

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

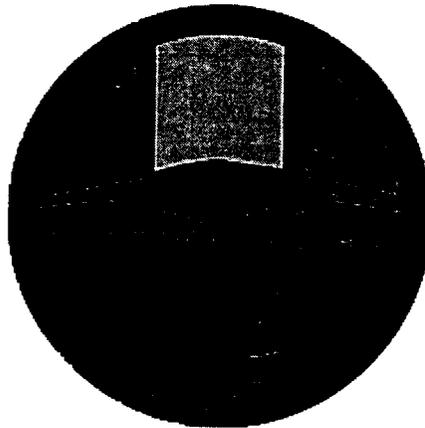
BUILDING: 2213

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
CHILD DEVELOPMENT CENTER
BUILDING 2213**

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
CHILD DEVELOPMENT CENTER
BUILDING 2213

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

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1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Building 2213 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 Building 2213 for the purpose of identifying building materials suspected to contain asbestos. Building 2213 is a single story child development center containing approximately 23,898 sq. ft. of floor space. Based on information provided by Fort McClellan representatives the building was originally constructed in 1955. 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) vinyl floor tile, and 2) linoleum.

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

- Cementitious hand-formed pipe fitting insulation
- Cementitious straight run pipe insulation
- Cementitious boiler insulation

Miscellaneous Material

- Vinyl floor tile 12x12
- Vinyl floor tile 9x9
- Vinyl flooring mastic

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 10 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 three types of friable material: 1) cementitious hand-formed pipe fitting insulation in boiler room, 2) cementitious straight run pipe insulation, and 3) cementitious boiler insulation.

- 1) A friable, hand-formed, asbestos containing insulation compound is applied to some of the fittings of pipes located in the boiler room of the building. This material was found to be in generally Good condition.
- 2) A friable, white, asbestos containing insulation is found on some of the straight runs of piping in the boiler room. Piping accessible outside the boiler room was found to have fiberglass insulation. This material was found to be in generally Good condition.
- 3) A friable, white, asbestos containing insulation is found on the boiler in the boiler room. This material was found to be in generally Good condition.

NON FRIABLE ACM

Two types of non-friable ACM were found in the building: 1) 9x9 vinyl floor tile, and 2) mastic associated with 9x9 vinyl floor tile. In addition, two types of presumed ACM were found in the form of 12x12 vinyl floor tile and mastic.

- 1) 9x9 inch asbestos containing vinyl floor tile was found in a small part of the building. The material was found to be in generally Good condition.

- 2) Black, asbestos containing mastics are present below 9x9 vinyl floor tiles in a small part of 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, straight run, and boiler insulation located in the boiler room. 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 328 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 2213 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 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: 06/22/97

Sample Date : 06/16/97

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
B2213-01/ 9 X 9 floor tile	15								85
B2213-02/ tile mastic	1				15	1			83
B2213-03/ boiler tank TSI	65	3							10
B2213-04/ pipe joint TSI Boiler room						35	5		60
B2213-05/ pipe run TSI Boiler room	25				15	5			55
B2213-06/ pipe run TSI Boiler room	65	5							30
B2213-07/ pipe TSI-run Crawlspace entrance					90				10
B2213-08/ pipe TSI-joint Crawlspace entrance							60		40
B2213-09/ pipe TSI-run Boiler room	35	35							30
B2213-10/ pipe TSI-elbow Boiler room			65						35

Chry = Chrysotile
 Amos = Amosite
 Croc = Crocidolite

Othr = Other
 Cell = Cellulose

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

APPENDIX B

ASBESTOS CONTAINING MATERIALS

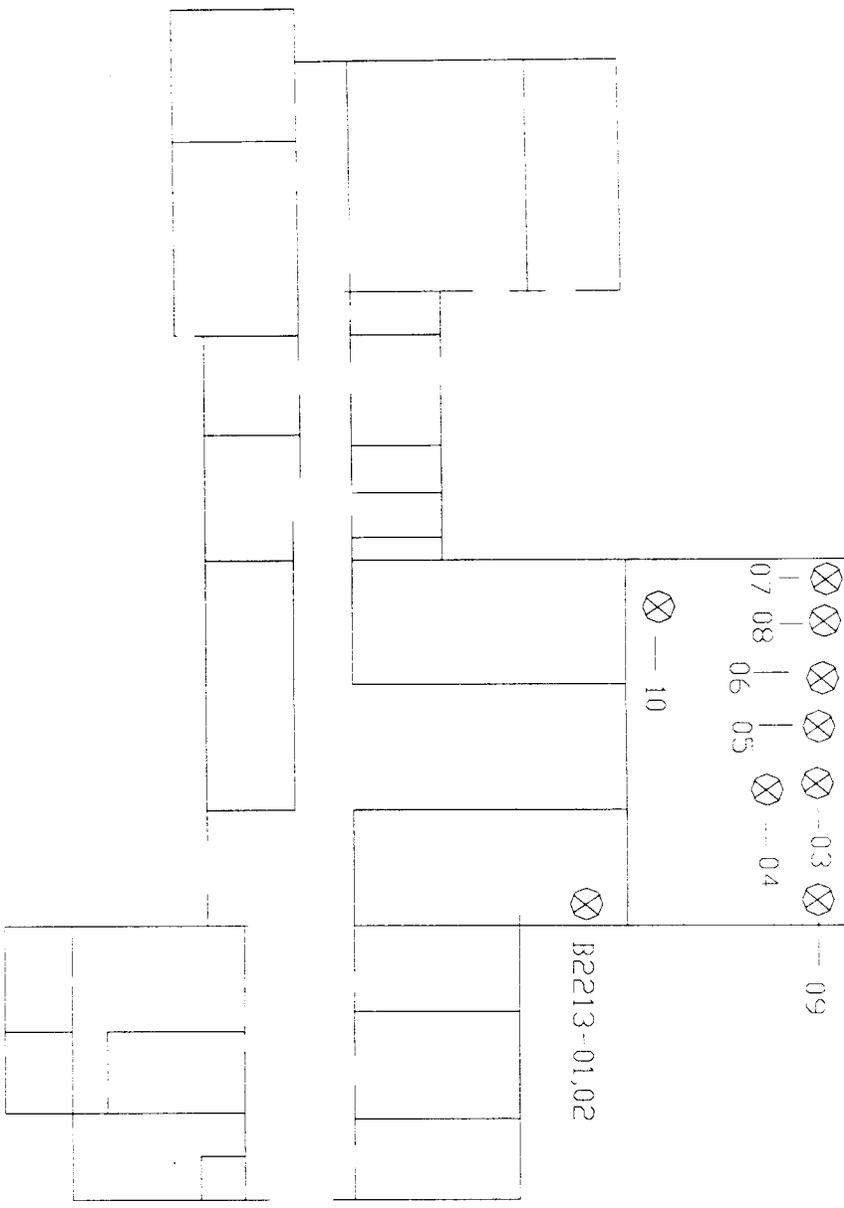
**SUMMARY TABLE
ASBESTOS CONTAINING MATERIALS
CHILD DEVELOPMENT CENTER
BUILDING 2213
FORT McCLELLAN, ALABAMA**

SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)
B2213-01,02	9x9 inch Floor Tile and Mastic	Near storage room	1620 sq. ft.
B2213-03	Boiler insulation	Boiler room	40 sq. ft.
B2213-05,06,09	Pipe straight run insulation	Boiler room	60 linear ft.
B2213-10	Pipe fitting	Boiler Room	10 fittings

