certain items (e. g. interior linings of equipment and special supplies, some non-friable materials such as transite, etc.). Exterior building materials were not sampled as part of this contract unless those materials were suspected to be of friable nature and continuous with indoor materials (e.g. piping insulation). Specifically, REISZ Engineering was contracted to provide the following services:

1. Identify and collect samples of accessible suspect friable building materials within the referenced project area.
2. Perform a visual inspection to provide information on material condition, material quantities, material locations, and building use.
3. Analysis of all bulk samples for asbestos content utilizing Polarized Light Microscopy and Dispersion Staining Techniques performed in accordance with EPA Bulk Analysis Method
EPA 600/M4-82-020.
4. Make recommendations as to response actions pertaining to those materials identified as asbestos containing.

5. Compilation of a final report (contained herein) which details all sample results, identifies sample locations, and provides recommendations based upon the results.
6. Preparation of a Building specific Operations & Maintenance (O&M) Plan for buildings containing friable asbestos materials.

2.0 REGULATORY STANDARDS

The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires the Owner or Operator of a facility to determine the presence or non-presence of asbestos containing materials prior to conducting renovation or demolition activities. The NESHAP Standard for asbestos (40CFR Part 61 Sub-part M) requires the use of engineered control procedures for removal of asbestos materials that are or will become friable during renovation or demolition. The removal must occur before renovation or demolition activities impact those materials.

On October 11, 1994 an OSHA promulgated regulation (29 CFR Part 1926.1101) became effective. This Standard is related to asbestos exposure in construction, renovation and building maintenance work places. Building owners are required, pursuant to the Standard, to notify employees, tenants and prospective employers (contractors) of the presence, location and quantities of ACM in the building. Implementation of the "communication of hazards" provisions in the Standard were originally to be not later than April 10, 1995 but was extended to July 10, 1995 and is now in effect. The OSHA Standard does not apply to work performed by employees of State agencies in states without state run OSHA programs (e.g. Alabama).

In October 1986, the Asbestos Hazard Emergency Response Act (AHERA) was signed into law. Included in this act are provisions directing E.P.A. to establish rules and regulations

(40CFR Part 763) addressing asbestos-containing materials in schools. Specifically, the E.P.A. was directed to address the issues of: 1) identifying, 2) evaluating, and 3) controlling asbestos containing materials (ACM) in schools. AHERA requires schools to perform building inspections and to prepare management plans for ACM control. Although the AHERA regulation does not specifically apply to this project it is generally accepted as the industry standard and was cited by Fort McClellan in the Asbestos Survey Request as the basis of survey methodology. The AHERA inspections must be conducted using specific guidelines that include a minimum number of samples per material type. This survey was conducted in accordance with those guidelines per the Contract requirements.

On November 28, 1992 a law became effective which extended the EPA's Model Accreditation Plan to all public and commercial buildings. Currently the rule extends the accreditation requirements of persons performing asbestos work (inspectors, project designers, abatement supervisors, and workers) in public and commercial buildings, but does not extend the other aspects of AHERA. This project was conducted utilizing EPA accredited personnel.

3.0 PROJECT CHARACTERISTICS

During the month of September 1997, Reisz Engineering accredited Asbestos Inspectors performed inspections of these buildings for the purpose of identifying building materials suspected to contain asbestos. Buildings 801-814 are single story structures of identical construction containing approximately 2,232 sq. ft of floor space. Based on information provided by Fort McClellan representatives the buildings were originally constructed in 1941. Various renovations may have taken place since the building was originally constructed but no building plans have been found which can be used to verify specific dates and activities. The dominant flooring condition existing in the buildings are 12x12 vinyl floor tile and cement.

4.0 SURVEY METHODOLOGY

The buildings were visually inspected for the presence of material suspected to contain asbestos. Those suspect materials were identified, bulk samples were obtained and placed into individual vials for transportation to the University of Alabama in Huntsville. General areas for sample locations were selected on a random basis with a preference for exact positioning at existing damage. Each sample location is represented by a number on the plans in Appendix C. Those numbers directly correspond with the numbers listed elsewhere in this report.

If any additional suspect materials are identified during renovation or demolition they should be analyzed for asbestos content. Materials visibly identifiable as non-asbestos (fiberglass, foam rubber, wood, etc.) were not sampled. Materials installed after October 12, 1988 (as reported by Fort McClellan staff) were not sampled.

Hazard Assessment Factors

Each time suspect ACM was sampled, it was classified as either a friable or a non-friable material. Friable material may be crumbled, pulverized, or reduced to powder by hand pressure. Friable ACM is more hazardous than non-friable ACM because friable material can release airborne asbestos fibers more easily. In assessing the fiber release potential, the current condition of all ACM identified was noted. Evidence of deterioration, physical damage, water damage, erosion of ACM due to its' proximity to an air plenum, high vibration, or contact potential was also noted.

5.0 LABORATORY ANALYSIS METHODOLOGY

All bulk samples were analyzed at UAH by polarized light microscopy utilizing dispersion staining or Becke line techniques, in accordance with the EPA's "Interim Method for Determination of Asbestos in Bulk Insulation Samples" (EPA 600/m4-82-020). Quality control samples were taken as duplicates at a rate of 1 to 10 and were sent to a second accredited laboratory. This type of analysis requires the microscopist to take a portion of the bulk sample and treat it with an oil of specific refractive index. This prepared slide is then subjected to a variety of optical tests.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation. Even though this is an estimation, any material that contains greater than one percent of any type of fibrous asbestos is considered ACM and must be handled according to OSHA and EPA regulations if disturbed during maintenance, renovation, demolition or removal.

The UAH laboratory participates in the American Industrial Hygiene Association (AIHA) quality assurance program for polarized light microscopy and is accredited by the AIHA through their voluntary program.

6.0 SUSPECT MATERIALS

The following is a general list of building materials that were suspected to contain asbestos. A complete and more detailed description of these materials can be found in Appendix B.

Surfacing

- None

Thermal System Insulation

- White, air-cell type insulation on remaining roof vent in all buildings

Miscellaneous Material

- 12x12 vinyl floor tile in all buildings excluding B808
- Vinyl flooring mastics
- Transite siding on exterior of all buildings

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 6 bulk samples were collected and analyzed. Details of all laboratory results can be found in Appendix A. A listing of all suspect materials, their corresponding sample numbers, general location, and approximate quantity are indicated in Appendix B. A narrative description of all "Friable Asbestos Containing Material" and "Non-Friable ACM" identified during the survey, is given below.

FRIABLE ACM

Laboratory analysis determined asbestos is present in one type of friable material: 1) white, air-cell type insulation.

- 1) A white, air-cell type asbestos containing material is found on 12 inch pipe roof vents located in all buildings. The remaining piping in all buildings are either bare or are insulated with fiberglass. The material was found to be in generally Good to Fair condition depending on the building and area.

NON FRIABLE ACM

Two types of non-friable PACM were found in the majority of the buildings. 1) transite panels are located on the exterior of all buildings, 2) 12x12 inch floor tile is found in all buildings excluding B808, and 3) mastics associated with 12x12 vinyl floor tile.

- 1) Presumed asbestos containing transite panels can be found on the exterior walls of all buildings
- 2) Presumed asbestos containing 12x12 inch floor tile is found in all buildings excluding B808.
- 3) Black, presumed asbestos containing mastics are present below vinyl floor tiles found in all of the buildings.

INACCESSIBLE MATERIAL

Insulation and spray-on compounds associated with inaccessible crawl-space and tunnel areas may and should be assumed as "like" materials corresponding to materials sampled within the building.

8.0 CONCLUSIONS AND RECOMMENDATIONS

None of the materials identified within this report are damaged to the extent that significant asbestos fiber release may be likely under normal conditions. The asbestos containing materials may be subject to routine maintenance activities that could involve significant disturbance. Proper management of the material in-place may be acceptable assuming the proper precautions are taken to eliminate exposure of personnel to any airborne asbestos. Reisz Engineering has written a Building Operations & Maintenance Plan for the buildings and we suggest that recommendations included in this plan be followed.

9.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions and recommendations expressed in this report are based only on conditions that were observed during the inspections of Buildings 801-814 during September, 1997. Reisz Engineering and this report make no representation or assumptions as to past conditions or future occurrences.

Our inspection was generally non-destructive in nature. Any conditions or materials that were not visible on the surface were not inspected and may differ from those observed. It was not within the scope of this investigation to remove surface materials to investigate portions of the structure or materials that may lie beneath the surface. Our selection of sample locations and frequency is based upon our observations and the assumption that all materials in the same area are homogeneous.

This report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos abatement contractors in locating ACM. Under no circumstances is this report to be utilized as a bidding document or as a project specification document.

APPENDIX A

REPORT OF LABORATORY ANALYSIS FOR ASBESTOS

UAH

Environmental Laboratory The University of Alabama in Huntsville
Kenneth E. Johnson Research Huntsville, Alabama 35899
Center Phone: (205) 890-6391
Fax: (205) 890-6376

Re : Bulk Asbestos
Analysis EPA
600/R-93/116
AIHA: 023601

Receipt Date: 09/11/97

Sample Date : 09/15/97

Client: Reisz Engineering
Building 32 Suite, A2
3322 Memorial Parkway South
Huntsville, AL 35801

Microscopist: Tom Carrington

Sample/Description	Asbestos Fibers (%)				Non-Asbestos Material (%)				
	Chry	Amos	Croc	Othr	Cell	Fbgl	MW	CaSO4	Othr
B805-01/ paper like air vent insulation	35				30				35
B806-01/ paper like air vent insulation	60				35				5
B807-01/ paper like air ent insulation	65				30				5
B808-01/ paper like air vent insulation	50				40				10
B814-01/ paper like air vent insulation	55				35				10

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

MW = Mineral Wool
Ca SO4 = Calcium Sulfate
Fbgl = Fiberglass

APPENDIX B

ASBESTOS CONTAINING MATERIALS

**SUMMARY TABLE
ASBESTOS CONTAINING MATERIALS
MISCELLANEOUS CLASSROOM
BUILDINGS 801-814**

FORT McCLELLAN, ALABAMA

SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)
Multiple Samples	White air-cell type insulation	All buildings excluding B3211, roof vent	12 inch pipe 2ft/bldg 28 linear ft. total
PACM	12x12 floor tile & Mastic	All buildings excluding B808	24,000 sq. ft. total
PACM	Transite siding	Exterior of all buildings	22,880 sq.ft. per bldg 320,320 sq.ft. total