APPENDIX C

SAMPLE LOCATIONS PLANS

Boiler Room Underneath



- ⊗ Positive Sample Locations
- Negative Sample Locations

BUILDING: 2213
PRE-SCHULTZ

FIGURE 1 LAYOUT

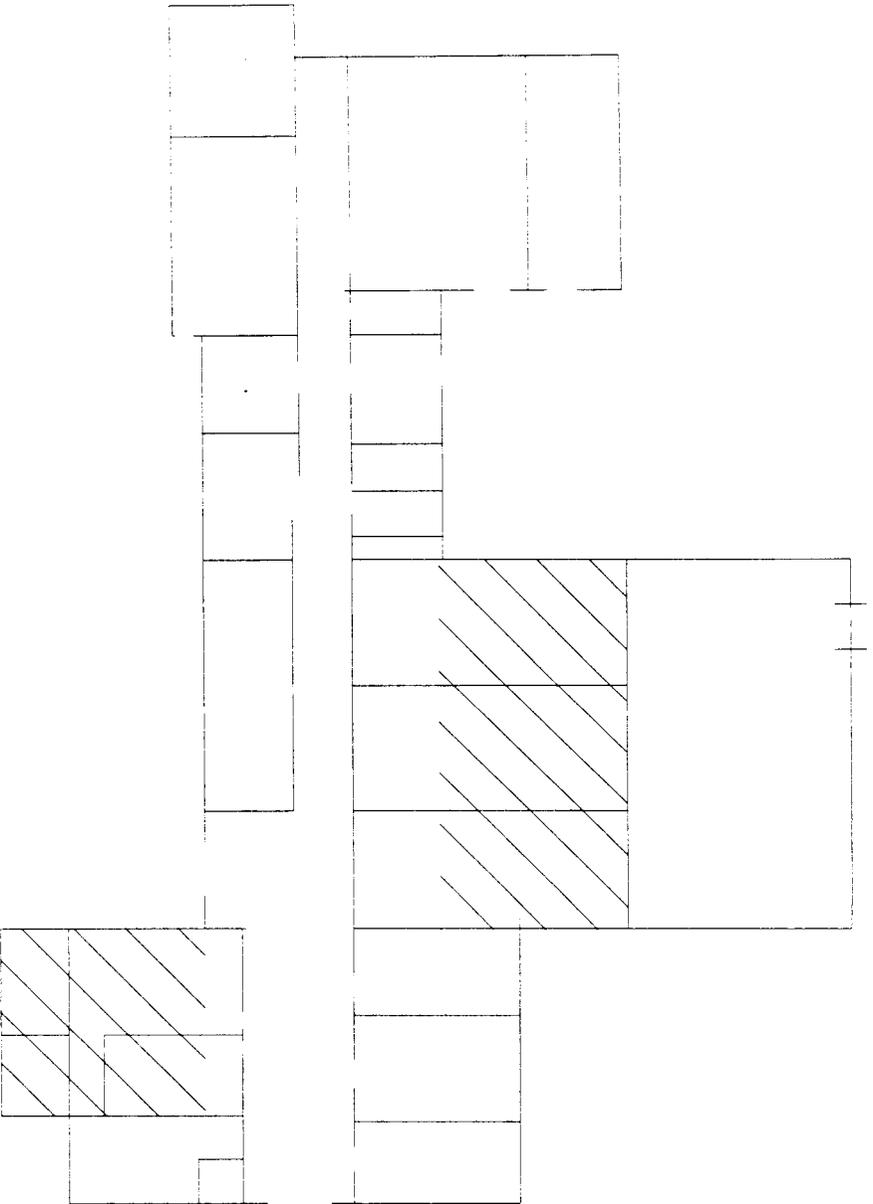
ASBESTOS SURVEY
DART02-96 D-0005
FM705

REISZ ENGINEERING

APPENDIX D

SELECTED ACM LOCATION PLANS

To Boiler Room Underneath



 - 9 x 9 Floor Tile

 - 12 x 12 Floor Tile

BUILDING 2213
PRESCHILL

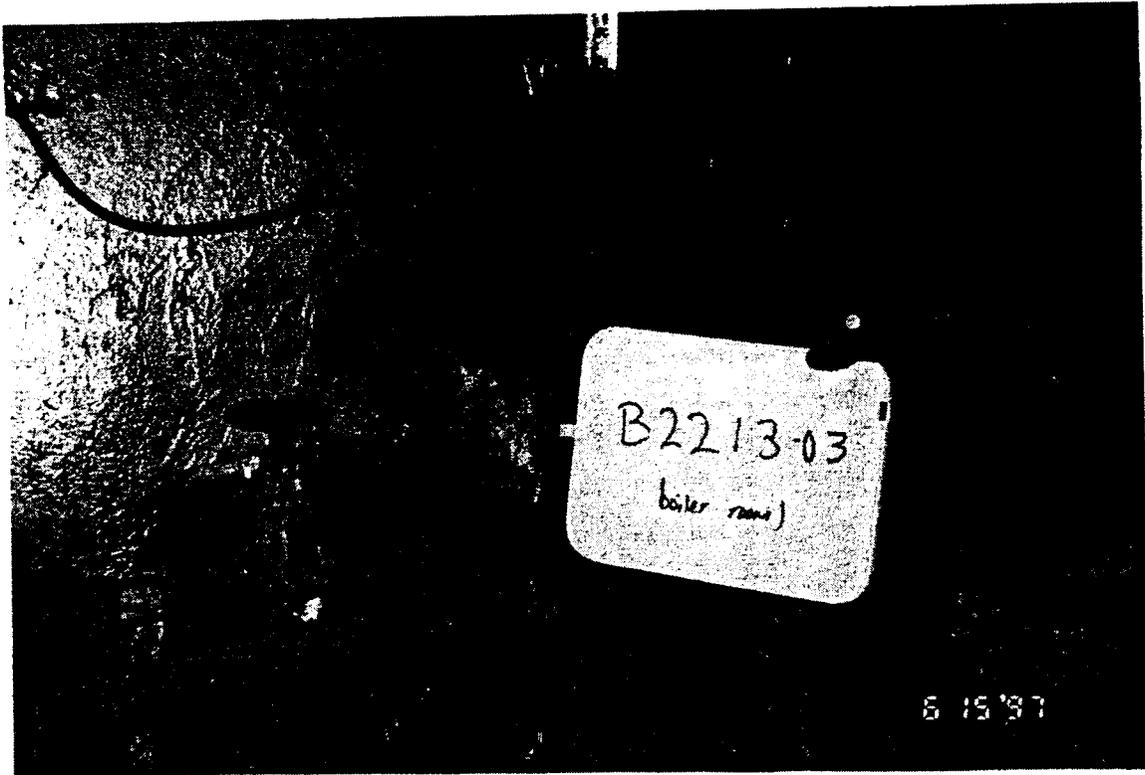
FLOOR LAYOUT

ASBESTOS SURVEY
DAB102 96-D-0005
FM705

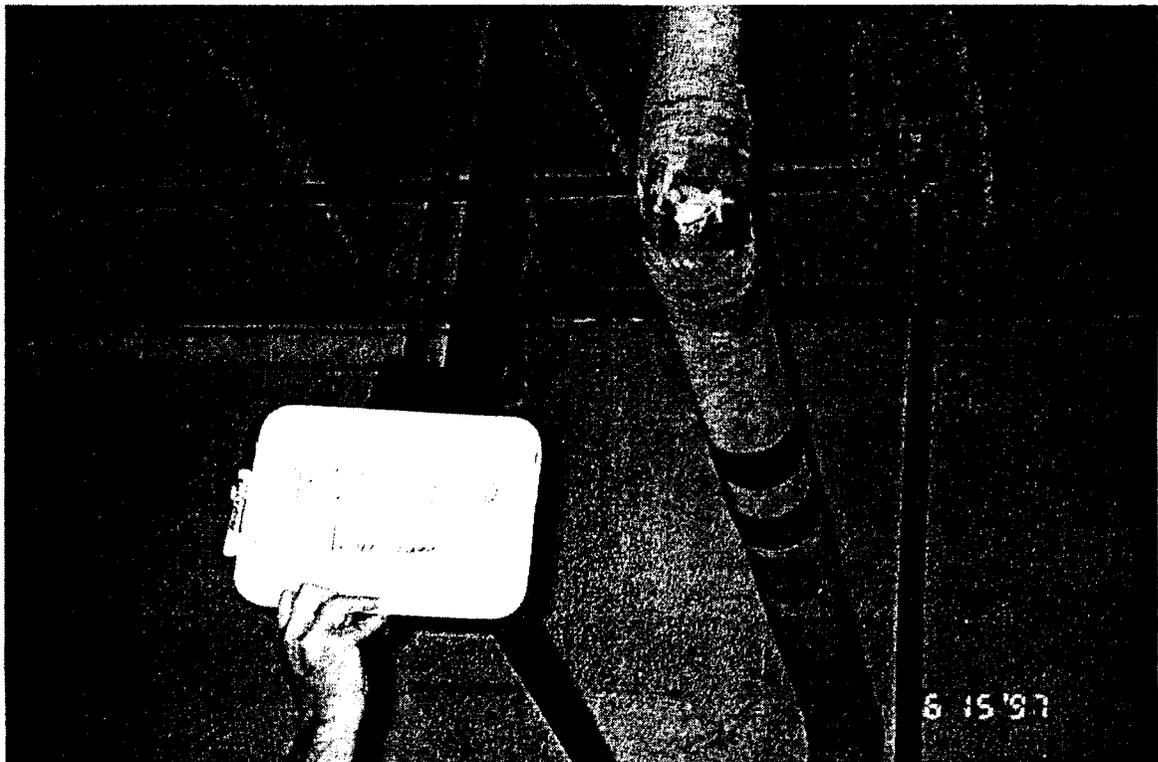
REISZ ENGINEERING

APPENDIX E

SELECTED ACM PHOTOGRAPHS



B2213-03: Boiler Insulation



B2213-10: Pipe fitting TSI

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

BUILDING(S): 3137

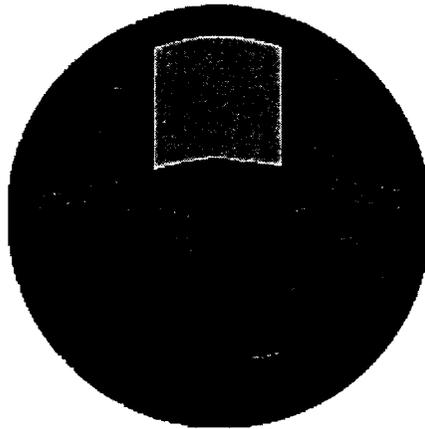
**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS
BUILDINGS (3100s)**

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 (3100s)

CONTAINING NON-FRIABLE PACM

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Prepared For:

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APPROVED FOR TRANSMITTAL BY
JAMES R. WRIGHT

Conducted and Prepared by:

REISZ ENGINEERING

June, 1998

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APPENDIX A - SUMMARY TABLE OF ACM AND COST ESTIMATES
APPENDIX B - LIST OF BUILDINGS
APPENDIX C - REPORT OF LABORATORY ANALYSIS

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at miscellaneous 3100 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

- Suspect white pipe insulation in B3137

Miscellaneous Material

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

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 2 bulk samples were collected for laboratory analysis. Both samples of suspect white pipe insulation in B3137 were found not to contain asbestos.

FRIABLE ACM

None

NON FRIABLE ACM

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

- 1) Presumed asbestos containing 12x12 inch floor tile and mastic is found in the following buildings:
B3137 B3172

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*
B3137	12x12 floor tile and mastic	5,000 sq. ft.	\$11,500
B3172	12x12 floor tile and mastic	1,000 sq. ft.	\$2,200

*Includes all air monitoring and design fees

APPENDIX B

LIST OF BUILDINGS

BUILDING NUMBER

B3137

B3172

APPENDIX C

ASBESTOS ANALYSIS REPORT

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

Receipt Date : 06-27-97

AIHA : 023601

Sample Date : 06/23/97

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
B3137-01 / hw tank insul white powder						2			98
37-02 / hw tank insul white powder						35	40		25

Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

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

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

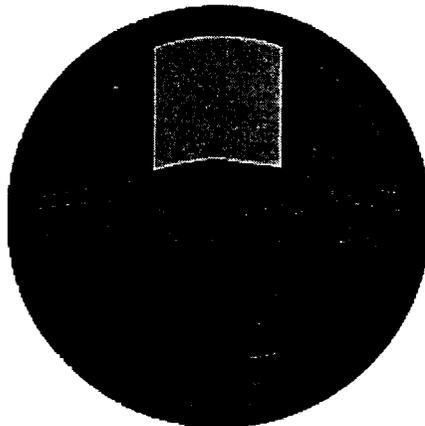
BUILDING: 3184

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
CLASSROOM
BUILDING 3184**

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
CLASSROOM
BUILDING 3184

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

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1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Building 3184 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 December 1997, Reisz Engineering accredited Asbestos Inspectors performed inspections of Building 3184 for the purpose of identifying building materials suspected to contain asbestos. Building 3184 is a single story classroom facility containing approximately 23,898 sq. ft. of floor space. The building has a basement mechanical room. Based on information provided by Fort McClellan representatives the building was originally constructed in 1954. 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 conditions existing in the facility is 12x12 inch vinyl floor tile. A suspect brown air-cell type pipe insulation runs from the mechanical room throughout the building.