APPENDIX C

SAMPLE & ACM LOCATIONS PLANS

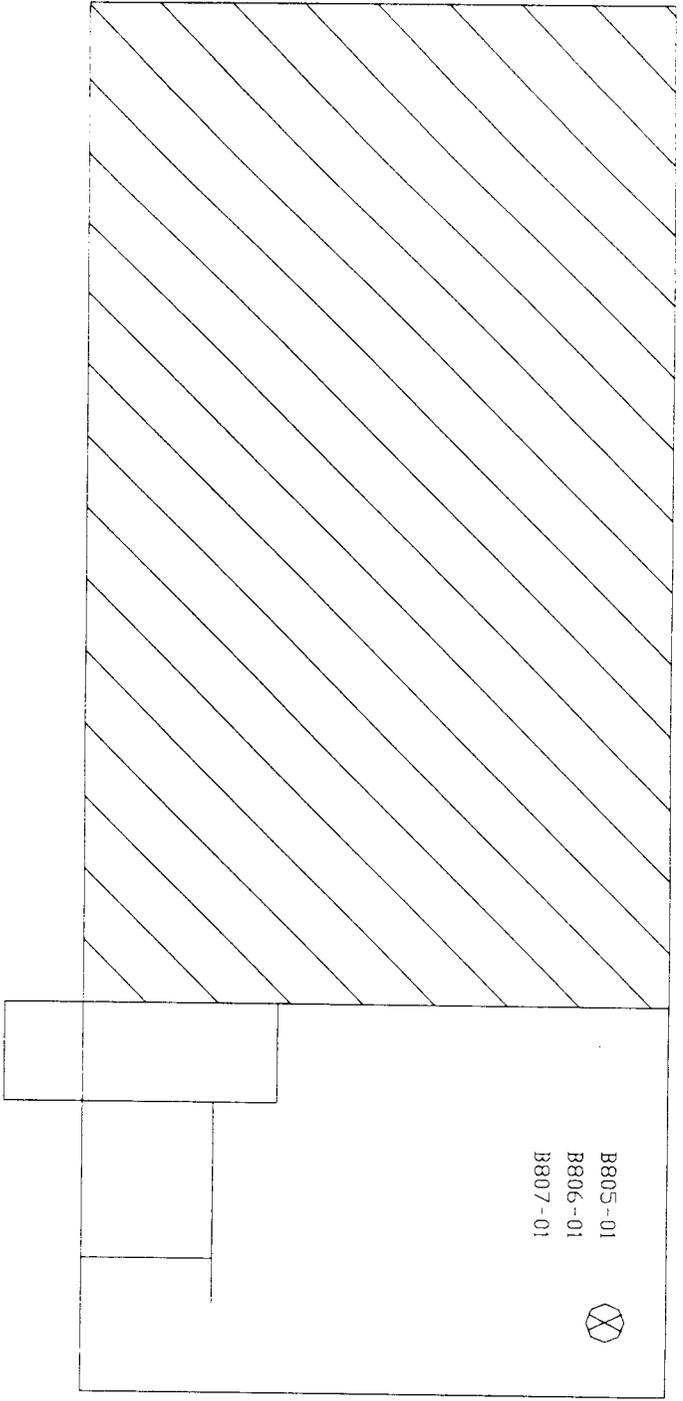
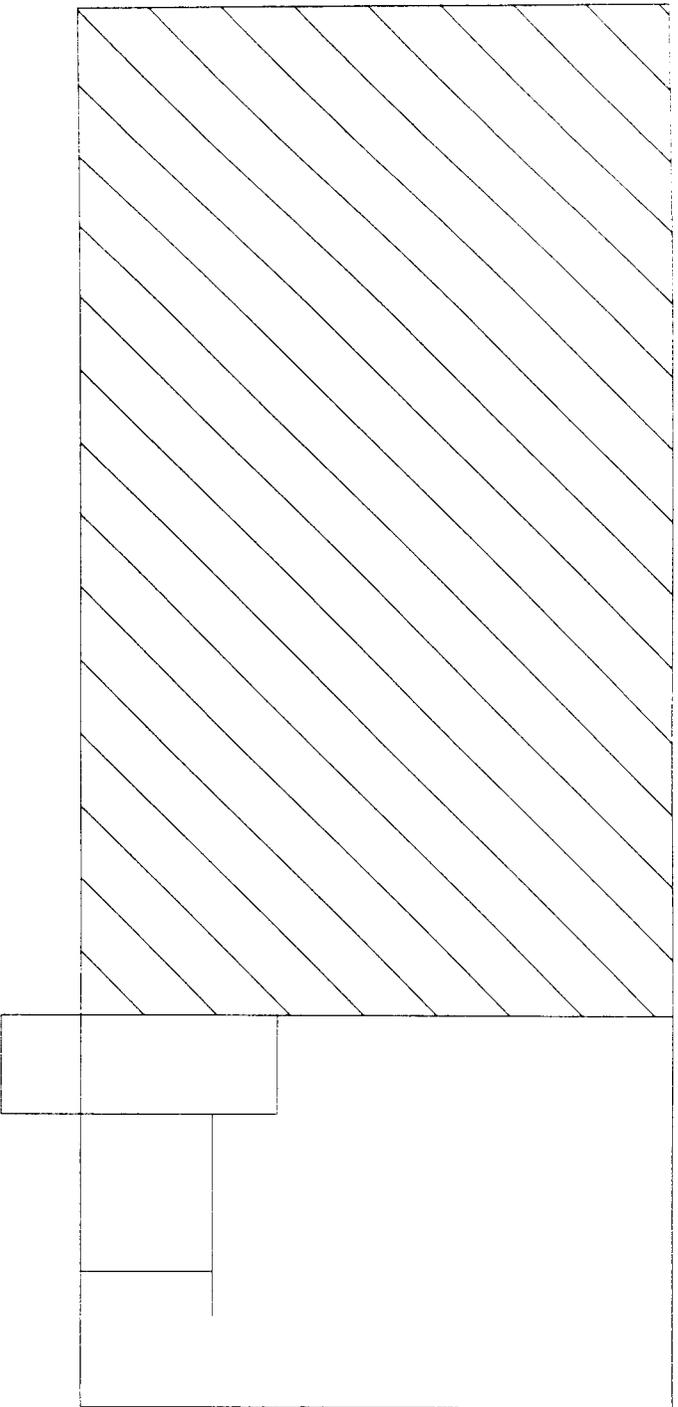


FIG. 1

LAYOUT PLAN

BUIL. DING. 802, 805-807	FIG. 1 LAYOUT	ASBESTOS SURVY DAB102-96-D-0005 FM705	REISZ ENGINEERING
-----------------------------	---------------	---	--------------------------



 12 x 12 Floor Tile

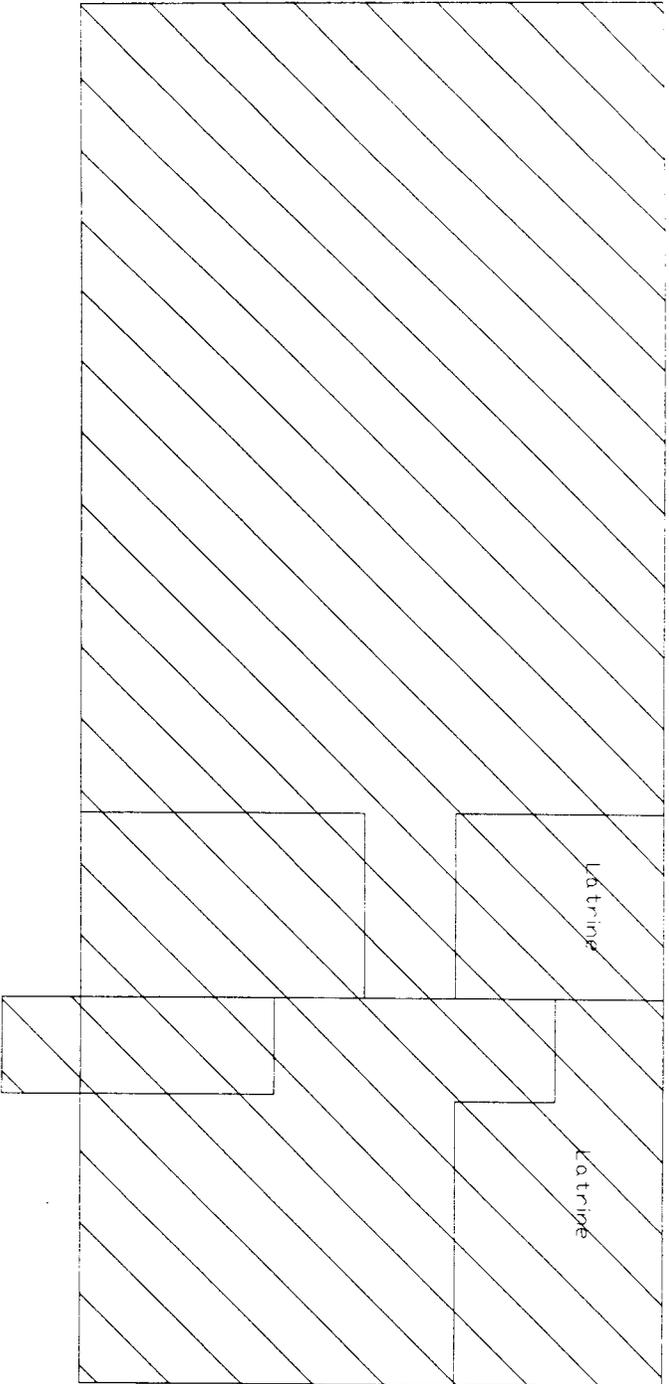
FIG. 1 LAYOUT PLAN

BUILDING: 803

FIG. 1 LAYOUT

ASBESTOS SURVEY
DAB102-96-D-0005
FM/05

REISZ ENGINEERING



 9 x 9 Floor Tile

FIG. 1 LAYOUT PLAN

BUILDING: 804,
809,811,812,813

FIG. 1 LAYOUT

ASBESTOS SURVEY
DABT02-96-D-0005
FM705

REISZ ENGINEERING

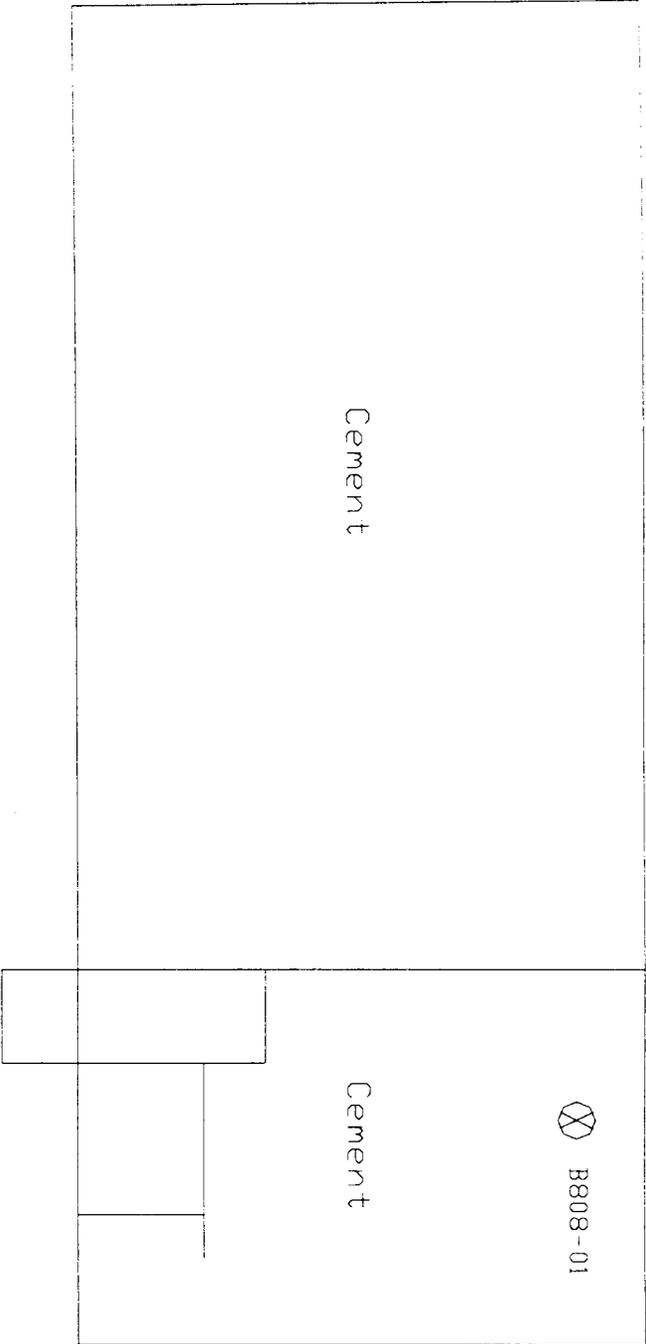


FIG. 1

LAYOUT PLAN

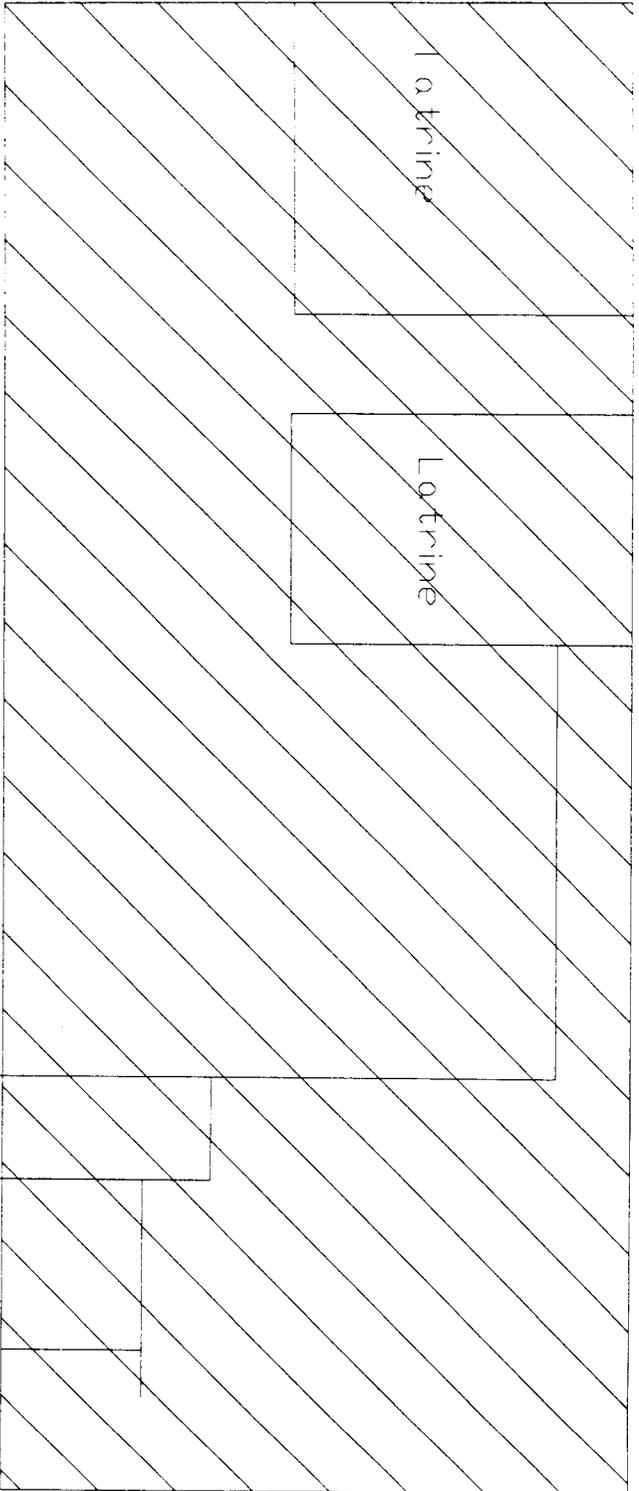
⊗ Positive Sample Locations
 No Floor Tile

BUILDING 808

FIG. 1 LAYOUT

ASBESTOS SURVEY
 DAB102 96-D-0005
 FM/05

REISZ ENGINEERING



12 x 12 Floor Tile

FIG. 1

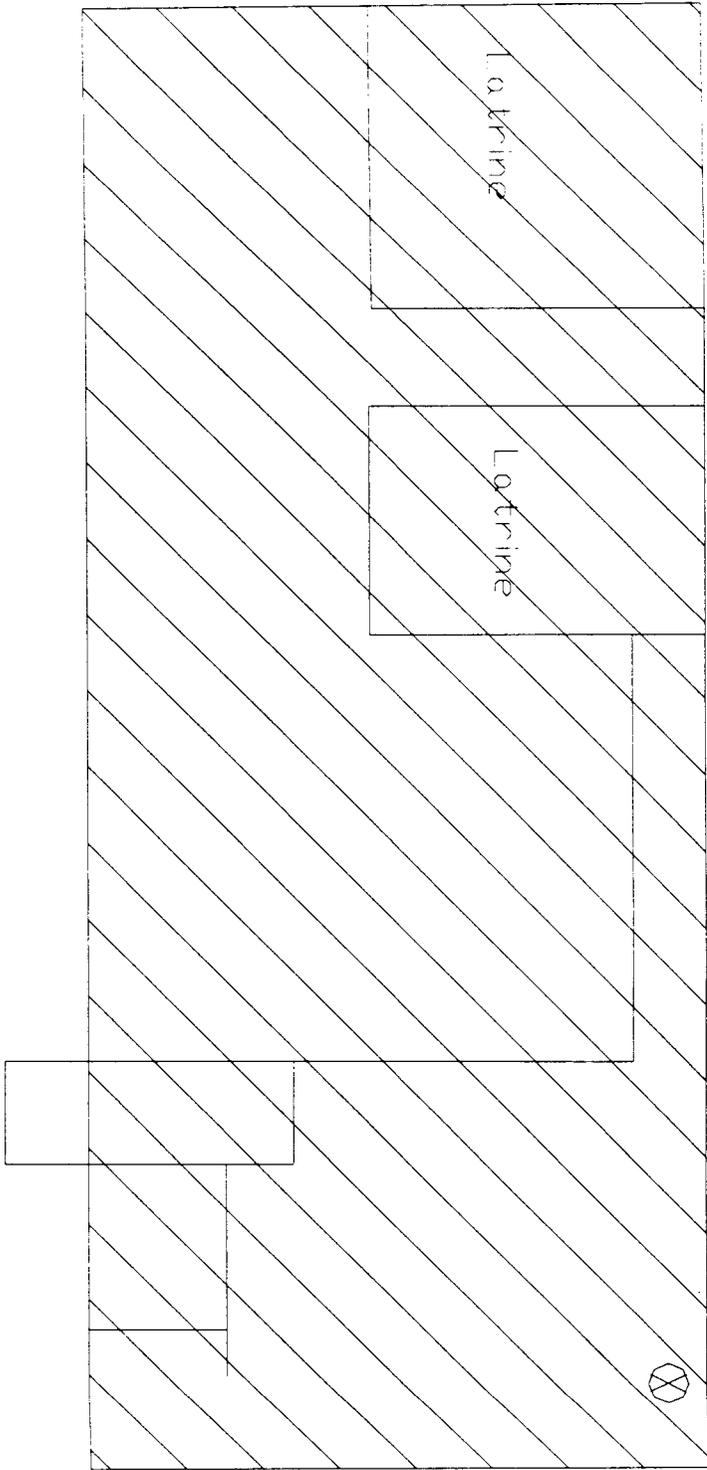
LAYOUT PLAN

BUIH DING, 810

FIG. 1 LAYOUT

ASBL STATUS SURVEY
 DAB102-96-D-0005
 FM/05

REISZ ENGINEERING



B814-01

-  12 x 12 Floor Tile
-  Positive Sample Locations

FIG. 1 LAYOUT PLAN

BUILDING: 814	FIG. 1 LAYOUT	ASBESTOS SURVEY DAB102-96-D-0005 FM/05	REISZ ENGINEERING
---------------	---------------	--	--------------------------

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

BUILDING(S): 829-834, 837-844, 853-859, 874 and 875

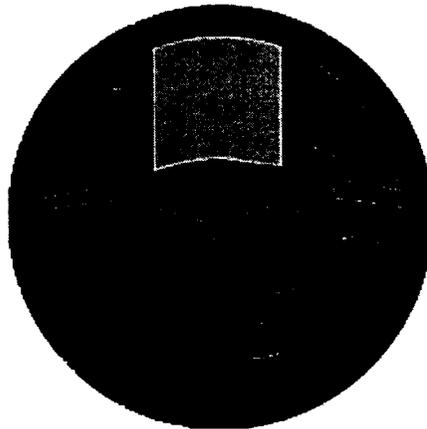
**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS OFFICE/CLASSROOM
BUILDINGS (800s)**

CONTAINING NON-FRIABLE PACM

FORT McCLELLAN, ALABAMA

**U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005**

Fort McClellan



Staying Beautiful

Conducted and Prepared by:

**REISZ ENGINEERING
P.O. BOX 1349**

HUNTSVILLE, ALABAMA 35807
ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS OFFICE/CLASSROOM
BUILDINGS (800s)

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Prepared For:

DIRECTORATE OF ENVIRONMENT
FORT McCLELLAN

APPROVED FOR TRANSMITTAL BY
JAMES R. WRIGHT

Conducted and Prepared by:

REISZ ENGINEERING

June, 1998

TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE OF SERVICES.....	1
2.0	REGULATORY STANDARDS.....	2
3.0	PROJECT CHARACTERISTICS.....	3
4.0	SURVEY METHODOLOGY.....	4
5.0	LABORATORY ANALYSIS	5
6.0	SUSPECT MATERIALS.....	5
7.0	ASBESTOS INSPECTION AND SAMPLING RESULTS.....	6
	FRIABLE ACM.....	7
	NON FRIABLE ACM.....	7
	INACCESSIBLE MATERIAL.....	8
8.0	CONCLUSIONS AND RECOMMENDATIONS.....	8
9.0	ASSUMPTIONS AND LIMITATIONS.....	8

APPENDICES

APPENDIX A - SUMMARY TABLE OF ACM AND COST ESTIMATES
APPENDIX B - SAMPLE & ACM LOCATIONS PLANS
APPENDIX C - LIST OF BUILDINGS

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at miscellaneous 800 series buildings located at Fort McClellan, Alabama. (See Appendix C for a complete list of buildings included in this document). Pursuant to the Contract, REISZ Engineering was required to provide the survey in accordance with AHERA (40 CFR Part 763 Subpart E) protocol. AHERA is applicable to interior building products installed prior to October 12, 1988. AHERA does not apply to the exterior of buildings and does not apply to non-building materials (e.g. cabinetry, special equipment and chalkboards). REISZ Engineering has included as part of the survey those readily accessible, suspect friable interior non-building materials (e.g. vibration dampers); but has not included certain items (e. g. interior linings of equipment and special supplies, some non-friable materials such as transite, etc.). Exterior building materials were not sampled as part of this contract unless those materials were suspected to be of friable nature and continuous with indoor materials (e.g. piping insulation). Specifically, REISZ Engineering was contracted to provide the following services:

1. Identify and collect samples of accessible suspect friable building materials within the referenced project area.
2. Perform a visual inspection to provide information on material condition, material quantities, material locations, and building use.
3. Analysis of all bulk samples for asbestos content utilizing Polarized Light Microscopy and Dispersion Staining Techniques performed in accordance with EPA Bulk Analysis Method
EPA 600/M4-82-020.
4. Make recommendations as to response actions pertaining to those materials identified as asbestos containing.

5. Compilation of a final report (contained herein) which details all sample results, identifies sample locations, and provides recommendations based upon the results.
6. Preparation of a Building specific Operations & Maintenance (O&M) Plan for buildings containing friable asbestos materials.

2.0 REGULATORY STANDARDS

The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires the Owner or Operator of a facility to determine the presence or non-presence of asbestos containing materials prior to conducting renovation or demolition activities. The NESHAP Standard for asbestos (40CFR Part 61 Sub-part M) requires the use of engineered control procedures for removal of asbestos materials that are or will become friable during renovation or demolition. The removal must occur before renovation or demolition activities impact those materials.

On October 11, 1994 an OSHA promulgated regulation (29 CFR Part 1926.1101) became effective. This Standard is related to asbestos exposure in construction, renovation and building maintenance work places. Building owners are required, pursuant to the Standard, to notify employees, tenants and prospective employers (contractors) of the presence, location and quantities of ACM in the building. Implementation of the "communication of hazards" provisions in the Standard were originally to be not later than April 10, 1995 but was extended to July 10, 1995 and is now in effect. The OSHA Standard does not apply to work performed by employees of State agencies in states without state run OSHA programs (e.g. Alabama).

In October 1986, the Asbestos Hazard Emergency Response Act (AHERA) was signed into law. Included in this act are provisions directing E.P.A. to establish rules and regulations (40CFR Part 763) addressing asbestos-containing materials in schools. Specifically, the E.P.A.

was directed to address the issues of: 1) identifying, 2) evaluating, and 3) controlling asbestos containing materials (ACM) in schools. AHERA requires schools to perform building inspections and to prepare management plans for ACM control. Although the AHERA regulation does not specifically apply to this project it is generally accepted as the industry standard and was cited by Fort McClellan in the Asbestos Survey Request as the basis of survey methodology. The AHERA inspections must be conducted using specific guidelines that include a minimum number of samples per material type. This survey was conducted in accordance with those guidelines per the Contract requirements.

On November 28, 1992 a law became effective which extended the EPA's Model Accreditation Plan to all public and commercial buildings. Currently the rule extends the accreditation requirements of persons performing asbestos work (inspectors, project designers, abatement supervisors, and workers) in public and commercial buildings, but does not extend the other aspects of AHERA. This project was conducted utilizing EPA accredited personnel.

3.0 PROJECT CHARACTERISTICS

During the month of September 1997, Reisz Engineering accredited Asbestos Inspectors performed inspections of these buildings for the purpose of identifying building materials suspected to contain asbestos. All buildings referenced in this survey contain only non-friable ACM. None of the buildings within this survey were found to have any friable asbestos containing materials. Based on information provided by Fort McClellan representatives the buildings were originally constructed in 1940 and 1941. Various renovations may have taken place since the building was originally constructed but no building plans have been found which can be used to verify specific dates and activities. The dominant flooring condition existing in the buildings are 12x12 or 9x9 vinyl floor tile and cement.

4.0 SURVEY METHODOLOGY

The buildings were visually inspected for the presence of material suspected to contain asbestos. Those suspect materials were identified, bulk samples were obtained and placed into individual vials for transportation to the University of Alabama in Huntsville. General areas for sample locations were selected on a random basis with a preference for exact positioning at existing damage. Each sample location is represented by a number on the plans in Appendix C. Those numbers directly correspond with the numbers listed elsewhere in this report.

If any additional suspect materials are identified during renovation or demolition they should be analyzed for asbestos content. Materials visibly identifiable as non-asbestos (fiberglass, foam rubber, wood, etc.) were not sampled. Materials installed after October 12, 1988 (as reported by Fort McClellan staff) were not sampled.

Hazard Assessment Factors

Each time suspect ACM was sampled, it was classified as either a friable or a non-friable material. Friable material may be crumbled, pulverized, or reduced to powder by hand pressure. Friable ACM is more hazardous than non-friable ACM because friable material can release airborne asbestos fibers more easily. In assessing the fiber release potential, the current condition of all ACM identified was noted. Evidence of deterioration, physical damage, water damage, erosion of ACM due to its' proximity to an air plenum, high vibration, or contact potential was also noted.

5.0 LABORATORY ANALYSIS METHODOLOGY

All bulk samples were analyzed at UAH by polarized light microscopy utilizing dispersion staining or Becke line techniques, in accordance with the EPA's "Interim Method for Determination of Asbestos in Bulk Insulation Samples" (EPA 600/m4-82-020). Quality control samples were taken as duplicates at a rate of 1 to 10 and were sent to a second accredited laboratory. This type of analysis requires the microscopist to take a portion of the bulk sample and treat it with an oil of specific refractive index. This prepared slide is then subjected to a variety of optical tests.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation. Even though this is an estimation, any material that contains greater than one percent of any type of fibrous asbestos is considered ACM and must be handled according to OSHA and EPA regulations if disturbed during maintenance, renovation, demolition or removal.

The UAH laboratory participates in the American Industrial Hygiene Association (AIHA) quality assurance program for polarized light microscopy and is accredited by the AIHA through their voluntary program.

6.0 SUSPECT MATERIALS

The following is a general list of building materials that were suspected to contain asbestos. A complete and more detailed description of these materials can be found in Appendix B.

Surfacing

- None

Thermal System Insulation

- None

Miscellaneous Material

- 12x12 vinyl floor tile in various buildings
- 9x9 vinyl floor tile in various buildings
- Vinyl flooring mastics
- Transite siding on exterior of various buildings

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

No bulk samples were collected and analyzed.

FRIABLE ACM

None

NON FRIABLE ACM

Four types of non-friable PACM were found in various buildings. 1) transite siding is located on the exterior of various buildings, 2) 12x12 inch floor tile, 3) 9x9 floor tile, and 4) mastics associated vinyl floor tile.

- 1) Presumed asbestos containing transite siding can be found on the exterior walls of the following buildings:
✓B830 B831✓ B856✓ B857 B874 B875

- 2) Presumed asbestos containing 12x12 inch floor tile and mastic is found in the following buildings:
B832✓ B833✓ B834✓ B837✓ B838 B839 B840 B841 B852 B855 B856 B874

- 3) Presumed asbestos containing 9x9 inch floor tile and mastic is found in the following buildings:
B829 B830 B831 B842 B843 B844 B853 B854 B857 B858 B859

Building 874 is bare concrete.