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

- Cementitious gray & white hand-formed pipe fitting insulation
- Brown air-cell type straight run pipe insulation

Miscellaneous Material

- Vinyl floor tile 12x12
- Vinyl flooring mastic

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 4 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 material: 1) cementitious hand-formed pipe fitting insulation on 4 inch pipes, and 2) brown air-cell type straight run pipe insulation on 3 inch pipes throughout the building.

- 1) A friable, hand-formed, asbestos containing insulation compound is applied to some of the 4 inch fittings of pipes located in the building. This material was found to be in generally Good condition.
- 2) A friable, brown air-cell type asbestos containing insulation is found on some of the straight runs of 3 & 4 inch piping throughout the building. This material was found to be in generally Good condition.

NON FRIABLE ACM

Two types of non-friable presumed ACM were found in the building: 1) 12x12 vinyl floor tile, and 2) mastic associated with 12x12 vinyl floor tile.

- 1) 12x12 inch asbestos containing vinyl floor tile was found throughout the building. The material was found to be in generally Good condition.
- 2) Black, asbestos containing mastics are present below 12x12 vinyl floor tiles in 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, straight run, and boiler insulation located in the boiler room. 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 328 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 3184 during December, 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

: Bulk Asbestos
Analysis EPA
600/R-93/116

Receipt Date: 01/15/98

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

Sample Date : 12/17/97

Microscopis : Tom Canington

t

Sample/Description	Asbestos Fibers(%)			Non-Asbestos Material (%)	
	CaSO4	Othr		Cell	Fbgl MW
B3184-011 Brown paper insul. on 15	35			50	
B3184-021 Brown paper insul. on 4 " pipe	15			60	25
B3184-03/ Brown paper insul. on 3 " pipe	20			55	25
B3184-04/ Elbow putty on 4 " pipe	30			40	30

Othr = Other
Cell = Cellulose

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

ury = Chrysotilo
Amos = Amosite
Croc =
Crocidolite,

APPENDIX B

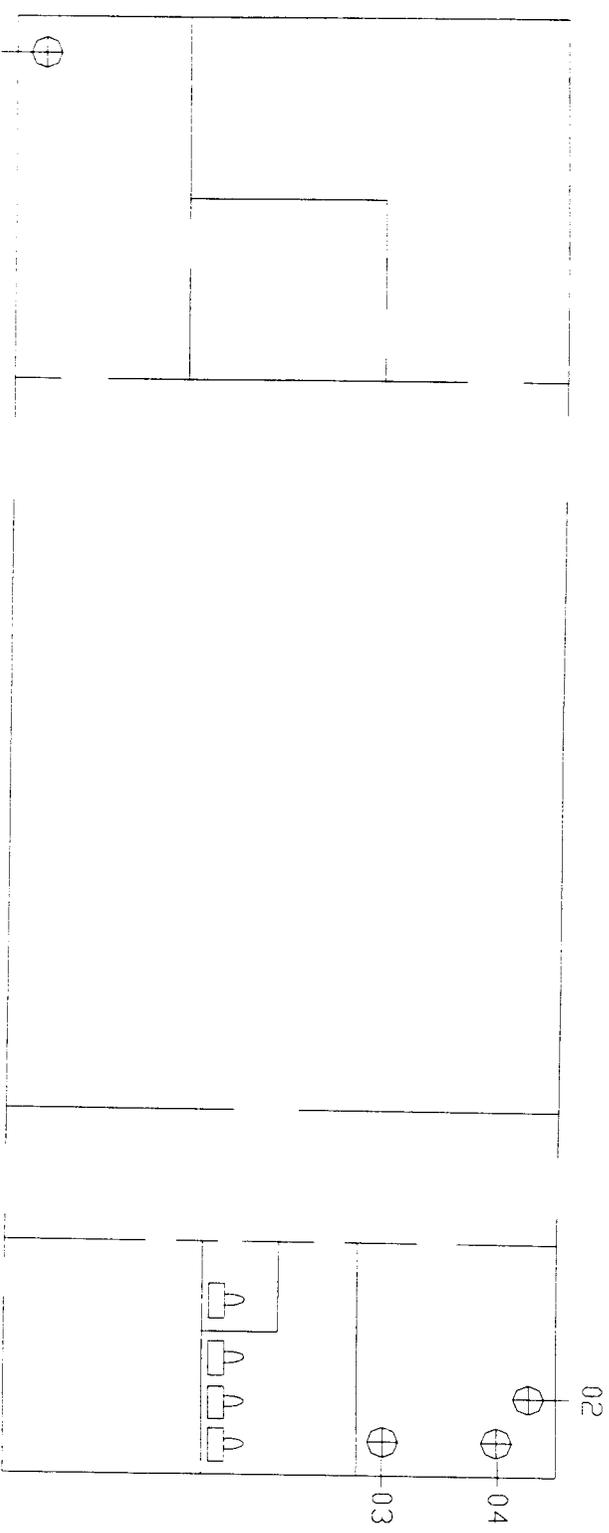
ASBESTOS CONTAINING MATERIALS

**SUMMARY TABLE
ASBESTOS CONTAINING MATERIALS
CLASSROOM
BUILDING 3184
FORT McCLELLAN, ALABAMA**

SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)
B3184-01,02,03	Brown air-cell type pipe insulation	3 & 4 inch piping throughout building	220 linear ft.
B3184-04	Gray & white pipe Fitting insulation	On 4 inch pipe	10 fittings
PACM	12x12 inch floor tile throughout building	Throughout building	4,000 sq. ft.

APPENDIX C

SAMPLE LOCATIONS PLANS



B3184 01
in basement mechanical room

- ⊕ Positive Sample Location
- ⊖ Negative Sample Location

BUILDING 3184

ASBESTOS SURVEY
DAB102--96 D-0005
FM705

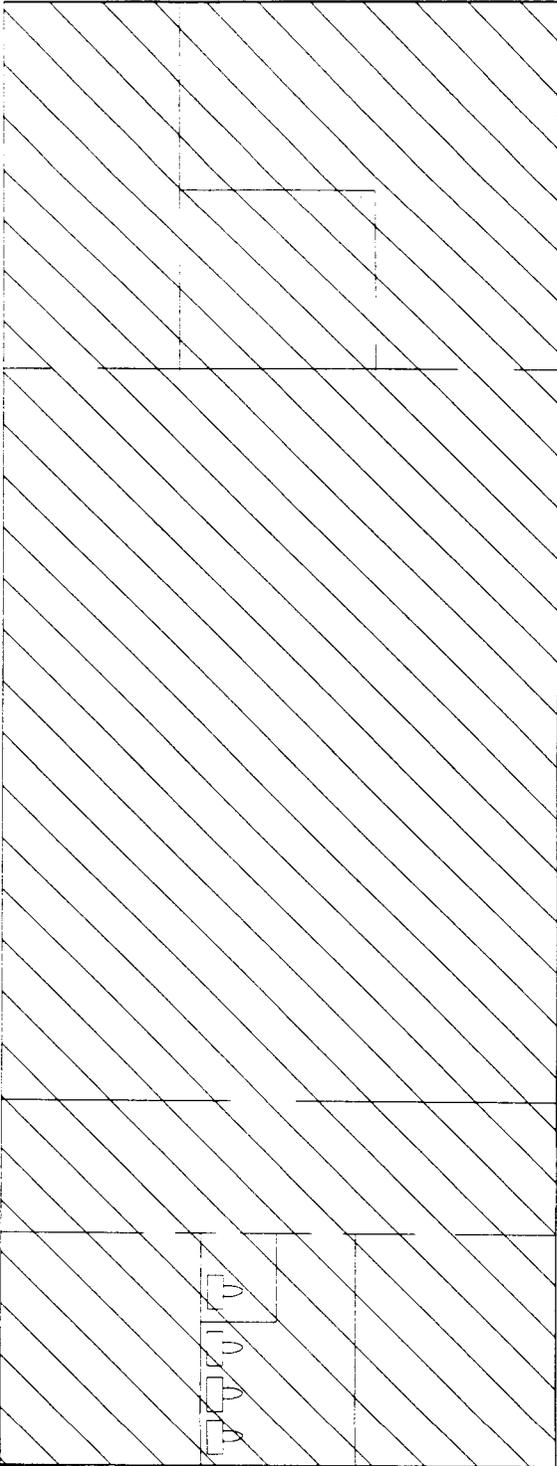
REISZ ENGINEERING

APPENDIX D

SELECTED ACM LOCATION PLANS

BUILDING 3184

ASBESTOS SURVEY
DAB102 96-D-0005
FM705



 12 x 12 Floor Tile

REISZ ENGINEERING

APPENDIX E

SELECTED ACM PHOTOGRAPHS

B2213-03: Boiler Insulation

B2213-10: Pipe fitting TSI

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

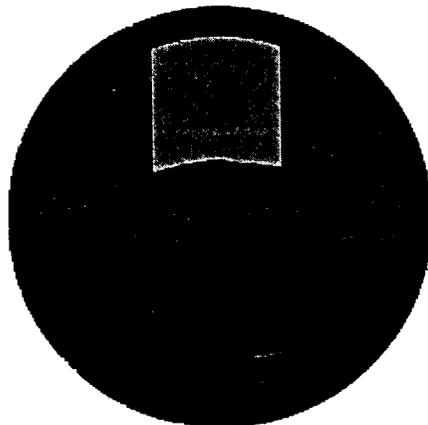
BUILDING(S): 3201 - 3211

**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS
BUILDINGS 3201-3211**

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 3201-3211

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

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1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Buildings 3201-3211 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 December 1997, Reisz Engineering accredited Asbestos Inspectors performed inspections of these buildings for the purpose of identifying building materials suspected to contain asbestos. Buildings 3201-3211 are single story structures of similar construction. The buildings range in size from 3,179 sq. ft. to 4,156 sq. ft. Based on information provided by Fort McClellan representatives the buildings were constructed beginning in 1953. 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 and/or 9x9 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 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

- Cementitious hand-formed pipe fitting insulation
- White, powdery TSI on hot water tanks
- Brown, air-cell type pipe insulation

Miscellaneous Material

- 12x12 vinyl floor tile
- 9x9 vinyl floor tile
- Vinyl flooring mastics
- Transite on some kitchen and mechanical room walls

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 30 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, and 2) brown, air-cell type straight-run pipe insulation.

- 1) A friable, hand-formed, asbestos containing insulation compound is applied to the fittings located in various locations both within the buildings. This material was found to be in Good to Fair condition depending on the building and area.
- 2) A brown, air-cell type asbestos containing material is found on straight runs of pipes located in all buildings except 3211. Some buildings have pipes that 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

Three types of non-friable ACM was found in the majority of the buildings. 1) transite panels located in kitchen areas of all buildings except 3207 & 3211, 2) 9x9 inch floor tile, and 3) mastics associated with 9x9 and 12x12 vinyl floor tile. 12x12 inch floor tile found in the majority of the buildings is presumed to contain asbestos.

- 1) Asbestos containing transite panels can be found on the walls around ovens in the kitchen areas of all buildings except 3207 & 3211.
- 2) Asbestos containing 9x9 inch floor tile is found in Building 3206.
- 3) Black, asbestos containing mastics are present below vinyl floor tiles found in all of 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. The asbestos containing materials may be subject to routine maintenance activities that could involve significant disturbance. Those materials include the pipe fitting and straight-run insulation located within the buildings. Based upon the aforementioned conditions, abatement of friable asbestos containing materials associated with these buildings should be considered. 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 3201-3211 during December, 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) 890-6391
 Fax: (205) 890-6376

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

Receipt Date: 01/15/97

Sample Date : 12/29/97

Microscopist: Tom Canington

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

Sample/Description	Asbestos Fibers (%)				Non-Asbestos Material (%)				
	Chry	Amos	Croc	Othr	Cell	Fbgl	MW	CaSO4	Othr
B3201-011 Brown paper on 3 " pipe			15				70		15
B3201-02/ Elbow putty on 3 " pipe								60	40
B3201-03/ Hot water tank insulation						10		45	45
B3201-041 Brown paper insul. on 3 " pipe			25				60		15
B3201-05/ Brown paper insul. on 3 " pipe			30				45		25

Cluy = Chrysotile Amos
 = Aniosite
 Croc = Crocidolite

Othr = Other Cell
 = Cellulose

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

UAH

Environmental Laboratory
Kenneth E. Johnson Research
Center

The University of Alabama in Huntsville

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

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

Receipt Date: 01/15/97

Sample Date : 12/30/97

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
B3202-01/ Brown paper insul. on 3 " pipe			30		45				25
B3202-02/ Brown paper insul. on 3 " pipe							60		40
B3202-031 Brown paper insul. on 6 " pipe			50		20				30
B3202-04/ White elbow putty insul. on 6 " pipe			40				45		15

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other Cell
= Cellulose

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

UAH

Environmental Laboratory
Kenneth E. Johnson Research
Center

The University of Alabama in Huntsville

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

Re : Bulk Asbestos
Analysis EPA
600/R-931116
AIHA: 023601

Receipt Date: 11/15/97

Sample Date : 12/30/97

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
B3203-01/ (a) floor tile 12x 12				10			90
B3203-011 (b) Mastic	3			20			77
B3203-021 Brown paper insul. on 3 " pipe	15			70			15

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other Cell
= Cellulose

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

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-931116
AIHA: 023601

Receipt Date: 01/15/98

Sample Date : 01/05/98

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
B3204-01/ Brown paper insul. on 3 " pipe		15			60				25
B3204-02/ Elbow putty nsul. on 4 " pipe						1	10		89
IB3204-03/ Brown paper insul. on 4 " pipe		65							35
B3204-04/ Brown paper insul. on 3 " pipe		25			55				20
B3204-05/ (a) 12 x 12 tile				No sample in container!					
B3204-051 (b) Mastic				No sample in container!					
B3204-06/ Hot water tank insul.					5	10	35		50

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other Cell
= Cellulose

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

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

Receipt Date: 01/15/98

Sample Date : 01/05198

Microscopist: Tom Canington

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

Sample/Description	Asbestos Fibers (%)		Non-Asbestos Material (%)						
	Chry	Amos	Croc	Othr	Cell	Fbgl	MW	CaSO4	Othr
B3205-01/ Brown paper insul. on 3 " pipe		18				65			17

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

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

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: 01/15/98

Sample Date : 01/06/98

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
B3206-01/ Brown paper insul. on 4 " pipe		45				30			25
B3206-02/ Brown paper insul. on 3 " pipe		25				60			15
B3206-03/ (a) 9 x 9 floor tile		15				15			70
B3206-03/ (b) Mastic		30				10			60

Chry = Chrysotile
Amos = Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

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

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 : 01/15/98

Sample Date : 01/06/98

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
B3207-01/ Brown paper insul. on 3 " pipe		15				70			15
B3207-02/ Brown paper insul. on 3 " pipe		55				25			20
B3207-03/ Brown paper insul. on 3 " pipe		30				55			15

Chry = Chrysotile Amos
= Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

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

UAH

Environmental Laboratory
Kenneth E. Johnson Research
Center

The University of Alabama in Huntsville

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

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

Receipt Date : 01/15/98

Sample Date : 01/07/98

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
B3209-01/ Brown paper insul.	50					25				25
B3209-02/ Brown paper insul.	10					35		35		20

Chry = Chrysotile Amos
= Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

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

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 : 01/15/98

Sample Date : 01/07/98

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	Fbql	MW	CaSO4	Othr
B3210-01/ Brown paper insul.		15				65			20

Chry = Chrysotile Amos
Amos = Amosite
Croc = Crocidolite

Othr = Other
Cell = Cellulose

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

APPENDIX B

ASBESTOS CONTAINING MATERIALS

**SUMMARY TABLE
ASBESTOS CONTAINING MATERIALS
MISCELLANEOUS
BUILDINGS 3201-3211**

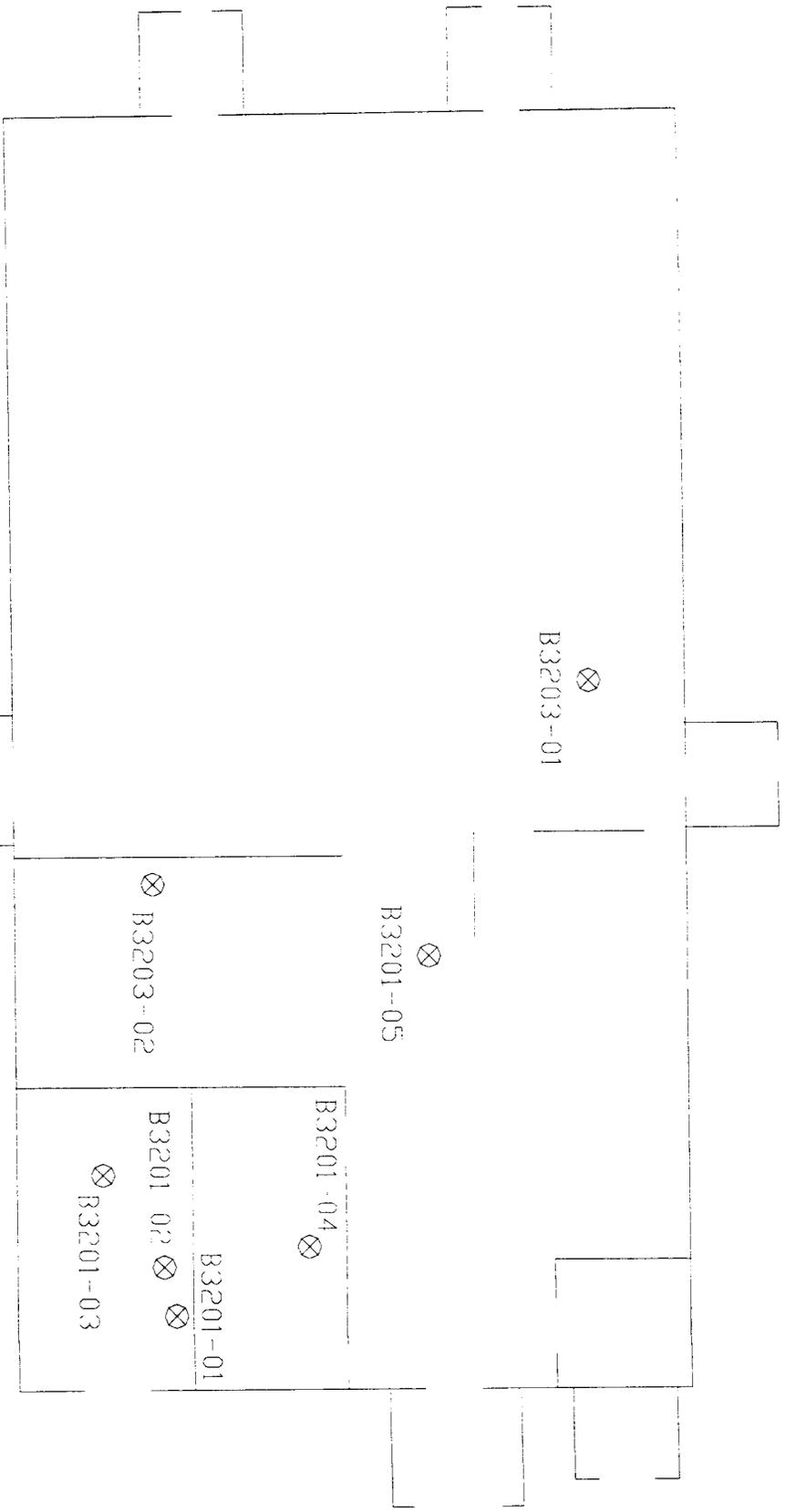
FORT McCLELLAN, ALABAMA

SAMPLE #(S)	Description of Materials	General Location of Material	Quantity (approx.)
--------------------	-------------------------------------	---	---------------------------

Multiple Samples	Brown air-cell type Pipe insulation	All buildings excluding B3211	782 linear ft. total
Multiple Samples	Pipe fitting insulation	B3201,3202,3204 & 3209	20 fittings
B3206-03a/b	9x9 floor tile & mastic	Building 3206	2,000 sq. ft.
3203-01b	Mastic associated with 12x12 floor tile	All buildings excluding B3206	22,000 sq. ft. total
PACM	Transite panels	Kitchen area of all buildings	2,000 sq. ft. total