INACCESSIBLE MATERIAL,

Insulation and spray-on compounds associated with inaccessible crawl-space and tunnel areas may should be assumed as "like" materials corresponding to materials sampled within the building.

8.0 CONCLUSIONS AND RECOMMENDATIONS

None of the materials identified within this report are damaged to the extent that significant asbestos fiber release may be likely under normal conditions. The asbestos containing materials may be subject to routine maintenance activities that could involve significant disturbance. Proper management of the material in-place may be acceptable assuming the proper precautions are taken to eliminate exposure of personnel to any airborne asbestos. Reisz Engineering has not written a Building Operations & Maintenance Plan for these buildings. Refer to Appendix B for Cost Estimates related to the abatement of the included ACM.

9.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions and recommendations expressed in this report are based only on conditions that were observed during the inspections of these buildings during September, 1997. Reisz Engineering and this report make no representation or assumptions as to past conditions or future occurrences.

Our inspection was generally non-destructive in nature. Any conditions or materials that were not visible on the surface were not inspected and may differ from those observed. It was not within the scope of this investigation to remove surface materials to investigate portions of the structure or materials that may lie beneath the surface. Our selection of sample locations and frequency is based upon our observations and the assumption that all materials in the same area are homogeneous.

This report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos abatement contractors in locating ACM. Under no circumstances is this report to be utilized as a bidding document or as a project specification document.

APPENDIX A

SUMMARY TABLE OF ACM AND COST ESTIMATES

**SUMMARY TABLE
 ASBESTOS CONTAINING MATERIALS
 MISCELLANEOUS OFFICE/CLASSROOM
 BUILDINGS (800s)**

FORT McCLELLAN, ALABAMA

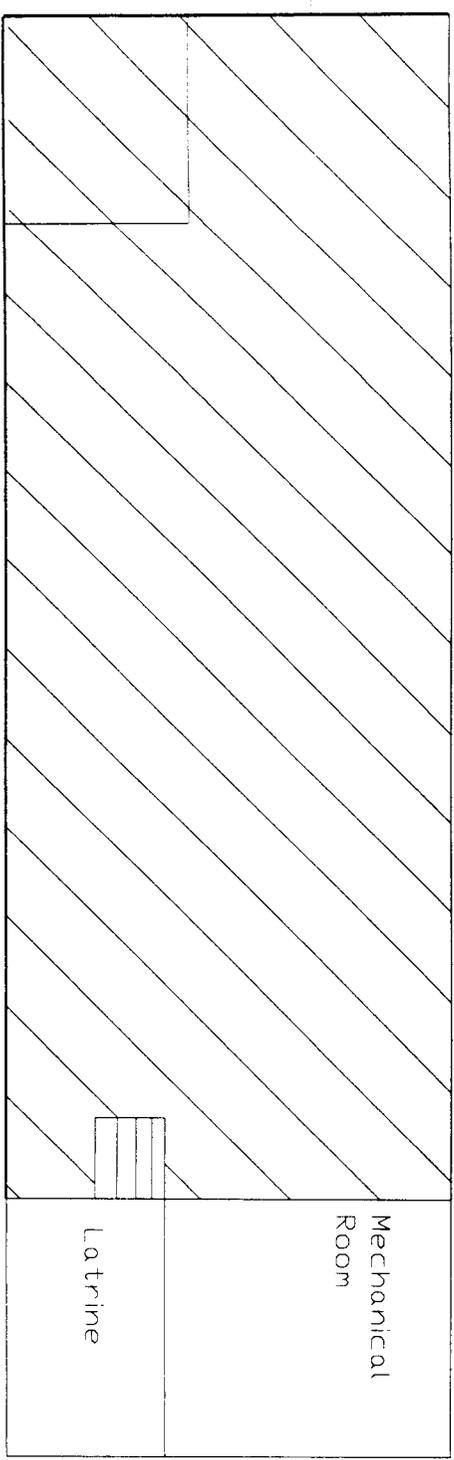
SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)	Estimated Abatement Cost
PACM (1)	Transite Siding	See (1) below	8340 sq.ft. per/bldg 33,360 sq.ft. total	\$57,540
PACM (2)	12x12 floor tile & mastic	See (2) below	36,000 sq.ft. total	\$82,800
PACM (3)	9x9 floor tile & mastic	See (3) below	28,000 sq.ft. total	\$52,900

- | | | |
|---|---|---|
| 1) B830
B831
B856
B857
B874
B875 | 2) B832
B833
B834
B837-841
B852
B855
B856
B874 | 3) B829-831
B842-844
B853
B854
B857
B859 |
|---|---|---|

APPENDIX B

ACM LOCATION PLANS

First Floor



Second Floor

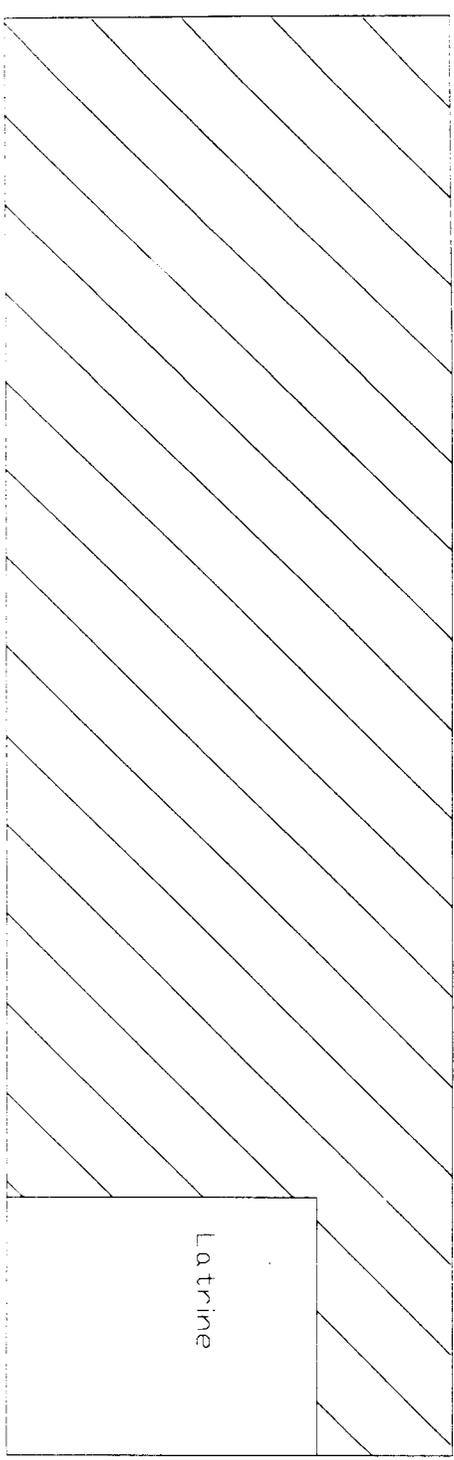


FIG. 1

LAYOUT PLAN



9 x 9 Floor Tile

BUILDINGS: 829,
830, 831, 842,
843, 844

FIG. 1 LAYOUT

ASBESTOS SURVEY
DAB102-96-D-0005
FM/05

REISZ ENGINEERING

First Floor

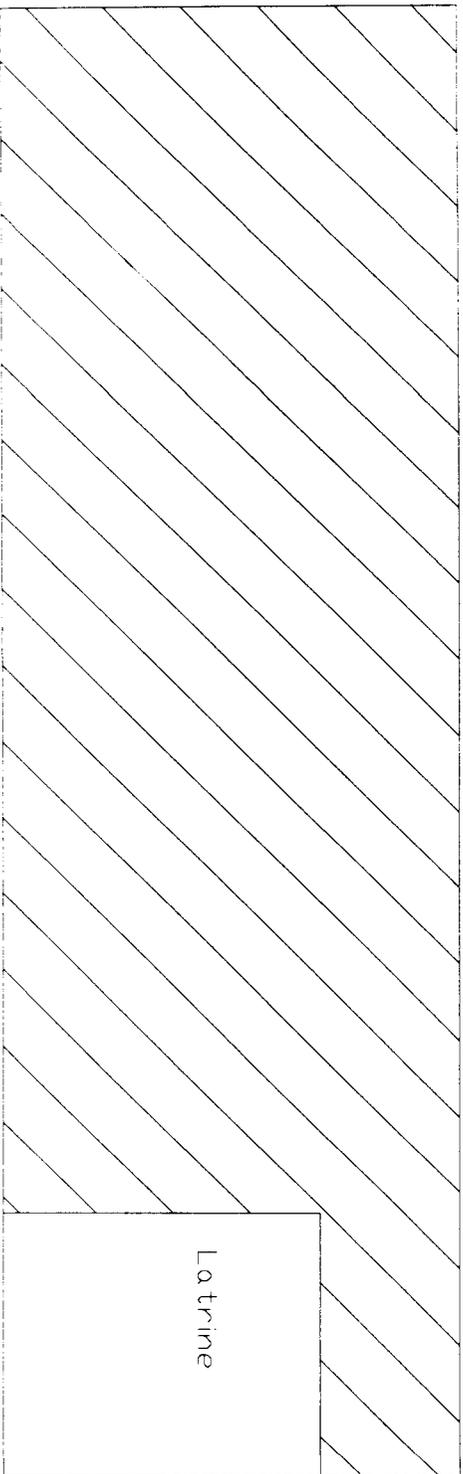
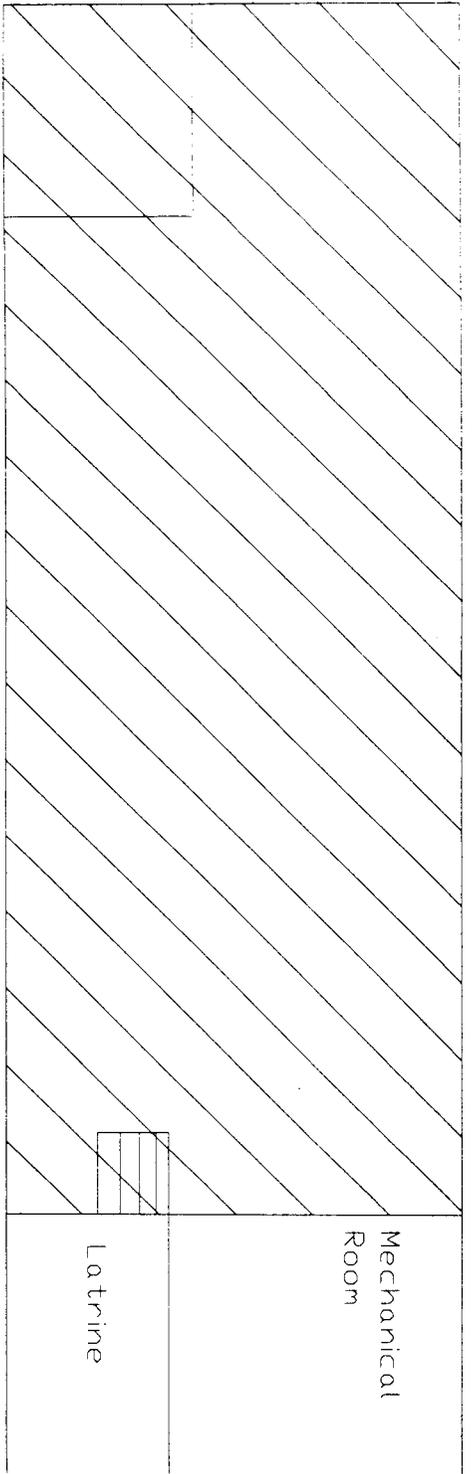