APPENDIX C

SAMPLE LOCATIONS PLANS

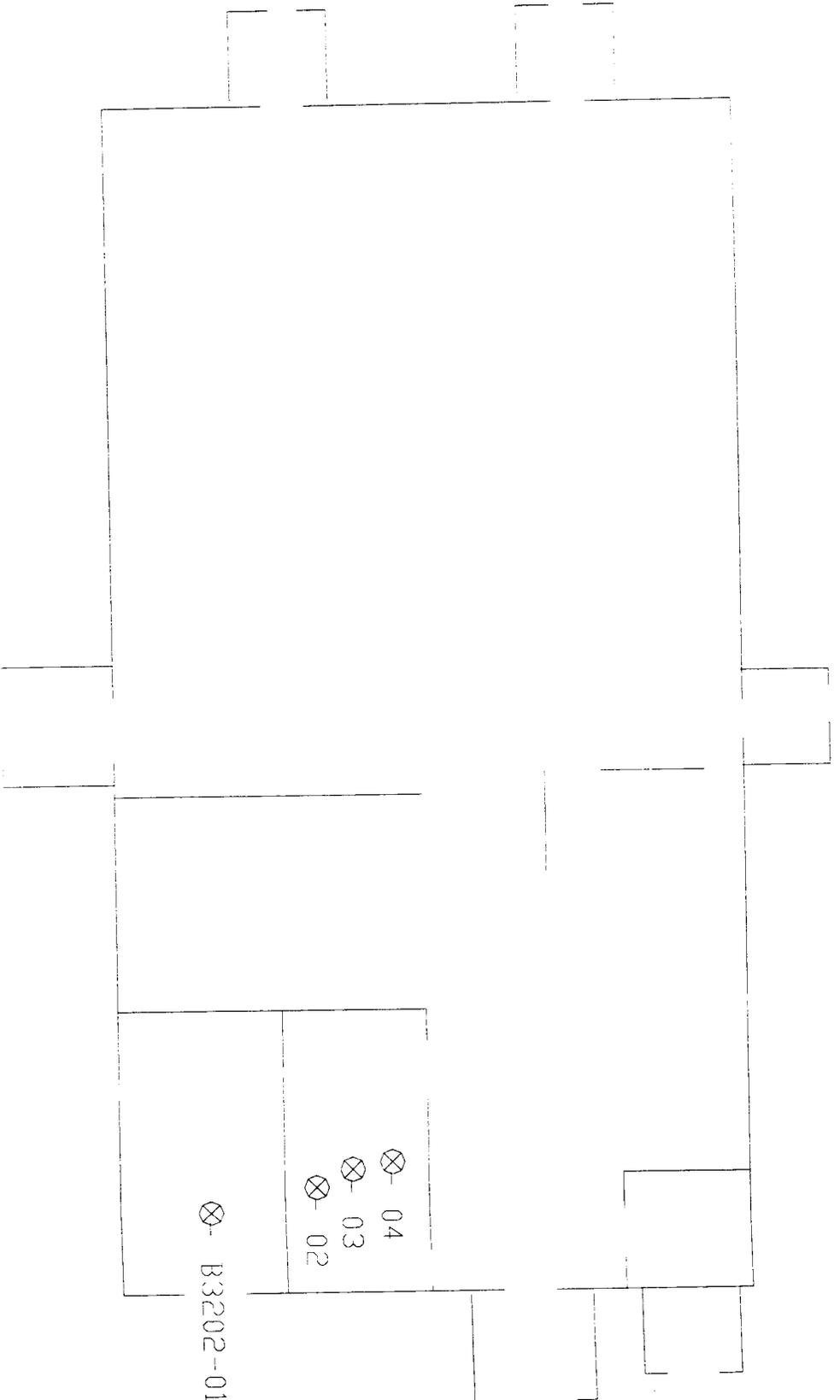


⊗ POSITIVE SAMPLE LOCATION
 ⊗ NEGATIVE SAMPLE LOCATION

BUILDING: 3201
 3203

ASBESTOS SURVEY
 DAB102-96-D-0005
 FM705

REISZ ENGINEERING

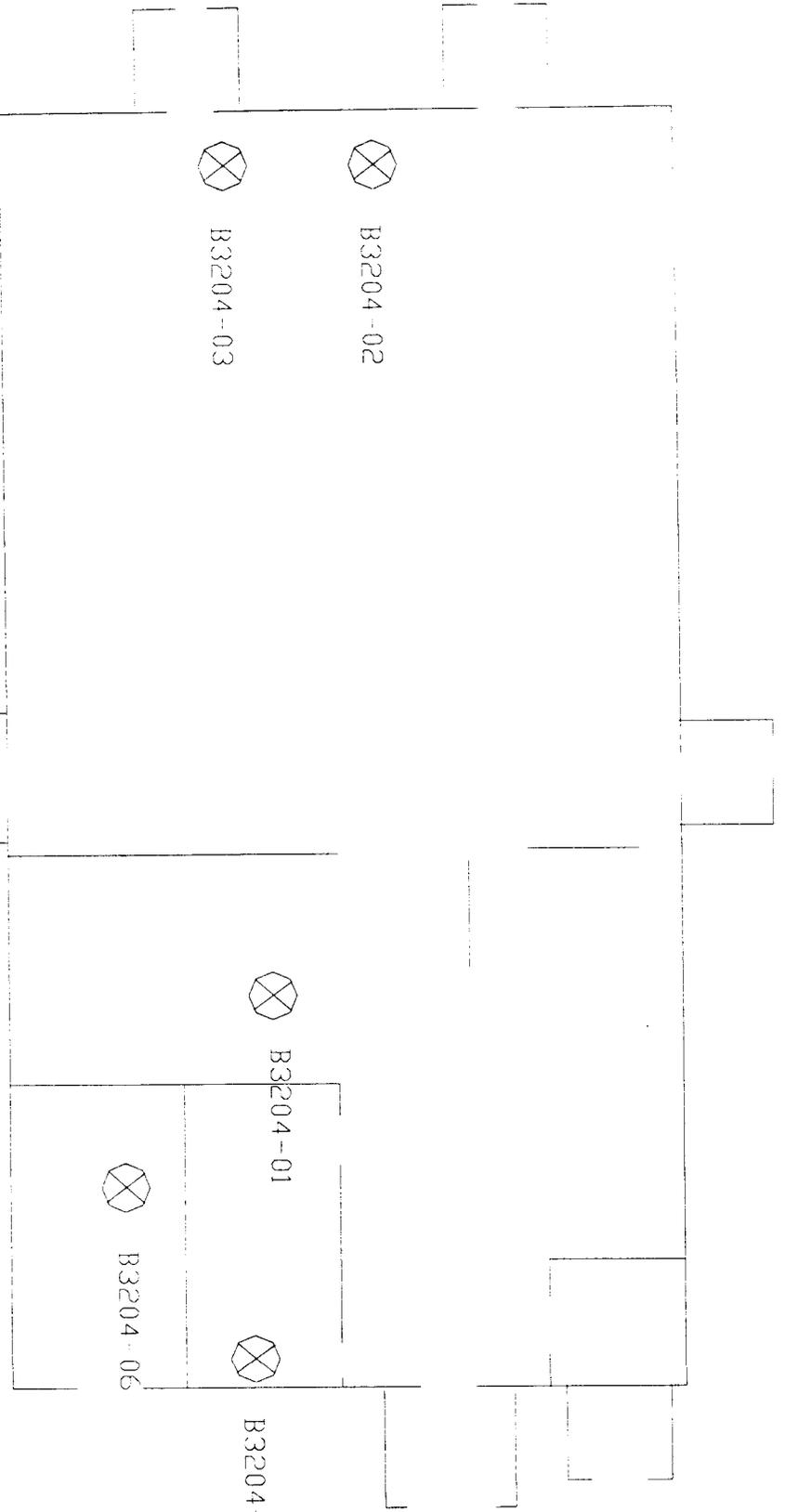


- ⊗ POSITIVE SAMPLE LOCATION
- ⊗ NEGATIVE SAMPLE LOCATION

BULL DINING 32202

ASBESTOS SURVEY
 DAR102-96 D 0005
 1M/05

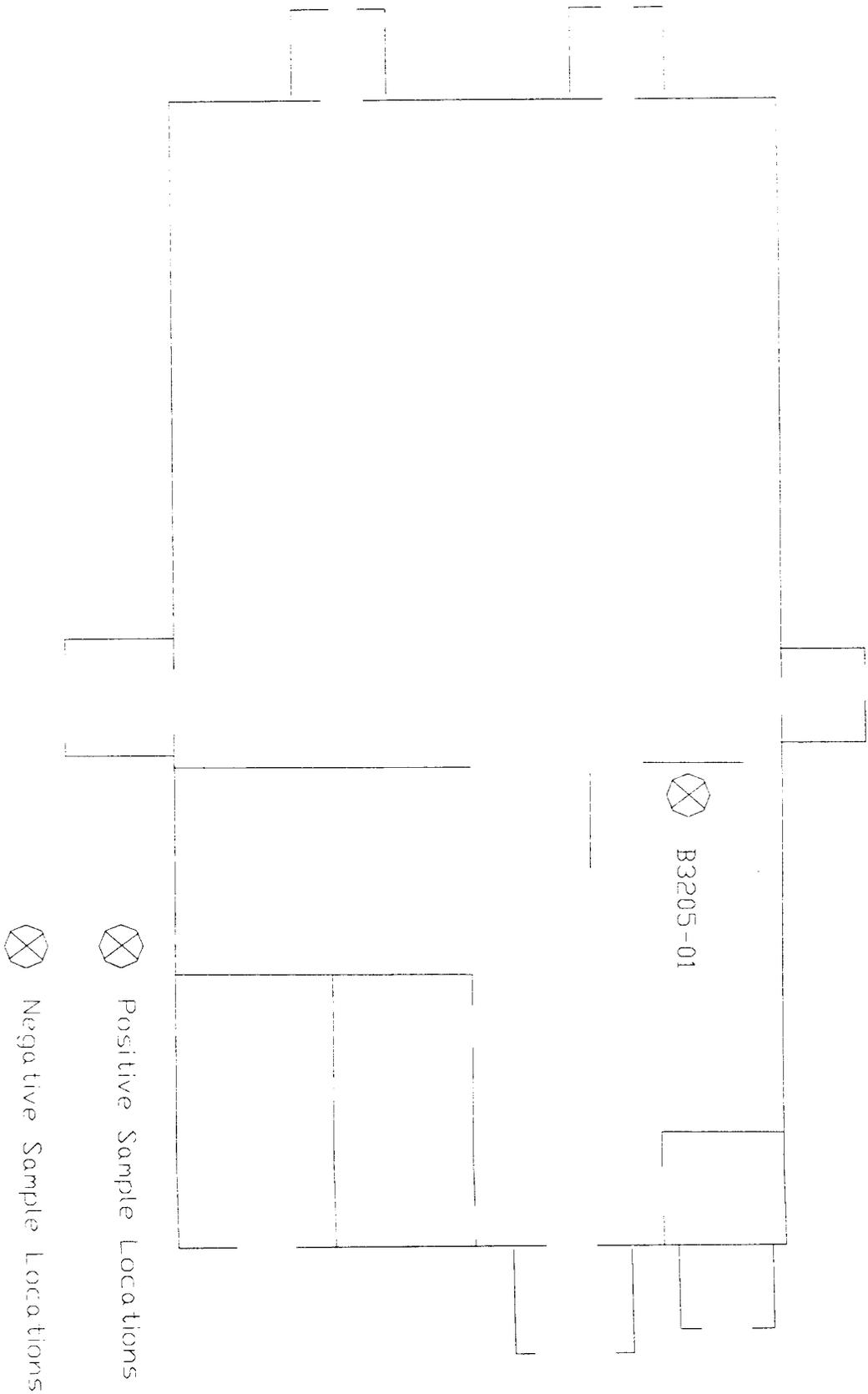
REISZ ENGINEERING



BUILDING 3205