FIG. 1

Second Floor
LAYOUT PLAN



12 x 12 Floor Tile

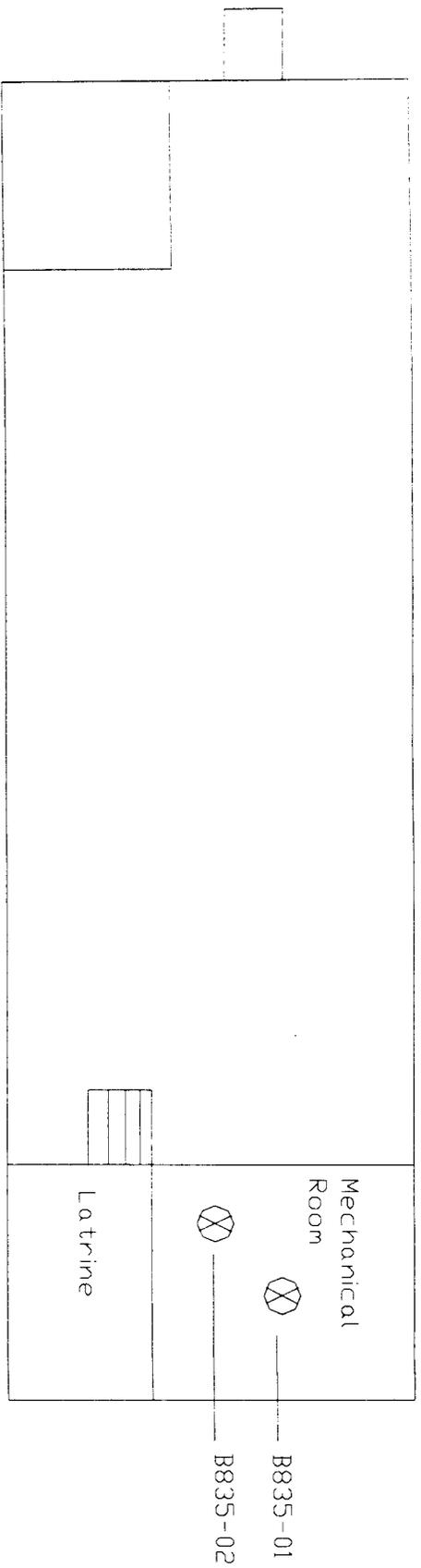
BUILDING, 832,
833,834,837-841

FIG. 1 LAYOUT

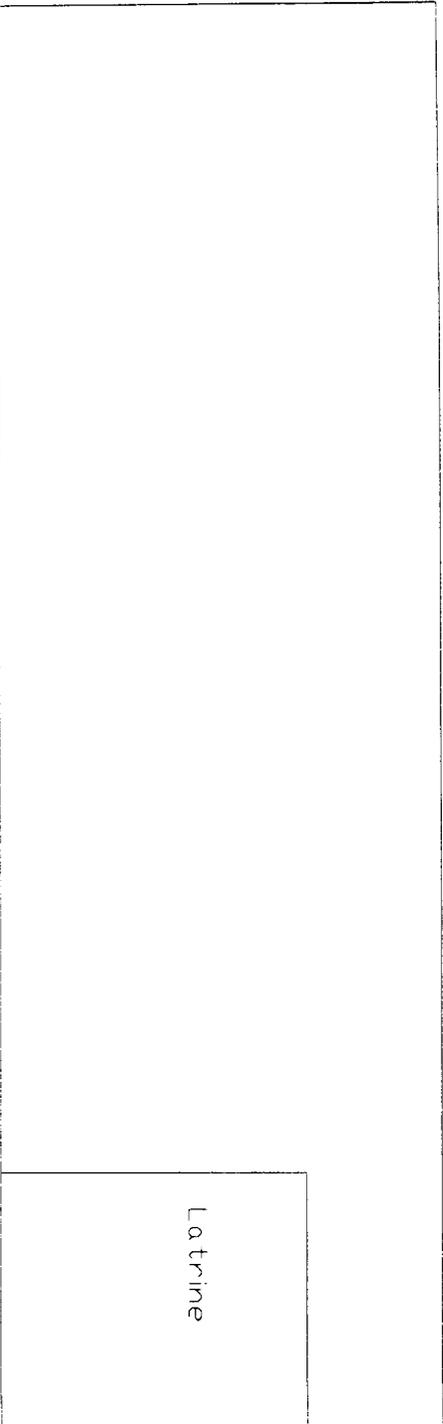
ASBESTOS SURVEY
DAB102-96-D-0005
FM705

REISZ ENGINEERING

First Floor



Second Floor



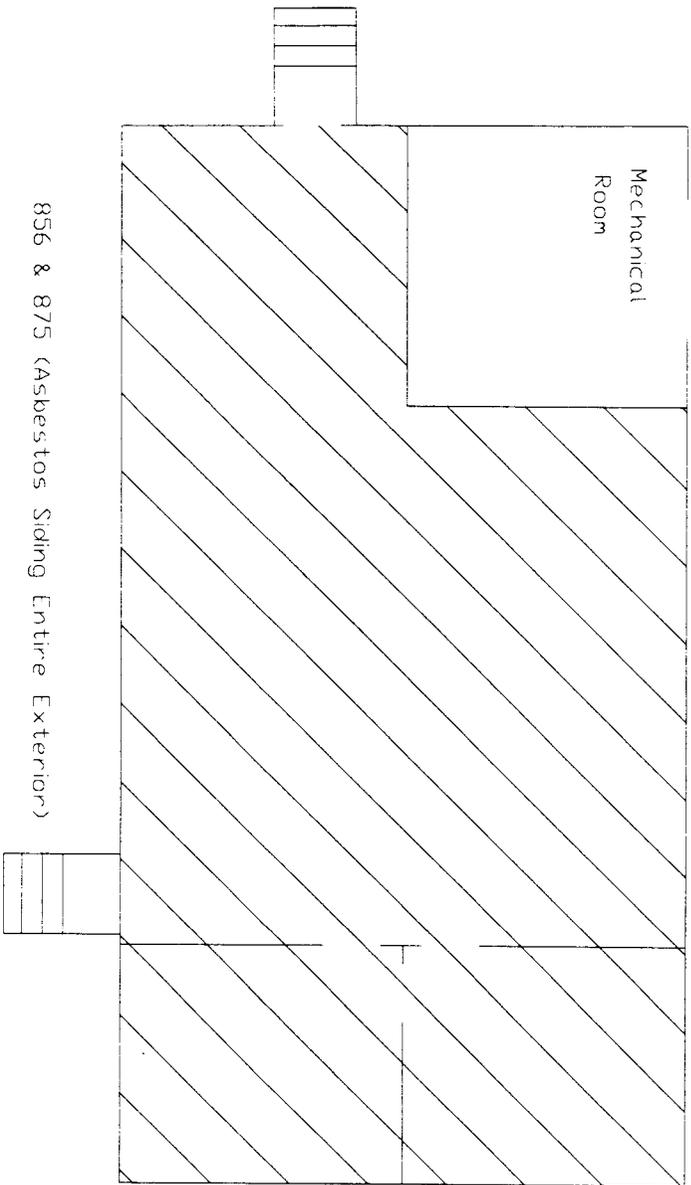
Positive Sample Locations

BUILDING 835

FIG. 1 LAYOUT

ASBESTOS SURVEY
DAB102-96-D-0005
FM705

REISZ ENGINEERING

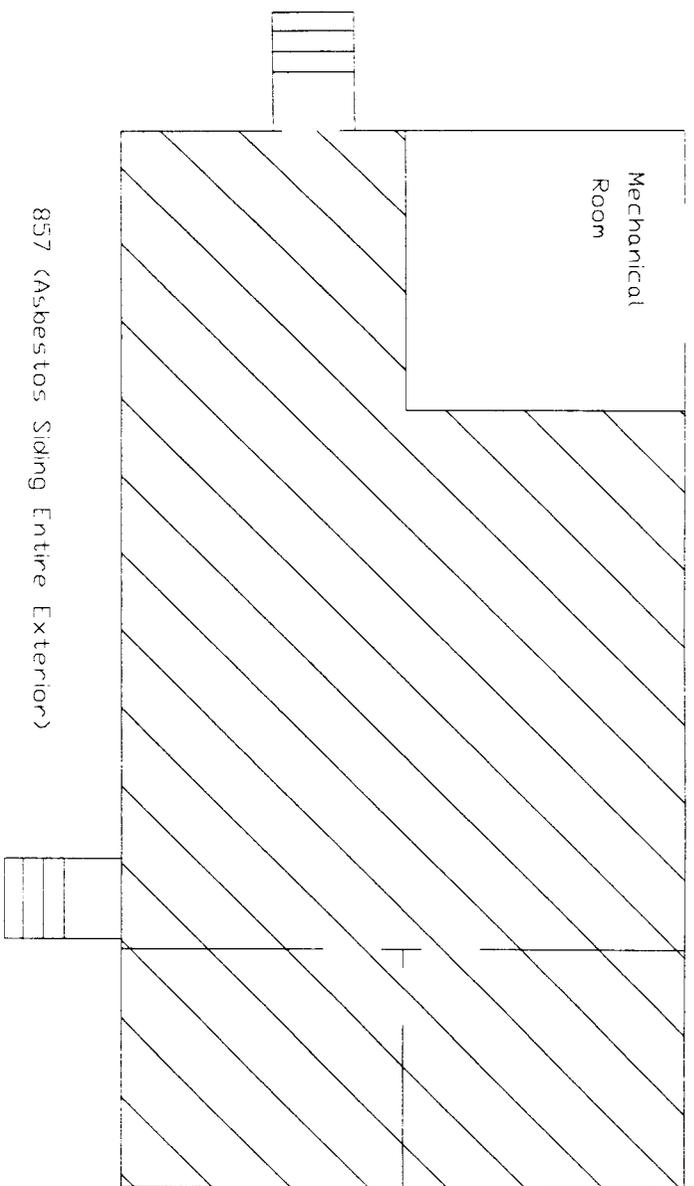


856 & 875 (Asbestos Siding Entire Exterior)

 12 x 12 Floor Tile

FIG. 1 LAYOUT PLAN

BUILDING: 852, 855,856,875	FIG. 1 LAYOUT	ASBESTOS SURVEY DAB102-96-D-0005 FM705	REISZ ENGINEERING
-------------------------------	---------------	--	--------------------------



 9 x 9 Floor Tile

FIG. 1 LAYOUT PLAN

BUILDING: 853,
854, 857, 858, 859

FIG. 1 LAYOUT

ASBESTOS SURVEY
DABT02-96 D-0005
FM/05

REISZ ENGINEERING

APPENDIX C

LIST OF BUILDINGS

829

830

831

832

833

834

837

838

839

840

841

842

843

844

852

853

854

855

856

857

874

875

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

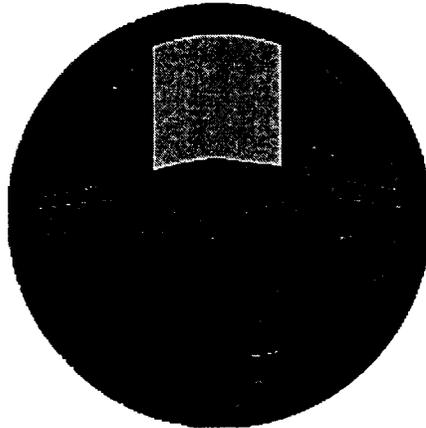
BUILDING: 893

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
CHAPEL
BUILDING 893**

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Fort McClellan



Staying Beautiful

Conducted and Prepared by:

REISZ ENGINEERING
P.O. BOX 1349

HUNTSVILLE, ALABAMA 35807
ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
CHAPEL
BUILDING 893

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Prepared For:

DIRECTORATE OF ENVIRONMENT
FORT McCLELLAN

APPROVED FOR TRANSMITTAL BY
JAMES R. WRIGHT

Conducted and Prepared by:

REISZ ENGINEERING

May, 1998

TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE OF SERVICES.....	1
2.0	REGULATORY STANDARDS.....	2
3.0	PROJECT CHARACTERISTICS.....	3
4.0	SURVEY METHODOLOGY.....	4
5.0	LABORATORY ANALYSIS	5
6.0	SUSPECT MATERIALS.....	5
7.0	ASBESTOS INSPECTION AND SAMPLING RESULTS.....	6
	FRIABLE ACM.....	7
	NON FRIABLE ACM.....	7
	INACCESSIBLE MATERIAL.....	8
8.0	CONCLUSIONS AND RECOMMENDATIONS.....	8
9.0	ASSUMPTIONS AND LIMITATIONS.....	8

APPENDICES

APPENDIX A - REPORT OF LABORATORY ANALYSIS
APPENDIX B - SUMMARY TABLE OF ACM
APPENDIX C - SAMPLE LOCATIONS PLANS
APPENDIX D - SELECTED ACM LOCATIONS PLANS
APPENDIX E - SELECTED ACM PHOTOGRAPHS (None)

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Building 893 located at Fort McClellan, Alabama. Pursuant to the Contract, REISZ Engineering was required to provide the survey in accordance with AHERA (40 CFR Part 763 Subpart E) protocol. AHERA is applicable to interior building products installed prior to October 12, 1988. AHERA does not apply to the exterior of buildings and does not apply to non-building materials (e.g. cabinetry, special equipment and chalkboards). REISZ Engineering has included as part of the survey those readily accessible, suspect friable interior non-building materials (e.g. vibration dampers); but has not included certain items (e. g. interior linings of equipment and special supplies, some non-friable materials such as transite, etc.). Exterior building materials were not sampled as part of this contract unless those materials were suspected to be of friable nature and continuous with indoor materials (e.g. piping insulation). Specifically, REISZ Engineering was contracted to provide the following services:

1. Identify and collect samples of accessible suspect friable building materials within the referenced project area.
2. Perform a visual inspection to provide information on material condition, material quantities, material locations, and building use.
3. Analysis of all bulk samples for asbestos content utilizing Polarized Light Microscopy and Dispersion Staining Techniques performed in accordance with EPA Bulk Analysis Method
EPA 600/M4-82-020.
4. Make recommendations as to response actions pertaining to those materials identified as asbestos containing.

5. Compilation of a final report (contained herein) which details all sample results, identifies sample locations, and provides recommendations based upon the results.
6. Preparation of a Building specific Operations & Maintenance (O&M) Plan for buildings containing friable asbestos materials.

2.0 REGULATORY STANDARDS

The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires the Owner or Operator of a facility to determine the presence or non-presence of asbestos containing materials prior to conducting renovation or demolition activities. The NESHAP Standard for asbestos (40CFR Part 61 Sub-part M) requires the use of engineered control procedures for removal of asbestos materials that are or will become friable during renovation or demolition. The removal must occur before renovation or demolition activities impact those materials.

On October 11, 1994 an OSHA promulgated regulation (29 CFR Part 1926.1101) became effective. This Standard is related to asbestos exposure in construction, renovation and building maintenance work places. Building owners are required, pursuant to the Standard, to notify employees, tenants and prospective employers (contractors) of the presence, location and quantities of ACM in the building. Implementation of the "communication of hazards" provisions in the Standard were originally to be not later than April 10, 1995 but was extended to July 10, 1995 and is now in effect. The OSHA Standard does not apply to work performed by employees of State agencies in states without state run OSHA programs (e.g. Alabama).