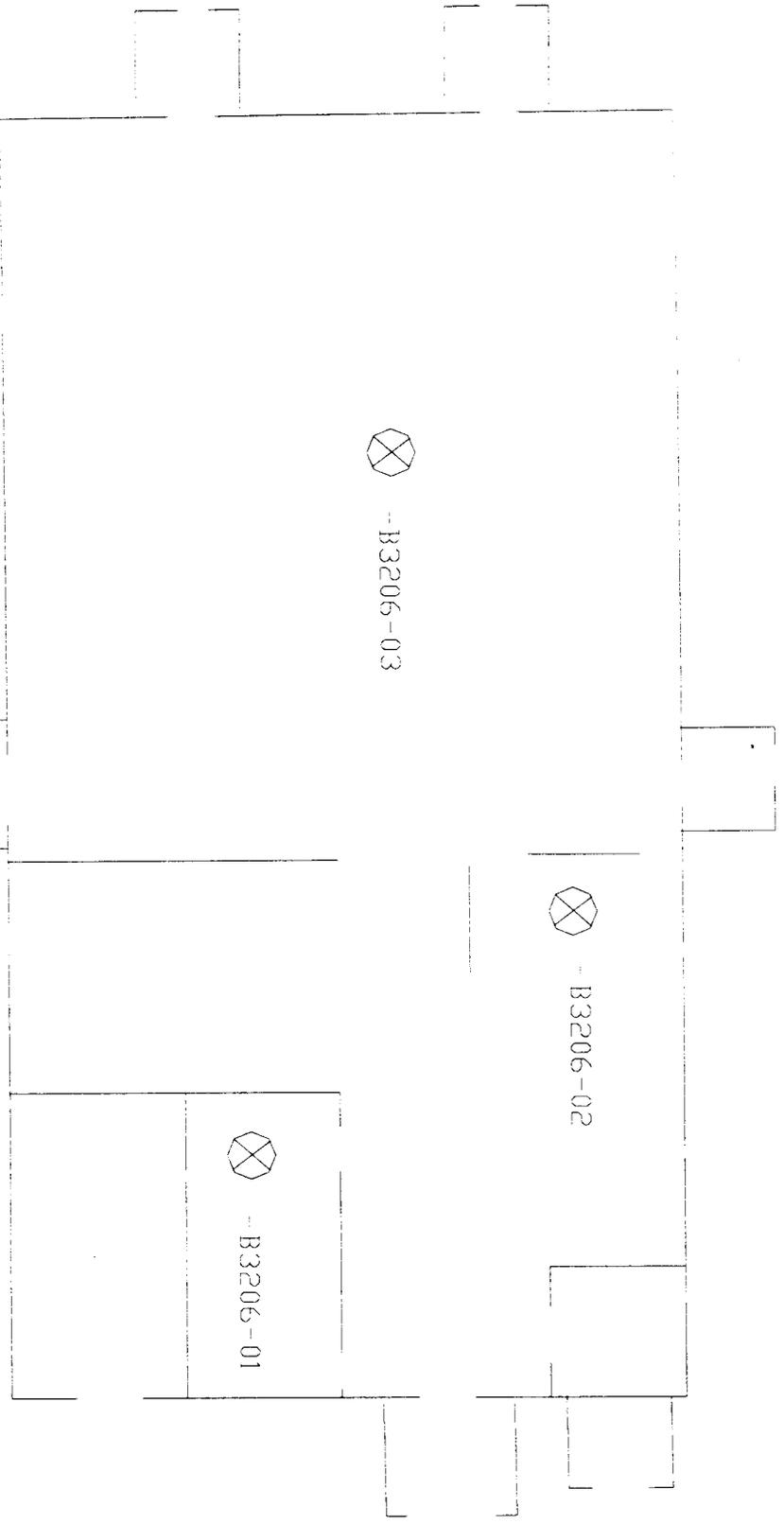
ASBESTOS SURVEY
DAB102-96 D-0003
1M705

REISZ ENGINEERING



BUILDING: 32206

ASBESTOS SURVEY
DAB102 96-D-0005
FM/05



⊗ Positive Sample Locations

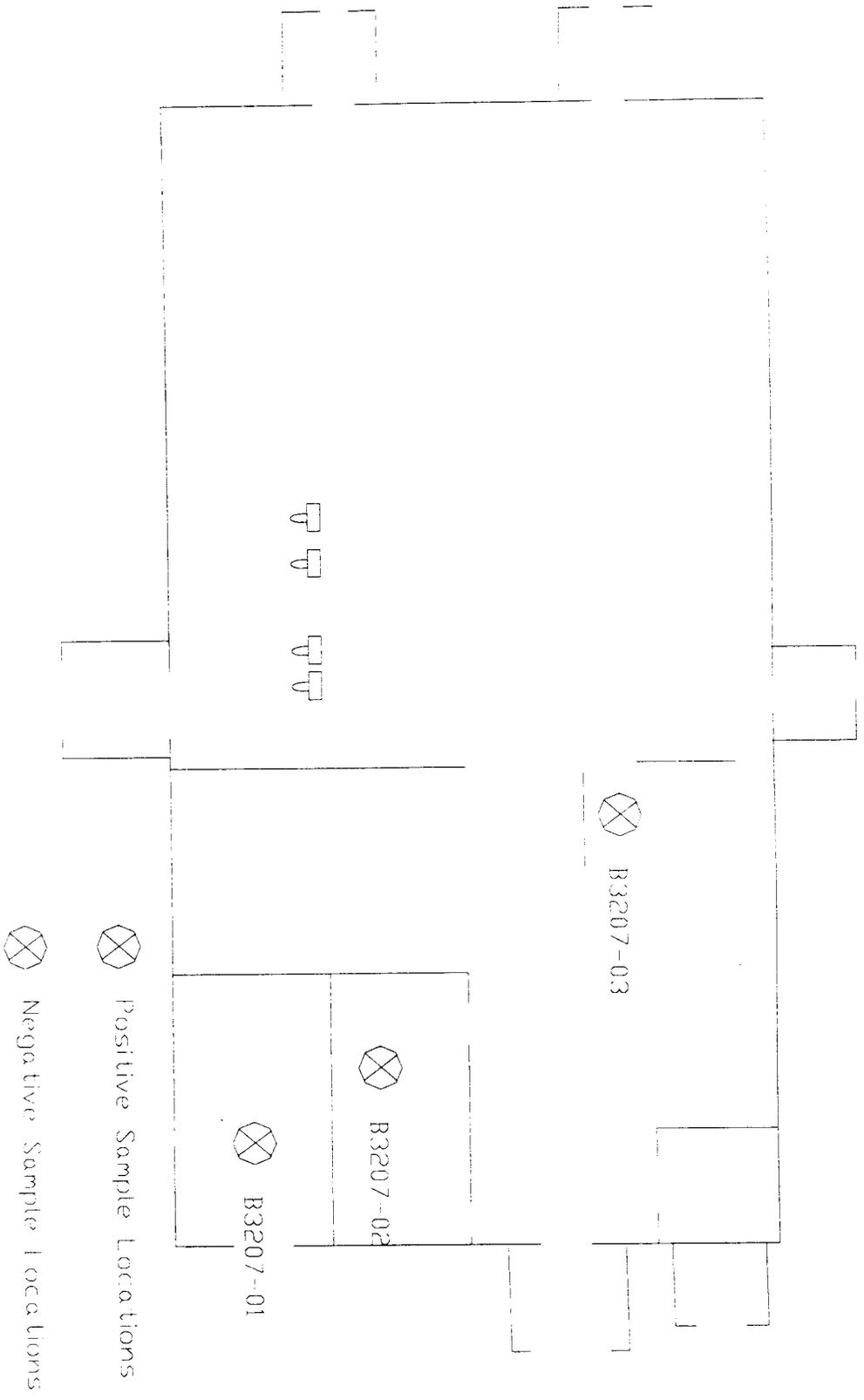
⊗ Negative Sample Locations

REISZ ENGINEERING

BUILDING: 3207

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

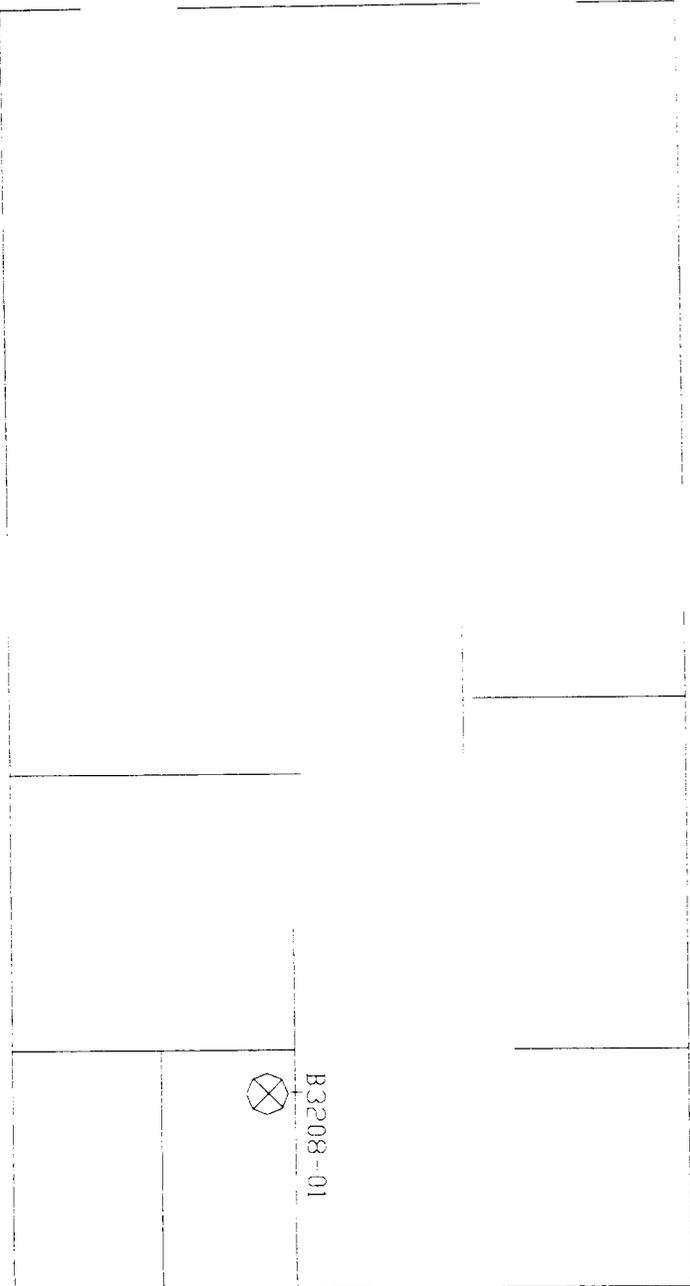
REISZ ENGINEERING



BUILDING: 3208

ASBESTOS SURVEY