In October 1986, the Asbestos Hazard Emergency Response Act (AHERA) was signed into law. Included in this act are provisions directing E.P.A. to establish rules and regulations

(40CFR Part 763) addressing asbestos-containing materials in schools. Specifically, the E.P.A. was directed to address the issues of: 1) identifying, 2) evaluating, and 3) controlling asbestos containing materials (ACM) in schools. AHERA requires schools to perform building inspections and to prepare management plans for ACM control. Although the AHERA regulation does not specifically apply to this project it is generally accepted as the industry standard and was cited by Fort McClellan in the Asbestos Survey Request as the basis of survey methodology. The AHERA inspections must be conducted using specific guidelines that include a minimum number of samples per material type. This survey was conducted in accordance with those guidelines per the Contract requirements.

On November 28, 1992 a law became effective which extended the EPA's Model Accreditation Plan to all public and commercial buildings. Currently the rule extends the accreditation requirements of persons performing asbestos work (inspectors, project designers, abatement supervisors, and workers) in public and commercial buildings, but does not extend the other aspects of AHERA. This project was conducted utilizing EPA accredited personnel.

3.0 PROJECT CHARACTERISTICS

During the month of September 1997, Reisz Engineering accredited Asbestos Inspectors performed inspections of Building 893 for the purpose of identifying building materials suspected to contain asbestos. Building 893 is a single story chapel/religious facility containing approximately 3,701 sq. ft. of floor space. Based on information provided by Fort McClellan representatives the building was originally constructed in 1936. Various renovations have no doubt taken place since the building was originally constructed but no building plans have been found which can be used to verify specific dates and activities.

The two dominant flooring conditions existing in the facility are 1) wood, 2) 9x9 vinyl floor tile, and 3) linoleum. Also, carpet has been installed over vinyl tiles in the entrance area.

4.0 SURVEY METHODOLOGY

The building was visually inspected for the presence of material suspected to contain asbestos. Those suspect materials were identified, bulk samples were obtained and placed into individual vials for transportation to the University of Alabama in Huntsville. General areas for sample locations were selected on a random basis with a preference for exact positioning at existing damage. Each sample location is represented by a number on the plans in Appendix C. Those numbers directly correspond with the numbers listed elsewhere in this report.

If any additional suspect materials are identified during renovation or demolition they should be analyzed for asbestos content. Materials visibly identifiable as non-asbestos (fiberglass, foam rubber, wood, etc.) were not sampled. Materials installed after October 12, 1988 (as reported by Fort McClellan staff) were not sampled.

Hazard Assessment Factors

Each time suspect ACM was sampled, it was classified as either a friable or a non-friable material. Friable material may be crumbled, pulverized, or reduced to powder by hand pressure. Friable ACM is more hazardous than non-friable ACM because friable material can release airborne asbestos fibers more easily. In assessing the fiber release potential, the current condition of all ACM identified was noted. Evidence of deterioration, physical damage, water

damage, erosion of ACM due to its' proximity to an air plenum, high vibration, or contact potential was also noted.

5.0 LABORATORY ANALYSIS METHODOLOGY

All bulk samples were analyzed at UAH by polarized light microscopy utilizing dispersion staining or Becke line techniques, in accordance with the EPA's "Interim Method for Determination of Asbestos in Bulk Insulation Samples" (EPA 600/m4-82-020). Quality control samples were taken as duplicates at a rate of 1 to 10 and were sent to a second accredited laboratory. This type of analysis requires the microscopist to take a portion of the bulk sample and treat it with an oil of specific refractive index. This prepared slide is then subjected to a variety of optical tests.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation. Even though this is an estimation, any material that contains greater than one percent of any type of fibrous asbestos is considered ACM and must be handled according to OSHA and EPA regulations if disturbed during maintenance, renovation, demolition or removal.

The UAH laboratory participates in the American Industrial Hygiene Association (AIHA) quality assurance program for polarized light microscopy and is accredited by the AIHA through their voluntary program.

6.0 SUSPECT MATERIALS

The following is a general list of building materials that were suspected to contain asbestos. A complete and more detailed description of these substances can be found in Appendix B.

Surfacing

- None

Thermal System Insulation

- Paper-like pipe insulation (straight-runs)
- Cementitious hand-formed pipe fitting insulation

Miscellaneous Material

- Vinyl floor tiles 9X9
- Vinyl flooring mastics

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 3 bulk samples were collected and analyzed. Details of all laboratory results can be found in Appendix A. A listing of all suspect materials, their corresponding sample numbers, general location, and approximate quantity are indicated in Appendix B. A narrative description of all "Friable Asbestos Containing Material" and "Non-Friable ACM" identified during the survey, is given below.

FRIABLE ACM

Laboratory analysis determined asbestos is present in two types of friable materials: 1) cementitious hand-formed pipe fitting insulation in mechanical room, 2) a brown paper-like insulation on a 3 inch water pipes located in the mechanical room and possibly other areas of the building

- 1) A friable, hand-formed, asbestos containing insulation compound is applied to the fittings of 8 inch pipes located in the mechanical room of the building. This material was found to be in generally Good condition.
- 2) A brown paper-like asbestos containing friable insulation compound is found on the straight runs of pipes associated with the building water. This material may be present on pipes running along the ceiling of the structure. Access could not be made to the pipes. The insulation is found to be in generally Good condition.

NON FRIABLE ACM

Two types of (Assumed) non-friable ACM's were found in the building: 1) vinyl floor tile, 9x9, and 2) mastics associated with vinyl floor tile.

- 1) Assumed asbestos containing vinyl floor tiles in 9x9 inch size are present in various locations scattered throughout the of the building with a large amount covered by carpet. Generally, the tiles were found to be in Good condition.
- 2) Black, asbestos containing mastics are present below vinyl floor tiles within the building.

INACCESSIBLE MATERIAL,

Insulation and spray-on compounds associated with inaccessible crawl-space and tunnel areas may should be assumed as “like” materials corresponding to materials sampled within the building.

8.0 CONCLUSIONS AND RECOMMENDATIONS

None of the materials identified within this report are damaged to the extent that significant asbestos fiber release may be likely under normal conditions. However, some of the asbestos containing materials are subject to routine maintenance activities that could involve significant disturbance. Those materials include the pipe fitting and straight-run insulation located in the mechanical room and other areas. Proper management of the material in-place may be acceptable assuming the proper precautions are taken to eliminate exposure of personnel to any airborne asbestos. Reisz Engineering has written a Building Operations & Maintenance Plan for Building 893 and we suggest that recommendations included in this plan be followed.

9.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions and recommendations expressed in this report are based only on conditions that were observed during the inspections of Building 893 during September, 1997. Reisz Engineering and this report make no representation or assumptions as to past conditions or future occurrences.

Our inspection was generally non-destructive in nature. Any conditions or materials that were not visible on the surface were not inspected and may differ from those observed. It was not within the scope of this investigation to remove surface materials to investigate portions of

the structure or materials that may lie beneath the surface. Our selection of sample locations and frequency is based upon our observations and the assumption that all materials in the same area are homogeneous.

This report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos abatement contractors in locating ACM. Under no circumstances is this report to be utilized as a bidding document or as a project specification document.

APPENDIX A

REPORT OF LABORATORY ANALYSIS FOR ASBESTOS

APPENDIX B

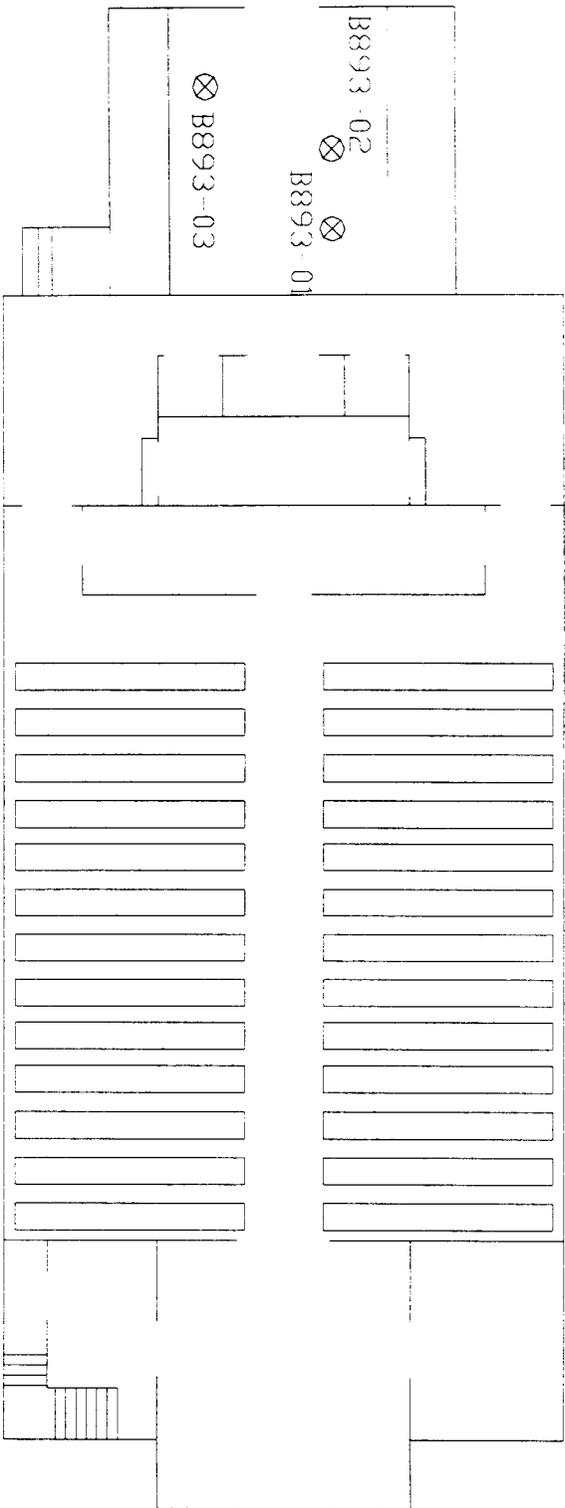
ASBESTOS CONTAINING MATERIALS

**SUMMARY TABLE
ASBESTOS CONTAINING MATERIALS
CHAPEL
BUILDING 893
FORT McCLELLAN, ALABAMA**

SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)
B893-01	Paper-like insulation on water pipes	Mechanical Room	10 linear ft.
B893-02,03	Pipe fitting insulation on 8 inch pipe	Mechanical Room	10 fittings

APPENDIX C

SAMPLE LOCATIONS PLANS



- ⊗ - POSITIVE SAMPLE LOCATION
- ⊗ - NEGATIVE SAMPLE LOCATION

BUILDING 893

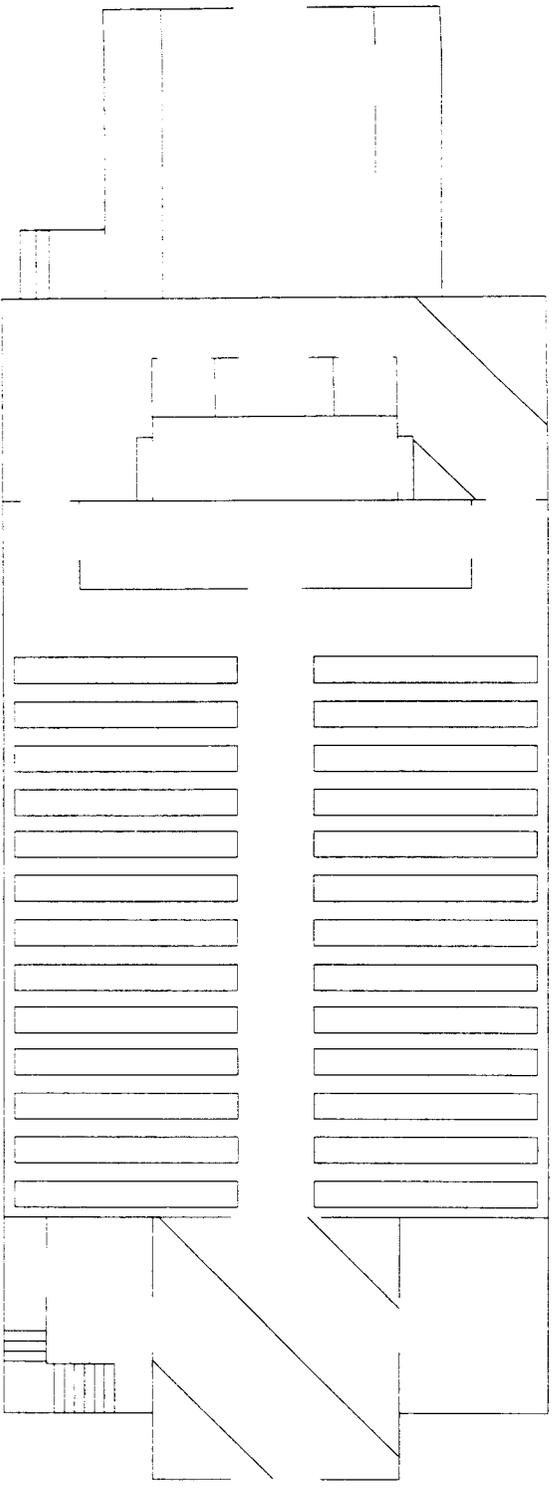
FIG. 1 LAYOUT

ASBESTOS SURVEY
 DAB102-96-D-0005
 FM701

REISZ ENGINEERING

APPENDIX D

SELECTED ACM LOCATION PLANS



 - 9 X 9 FLOOR TILE
 - 12 X 12 FLOOR TILE

BUILDING: 8913

FIG. 11 AVIUM

ASBESTOS SURVEY
 DAB102--96-D-0005
 FM/05

REISZ ENGINEERING

APPENDIX E

SELECTED ACM PHOTOGRAPHS

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

BUILDING(S): 930 and 931

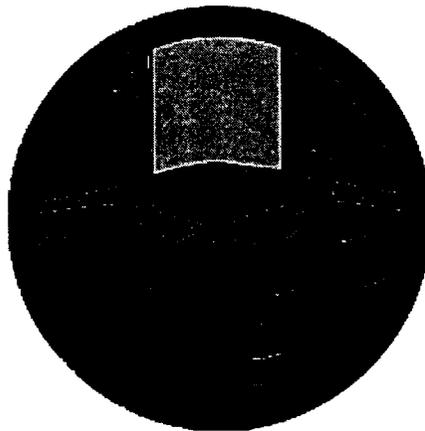
**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS
BUILDINGS (900s)**