DATE: 10/29/96 (D 0005)
FM/015

REISZ ENGINEERING

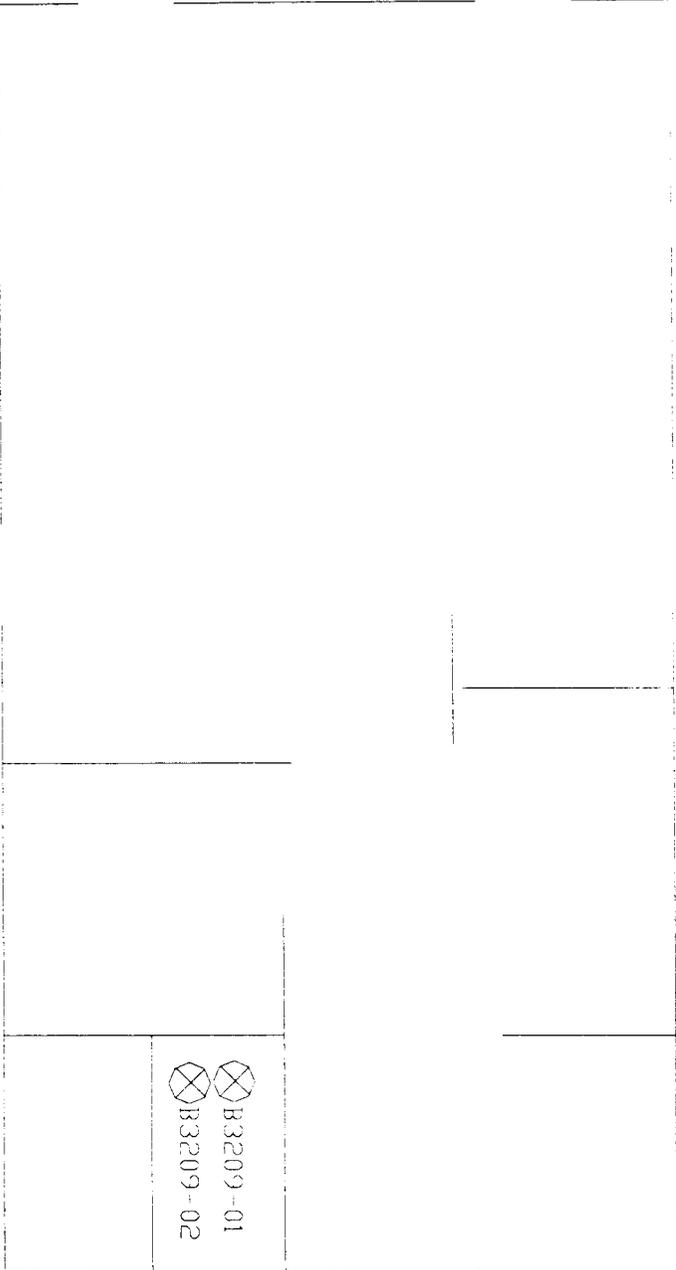


- ⊗ Positive sample location
- ⊗ Negative sample location

BULI DING 3209

ASBESTOS SURVEY
DAB102-96 B-0000
FM/05

REISZ ENGINEERING



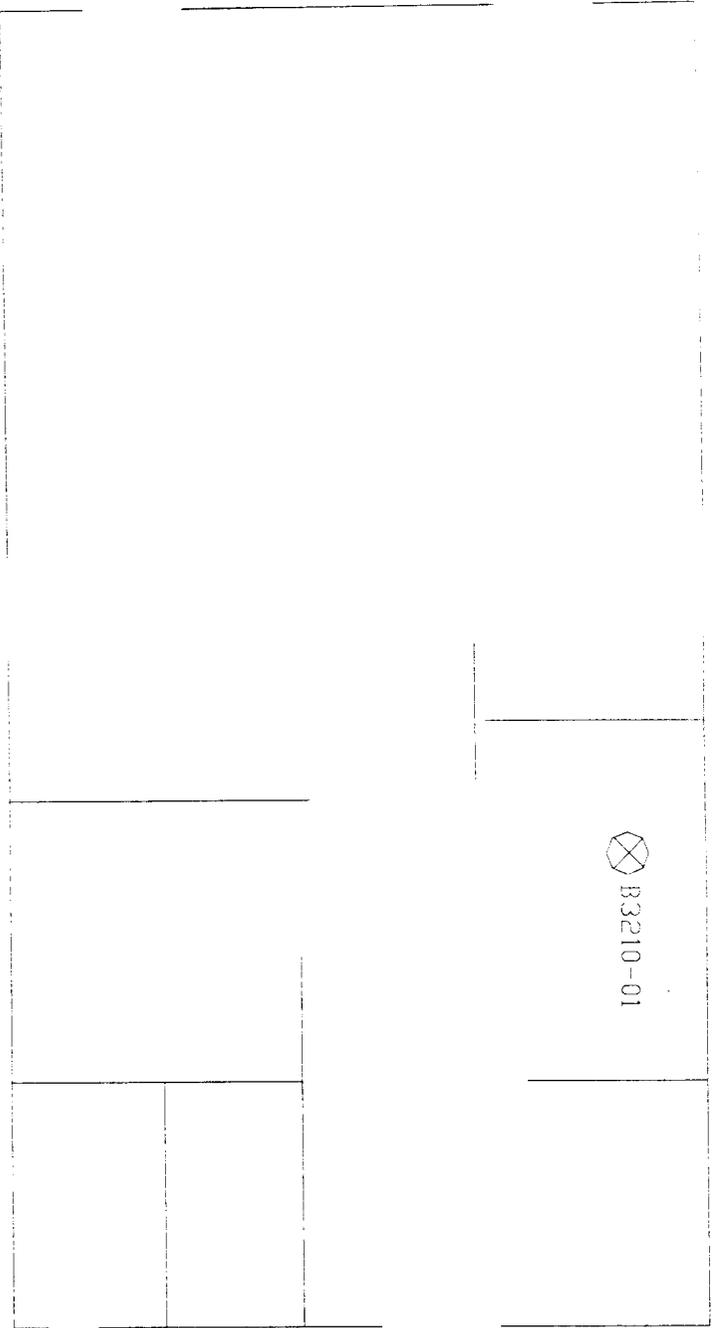
⊗ Positive sample location

⊗ Negative sample location

BUILDING: 3210

ASBESTOS SURVEY
DAB102-96-D-0005
1/17/05

REISZ ENGINEERING

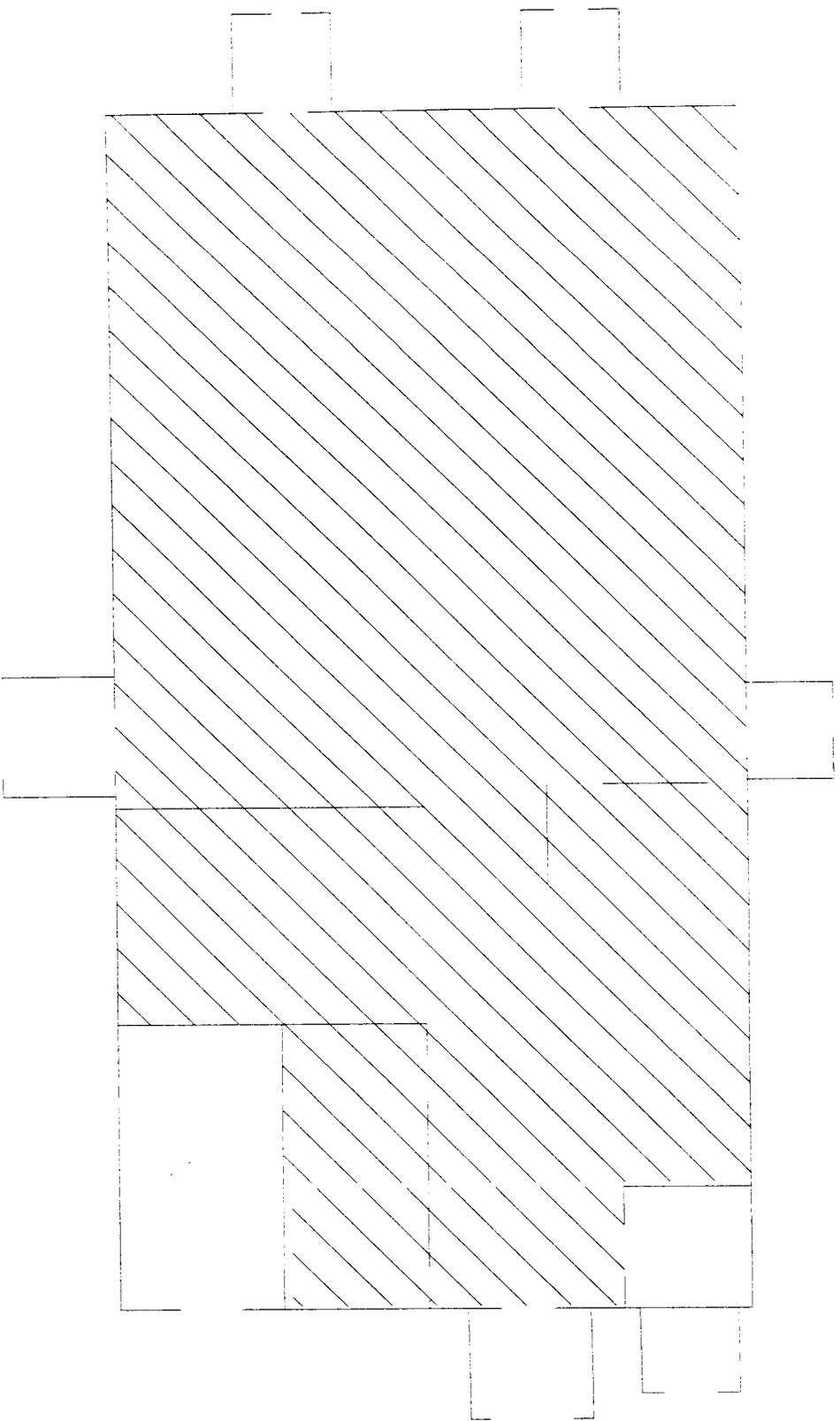