CONTAINING NON-FRIABLE PACM

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Fort McClellan



Staying Beautiful

Conducted and Prepared by:

REISZ ENGINEERING
P.O. BOX 1349

HUNTSVILLE, ALABAMA 35807
ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS
BUILDINGS (900s)

CONTAINING NON-FRIABLE PACM

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Prepared For:

DIRECTORATE OF ENVIRONMENT
FORT McCLELLAN

APPROVED FOR TRANSMITTAL BY
JAMES R. WRIGHT

Conducted and Prepared by:

REISZ ENGINEERING

June, 1998

TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE OF SERVICES.....	1
2.0	REGULATORY STANDARDS.....	2
3.0	PROJECT CHARACTERISTICS.....	3
4.0	SURVEY METHODOLOGY.....	4
5.0	LABORATORY ANALYSIS	5
6.0	SUSPECT MATERIALS.....	5
7.0	ASBESTOS INSPECTION AND SAMPLING RESULTS.....	6
	FRIABLE ACM.....	7
	NON FRIABLE ACM.....	7
	INACCESSIBLE MATERIAL.....	8
8.0	CONCLUSIONS AND RECOMMENDATIONS.....	8
9.0	ASSUMPTIONS AND LIMITATIONS.....	8

APPENDICES

APPENDIX A - SUMMARY TABLE OF ACM AND COST ESTIMATES
APPENDIX B - LIST OF BUILDINGS

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at miscellaneous 900 series buildings located at Fort McClellan, Alabama. (See Appendix B for a complete list of buildings included in this document). Pursuant to the Contract, REISZ Engineering was required to provide the survey in accordance with AHERA (40 CFR Part 763 Subpart E) protocol. AHERA is applicable to interior building products installed prior to October 12, 1988. AHERA does not apply to the exterior of buildings and does not apply to non-building materials (e.g. cabinetry, special equipment and chalkboards). REISZ Engineering has included as part of the survey those readily accessible, suspect friable interior non-building materials (e.g. vibration dampers); but has not included certain items (e. g. interior linings of equipment and special supplies, some non-friable materials such as transite, etc.). Exterior building materials were not sampled as part of this contract unless those materials were suspected to be of friable nature and continuous with indoor materials (e.g. piping insulation). Specifically, REISZ Engineering was contracted to provide the following services:

1. Identify and collect samples of accessible suspect friable building materials within the referenced project area.
2. Perform a visual inspection to provide information on material condition, material quantities, material locations, and building use.
3. Analysis of all bulk samples for asbestos content utilizing Polarized Light Microscopy and Dispersion Staining Techniques performed in accordance with EPA Bulk Analysis Method
EPA 600/M4-82-020.
4. Make recommendations as to response actions pertaining to those materials identified as asbestos containing.

5. Compilation of a final report (contained herein) which details all sample results, identifies sample locations, and provides recommendations based upon the results.
6. Preparation of a Building specific Operations & Maintenance (O&M) Plan for buildings containing friable asbestos materials.

2.0 REGULATORY STANDARDS

The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires the Owner or Operator of a facility to determine the presence or non-presence of asbestos containing materials prior to conducting renovation or demolition activities. The NESHAP Standard for asbestos (40CFR Part 61 Sub-part M) requires the use of engineered control procedures for removal of asbestos materials that are or will become friable during renovation or demolition. The removal must occur before renovation or demolition activities impact those materials.

On October 11, 1994 an OSHA promulgated regulation (29 CFR Part 1926.1101) became effective. This Standard is related to asbestos exposure in construction, renovation and building maintenance work places. Building owners are required, pursuant to the Standard, to notify employees, tenants and prospective employers (contractors) of the presence, location and quantities of ACM in the building. Implementation of the "communication of hazards" provisions in the Standard were originally to be not later than April 10, 1995 but was extended to July 10, 1995 and is now in effect. The OSHA Standard does not apply to work performed by employees of State agencies in states without state run OSHA programs (e.g. Alabama).

In October 1986, the Asbestos Hazard Emergency Response Act (AHERA) was signed into law. Included in this act are provisions directing E.P.A. to establish rules and regulations

(40CFR Part 763) addressing asbestos-containing materials in schools. Specifically, the E.P.A. was directed to address the issues of: 1) identifying, 2) evaluating, and 3) controlling asbestos containing materials (ACM) in schools. AHERA requires schools to perform building inspections and to prepare management plans for ACM control. Although the AHERA regulation does not specifically apply to this project it is generally accepted as the industry standard and was cited by Fort McClellan in the Asbestos Survey Request as the basis of survey methodology. The AHERA inspections must be conducted using specific guidelines that include a minimum number of samples per material type. This survey was conducted in accordance with those guidelines per the Contract requirements.

On November 28, 1992 a law became effective which extended the EPA's Model Accreditation Plan to all public and commercial buildings. Currently the rule extends the accreditation requirements of persons performing asbestos work (inspectors, project designers, abatement supervisors, and workers) in public and commercial buildings, but does not extend the other aspects of AHERA. This project was conducted utilizing EPA accredited personnel.

3.0 PROJECT CHARACTERISTICS

Reisz Engineering accredited Asbestos Inspectors performed inspections of these buildings for the purpose of identifying building materials suspected to contain asbestos. All buildings referenced in this survey contain only non-friable ACM. None of the buildings within this survey were found to have any friable asbestos containing materials. Various renovations may have taken place since the building was originally constructed but no building plans have been found which can be used to verify specific dates and activities.

4.0 SURVEY METHODOLOGY

The buildings were visually inspected for the presence of material suspected to contain asbestos. Those suspect materials were identified, bulk samples were obtained and placed into individual vials for transportation to the University of Alabama in Huntsville. General areas for sample locations were selected on a random basis with a preference for exact positioning at existing damage. Each sample location is represented by a number on the plans in Appendix C. Those numbers directly correspond with the numbers listed elsewhere in this report.

If any additional suspect materials are identified during renovation or demolition they should be analyzed for asbestos content. Materials visibly identifiable as non-asbestos (fiberglass, foam rubber, wood, etc.) were not sampled. Materials installed after October 12, 1988 (as reported by Fort McClellan staff) were not sampled.

Hazard Assessment Factors

Each time suspect ACM was sampled, it was classified as either a friable or a non-friable material. Friable material may be crumbled, pulverized, or reduced to powder by hand pressure. Friable ACM is more hazardous than non-friable ACM because friable material can release airborne asbestos fibers more easily. In assessing the fiber release potential, the current condition of all ACM identified was noted. Evidence of deterioration, physical damage, water damage, erosion of ACM due to its' proximity to an air plenum, high vibration, or contact potential was also noted.

5.0 LABORATORY ANALYSIS METHODOLOGY

All bulk samples were analyzed at UAH by polarized light microscopy utilizing dispersion staining or Becke line techniques, in accordance with the EPA's "Interim Method for Determination of Asbestos in Bulk Insulation Samples" (EPA 600/m4-82-020). Quality control

samples were taken as duplicates at a rate of 1 to 10 and were sent to a second accredited laboratory. This type of analysis requires the microscopist to take a portion of the bulk sample and treat it with an oil of specific refractive index. This prepared slide is then subjected to a variety of optical tests.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation. Even though this is an estimation, any material that contains greater than one percent of any type of fibrous asbestos is considered ACM and must be handled according to OSHA and EPA regulations if disturbed during maintenance, renovation, demolition or removal.

The UAH laboratory participates in the American Industrial Hygiene Association (AIHA) quality assurance program for polarized light microscopy and is accredited by the AIHA through their voluntary program.

6.0 SUSPECT MATERIALS

The following is a general list of building materials that were suspected to contain asbestos. A complete and more detailed description of these materials can be found in Appendix B.

Surfacing

- None

Thermal System Insulation

- None

Miscellaneous Material

- 12x12 vinyl floor tile in various buildings
- Vinyl flooring mastics
- Transite

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

No bulk samples were collected and analyzed.

FRIABLE ACM

None

NON FRIABLE ACM

Three types of non-friable PACM were found in various buildings. 1) suspect transite siding, 2) 12x12 inch floor tile, and 3) mastics associated vinyl floor tile.

- 1) Presumed asbestos containing transite siding is be found on the exterior of the following buildings:
B930 B931
- 2) Presumed asbestos containing 12x12 inch floor tile and mastic is found in the following buildings:

B930 B954 B959

INACCESSIBLE MATERIAL,

Insulation and spray-on compounds associated with inaccessible crawl-space and tunnel areas may should be assumed as “like” materials corresponding to materials sampled within the building.

8.0 CONCLUSIONS AND RECOMMENDATIONS

None of the materials identified within this report are damaged to the extent that significant asbestos fiber release may be likely under normal conditions. The asbestos containing materials may be subject to routine maintenance activities that could involve significant disturbance. Proper management of the material in-place may be acceptable assuming the proper precautions are taken to eliminate exposure of personnel to any airborne asbestos. Reisz Engineering has not written a Building Operations & Maintenance Plan for these buildings. Refer to Appendix A for Cost Estimates related to the abatement of the included ACM.

9.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions and recommendations expressed in this report are based only on conditions that were observed during the inspections of these buildings during 1997. Reisz Engineering and this report make no representation or assumptions as to past conditions or future occurrences.

Our inspection was generally non-destructive in nature. Any conditions or materials that were not visible on the surface were not inspected and may differ from those observed. It was not within the scope of this investigation to remove surface materials to investigate portions of the structure or materials that may lie beneath the surface. Our selection of sample locations and frequency is based upon our observations and the assumption that all materials in the same area are homogeneous.

This report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos abatement contractors in locating ACM. Under no circumstances is this report to be utilized as a bidding document or as a project specification document.

APPENDIX A

SUMMARY TABLE OF ACM AND COST ESTIMATES

Building Number	PACM Material	Quantity	Estimated abatement cost*
B930	12x12 floor tile and mastic	9,000 sq. ft.	\$20,700
	Transite siding	3,200 sq. ft.	\$5,400
		TOTAL	\$26,100
B931	Transite siding	2,500 sq. ft.	\$4,400
B954	12x12 floor tile and mastic	3,750 sq. ft.	\$8,625
B959	12x12 floor tile and mastic	4,500 sq. ft.	\$10,350

*Includes all air monitoring and design fees

APPENDIX B

LIST OF BUILDINGS

BUILDING NUMBER

B930

B931

B954

B959

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

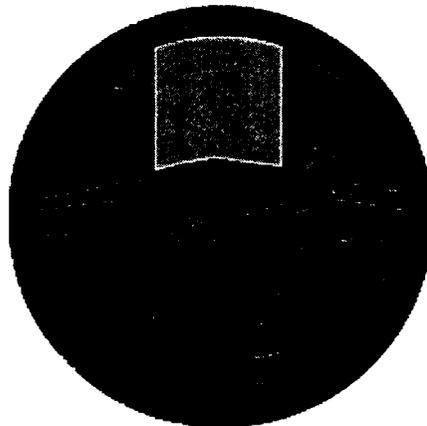
BUILDING: 2101

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
AUDITORIUM
BUILDING 2101**

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Fort McClellan



Staying Beautiful

Conducted and Prepared by:

**REISZ ENGINEERING
P.O. BOX 1349**

HUNTSVILLE, ALABAMA 35807
ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
AUDITORIUM
BUILDING 2101

FORT McCLELLAN, ALABAMA

U.S. ARMY CONTRACT NO. DABT02-96-D-0005
DELIVERY ORDER 0005

Prepared For:

DIRECTORATE OF ENVIRONMENT
FORT McCLELLAN

APPROVED FOR TRANSMITTAL BY
JAMES R. WRIGHT

Conducted and Prepared by:

REISZ ENGINEERING

June, 1998

TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE OF SERVICES.....	1
2.0	REGULATORY STANDARDS.....	2
3.0	PROJECT CHARACTERISTICS.....	3
4.0	SURVEY METHODOLOGY.....	4
5.0	LABORATORY ANALYSIS	5
6.0	SUSPECT MATERIALS.....	5
7.0	ASBESTOS INSPECTION AND SAMPLING RESULTS.....	6
	FRIABLE ACM.....	7
	NON FRIABLE ACM.....	7
	INACCESSIBLE MATERIAL.....	8
8.0	CONCLUSIONS AND RECOMMENDATIONS.....	8
9.0	ASSUMPTIONS AND LIMITATIONS.....	8

APPENDICES

APPENDIX A - REPORT OF LABORATORY ANALYSIS
APPENDIX B - SUMMARY TABLE OF ACM
APPENDIX C - SAMPLE LOCATIONS PLANS
APPENDIX D - SELECTED ACM LOCATIONS PLANS (None)

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Building 2101 located at Fort McClellan, Alabama. Pursuant to the Contract, REISZ Engineering was required to provide the survey in accordance with AHERA (40 CFR Part 763 Subpart E) protocol. AHERA is applicable to interior building products installed prior to October 12, 1988. AHERA does not apply to the exterior of buildings and does not apply to non-building materials (e.g. cabinetry, special equipment and chalkboards). REISZ Engineering has included as part of the survey those readily accessible, suspect friable interior non-building materials (e.g. vibration dampers); but has not included certain items (e. g. interior linings of equipment and special supplies, some non-friable materials such as transite, etc.). Exterior building materials were not sampled as part of this contract unless those materials were suspected to be of friable nature and continuous with indoor materials (e.g. piping insulation). Specifically, REISZ Engineering was contracted to provide the following services:

1. Identify and collect samples of accessible suspect friable building materials within the referenced project area.
2. Perform a visual inspection to provide information on material condition, material quantities, material locations, and building use.
3. Analysis of all bulk samples for asbestos content utilizing Polarized Light Microscopy and Dispersion Staining Techniques performed in accordance with EPA Bulk Analysis Method
EPA 600/M4-82-020.
4. Make recommendations as to response actions pertaining to those materials identified as asbestos containing.

5. Compilation of a final report (contained herein) which details all sample results, identifies sample locations, and provides recommendations based upon the results.
6. Preparation of a Building specific Operations & Maintenance (O&M) Plan for buildings containing friable asbestos materials.

2.0 REGULATORY STANDARDS

The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires the Owner or Operator of a facility to determine the presence or non-presence of asbestos containing materials prior to conducting renovation or demolition activities. The NESHAP Standard for asbestos (40CFR Part 61 Sub-part M) requires the use of engineered control procedures for removal of asbestos materials that are or will become friable during renovation or demolition. The removal must occur before renovation or demolition activities impact those materials.

On October 11, 1994 an OSHA promulgated regulation (29 CFR Part 1926.1101) became effective. This Standard is related to asbestos exposure in construction, renovation and building maintenance work places. Building owners are required, pursuant to the Standard, to notify employees, tenants and prospective employers (contractors) of the presence, location and quantities of ACM in the building. Implementation of the "communication of hazards" provisions in the Standard were originally to be not later than April 10, 1995 but was extended to July 10, 1995 and is now in effect. The OSHA Standard does not apply to work performed by employees of State agencies in states without state run OSHA programs (e.g. Alabama).

In October 1986, the Asbestos Hazard Emergency Response Act (AHERA) was signed into law. Included in this act are provisions directing E.P.A. to establish rules and regulations

(40CFR Part 763) addressing asbestos-containing materials in schools. Specifically, the E.P.A. was directed to address the issues of: 1) identifying, 2) evaluating, and 3) controlling asbestos containing materials (ACM) in schools. AHERA requires schools to perform building inspections and to prepare management plans for ACM control. Although the AHERA regulation does not specifically apply to this project it is generally accepted as the industry standard and was cited by Fort McClellan in the Asbestos Survey Request as the basis of survey methodology. The AHERA inspections must be conducted using specific guidelines that include a minimum number of samples per material type. This survey was conducted in accordance with those guidelines per the Contract requirements.

On November 28, 1992 a law became effective which extended the EPA's Model Accreditation Plan to all public and commercial buildings. Currently the rule extends the accreditation requirements of persons performing asbestos work (inspectors, project designers, abatement supervisors, and workers) in public and commercial buildings, but does not extend the other aspects of AHERA. This project was conducted utilizing EPA accredited personnel.

3.0 PROJECT CHARACTERISTICS

During the month of October 1997, Reisz Engineering accredited Asbestos Inspectors performed inspections of Building 2101 for the purpose of identifying building materials suspected to contain asbestos. Building 2101 is a one story auditorium facility containing approximately 11,119 sq. ft. of floor space. Based on information provided by Fort McClellan representatives the building was originally constructed in 1970. Various renovations may have taken place since the building was originally constructed but no building plans have been found which can be used to verify specific dates and activities. The two dominant flooring conditions existing in the facility are 1) carpet, and 2) cement.

4.0 SURVEY METHODOLOGY

The building was visually inspected for the presence of material suspected to contain asbestos. Those suspect materials were identified, bulk samples were obtained and placed into individual vials for transportation to the University of Alabama in Huntsville. General areas for sample locations were selected on a random basis with a preference for exact positioning at existing damage. Each sample location is represented by a number on the plans in Appendix C. Those numbers directly correspond with the numbers listed elsewhere in this report.

If any additional suspect materials are identified during renovation or demolition they should be analyzed for asbestos content. Materials visibly identifiable as non-asbestos (fiberglass, foam rubber, wood, etc.) were not sampled. Materials installed after October 12, 1988 (as reported by Fort McClellan staff) were not sampled.

Hazard Assessment Factors

Each time suspect ACM was sampled, it was classified as either a friable or a non-friable material. Friable material may be crumbled, pulverized, or reduced to powder by hand pressure. Friable ACM is more hazardous than non-friable ACM because friable material can release airborne asbestos fibers more easily. In assessing the fiber release potential, the current condition of all ACM identified was noted. Evidence of deterioration, physical damage, water damage, erosion of ACM due to its' proximity to an air plenum, high vibration, or contact potential was also noted.

5.0 LABORATORY ANALYSIS METHODOLOGY

All bulk samples were analyzed at UAH by polarized light microscopy utilizing dispersion staining or Becke line techniques, in accordance with the EPA's "Interim Method for Determination of Asbestos in Bulk Insulation Samples" (EPA 600/m4-82-020). Quality control samples were taken as duplicates at a rate of 1 to 10 and were sent to a second accredited laboratory. This type of analysis requires the microscopist to take a portion of the bulk sample and treat it with an oil of specific refractive index. This prepared slide is then subjected to a variety of optical tests.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation. Even though this is an estimation, any material that contains greater than one percent of any type of fibrous asbestos is considered ACM and must be handled according to OSHA and EPA regulations if disturbed during maintenance, renovation, demolition or removal.

The UAH laboratory participates in the American Industrial Hygiene Association (AIHA) quality assurance program for polarized light microscopy and is accredited by the AIHA through their voluntary program.

6.0 SUSPECT MATERIALS

The following is a general list of building materials that were suspected to contain asbestos. A complete and more detailed description of these substances can be found in Appendix B.

Surfacing

- None

Thermal System Insulation

- White pipe fitting insulation on pipes in mechanical room

Miscellaneous Material

- None

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 1 bulk sample was collected and analyzed. Details of all laboratory results can be found in Appendix A. A listing of all suspect materials, their corresponding sample numbers, general location, and approximate quantity are indicated in Appendix B. A narrative description of all "Friable Asbestos Containing Material" and "Non-Friable ACM" identified during the survey, is given below.

FRIABLE ACM

Laboratory analysis determined asbestos is present in one type of friable material: 1) pipe fitting insulation in mechanical room. All straight run pipe insulation is fiberglass.

- 1) A friable, asbestos containing insulation compound is applied to pipe fittings located in the mechanical room of the building.

NON FRIABLE ACM

No non-friable asbestos containing materials were found.

INACCESSIBLE MATERIAL,

Insulation and spray-on compounds associated with inaccessible crawl-space and tunnel areas may should be assumed as “like” materials corresponding to materials sampled within the building.

8.0 CONCLUSIONS AND RECOMMENDATIONS

None of the materials identified within this report are damaged to the extent that significant asbestos fiber release may be likely under normal conditions. Proper management of the material in-place may be acceptable assuming the proper precautions are taken to eliminate exposure of personnel to any airborne asbestos. Reisz Engineering has written a Building Operations & Maintenance Plan for Building 1060 and we suggest that recommendations included in this plan be followed.

9.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions and recommendations expressed in this report are based only on conditions that were observed during the inspections of Building 2101 during October, 1997. Reisz Engineering and this report make no representation or assumptions as to past conditions or future occurrences.

Our inspection was generally non-destructive in nature. Any conditions or materials that were not visible on the surface were not inspected and may differ from those observed. It was not within the scope of this investigation to remove surface materials to investigate portions of the structure or materials that may lay beneath the surface. Our selection of sample locations and frequency is based upon our observations and the assumption that all materials in the same area are homogeneous.

This report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos abatement contractors in locating ACM. Under no circumstances is this report to be utilized as a bidding document or as a project specification document.

APPENDIX A

REPORT OF LABORATORY ANALYSIS FOR ASBESTOS

UAH

The University of Alabama in Huntsville
Environmental Laboratory
Kenneth E. Johnson Research
Center
Huntsville, Alabama 35899
Phone: (205) 890-6391
Fax: (205) 890-6376

Re : Bulk Asbestos
Analysis EPA
600/R-93/116
AIHA: 023601

Receipt Date: 11/17/97

Sample Date : 10/29/97

Client: Reisz Engineering
Building 32 Suite, A2
3322 Memorial Parkway South
Huntsville, AL 35801

Microscopist: Tom Carrington

Sample/Description	Asbestos Fibers (%)				Non-Asbestos Material (%)				
	Chry	Amos	Croc	Othr	Cell	Fbgl	MW	CaSO4	Othr
B3183-01/ white putty at Elbow of pipes		5				5		30	60

ry = Chrysotile
AMOS = Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

MW = Mineral Wool
Ca S04= Calcium Sulfate
Fbgl = Fiberglass

APPENDIX B

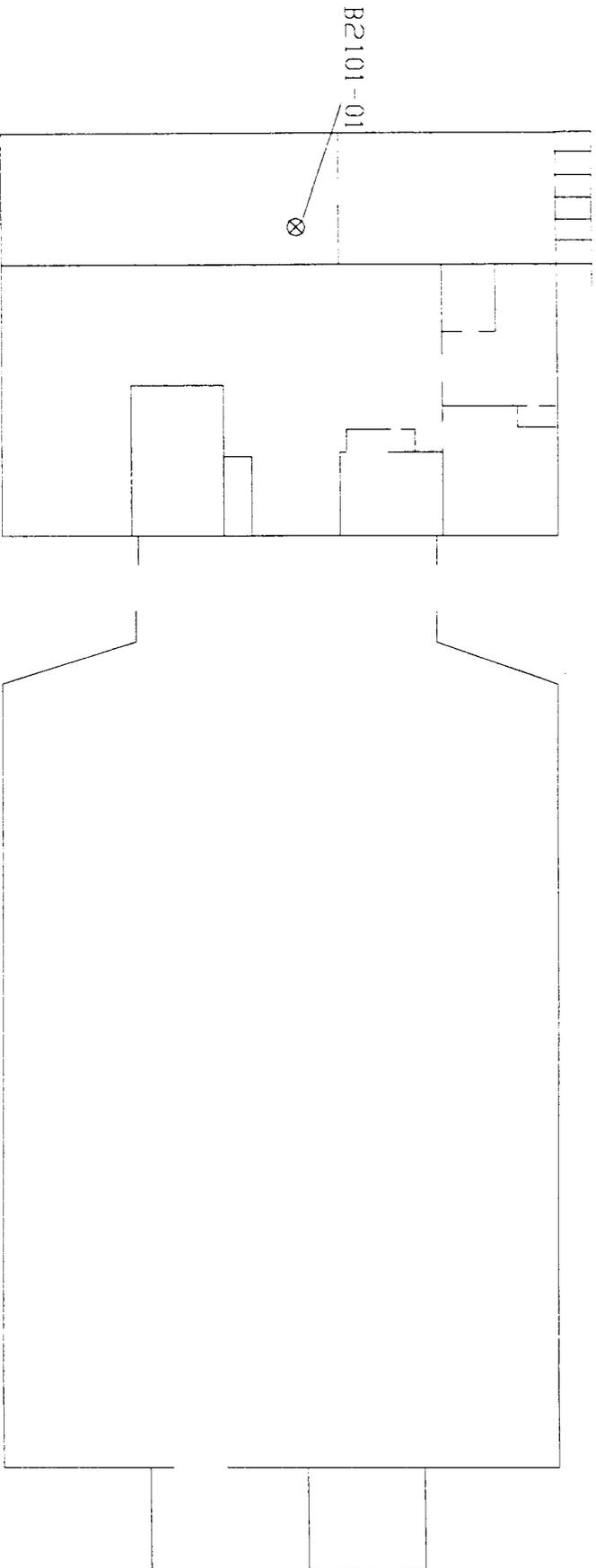
ASBESTOS CONTAINING MATERIALS

**SUMMARY TABLE
ASBESTOS CONTAINING MATERIALS
AUDITORIUM
BUILDING 2101
FORT McCLELLAN, ALABAMA**

SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)
B2101-01	Pipe fitting insulation	Mechanical Room	20 linear ft.

APPENDIX C

SAMPLE LOCATIONS PLANS



⊗ POSITIVE SAMPLE LOCATION

BUILDING 2101

FIG. 1 (AY101)

ASBESTOS SURVEY
 DABTOP-96-D-0005
 FM705

REISZ ENGINEERING

APPENDIX D

SELECTED ACM LOCATION PLANS

APPENDIX E

SELECTED ACM PHOTOGRAPHS