⊗ Positive sample location

⊗ Negative sample location

APPENDIX D

SELECTED ACM LOCATION PLANS

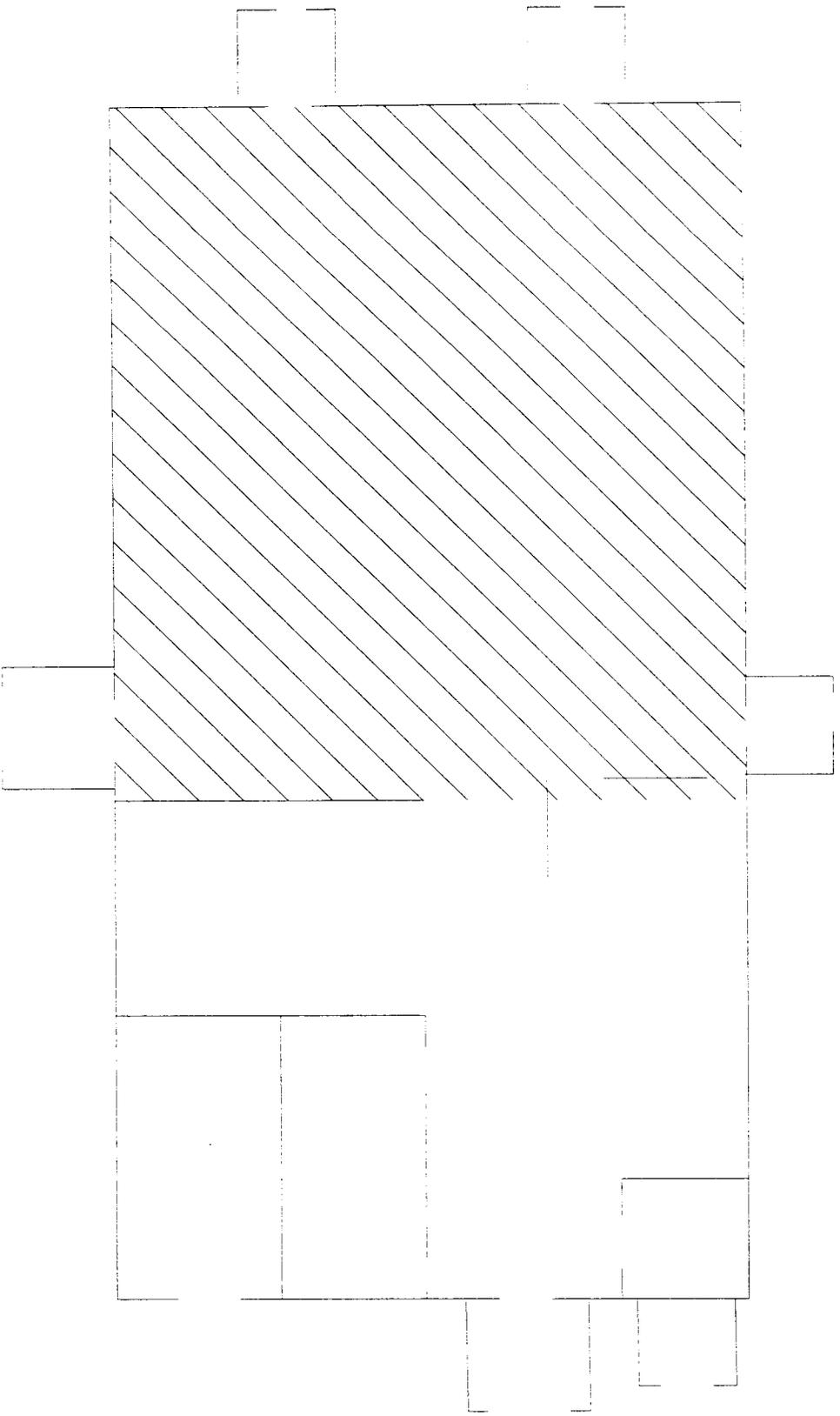


12 X 12 INCH PIPE

BILL DING 3202

ASBESTOS SURVEY
DAB102 96-D-0005
FM705

REISZ ENGINEERING

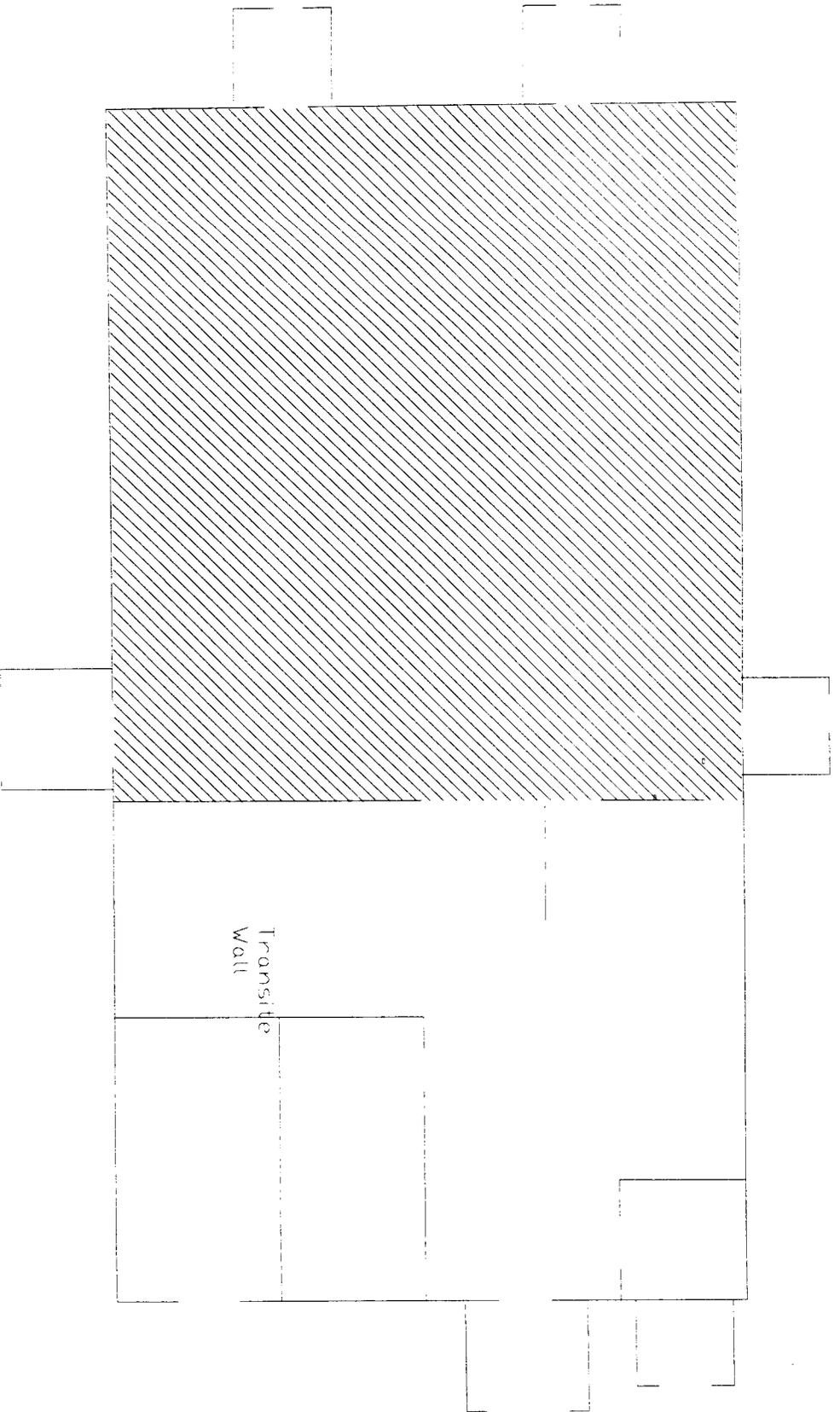


 9 X 9 FLOOR TILE
 12 X 12 FLOOR TILE

BUILDING 3201
 3203

ASBESTOS SURVEY
 DABTOP 96 D-0005
 FM/03

REISZ ENGINEERING

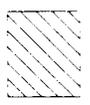


12 X 12 FLINTK 1117

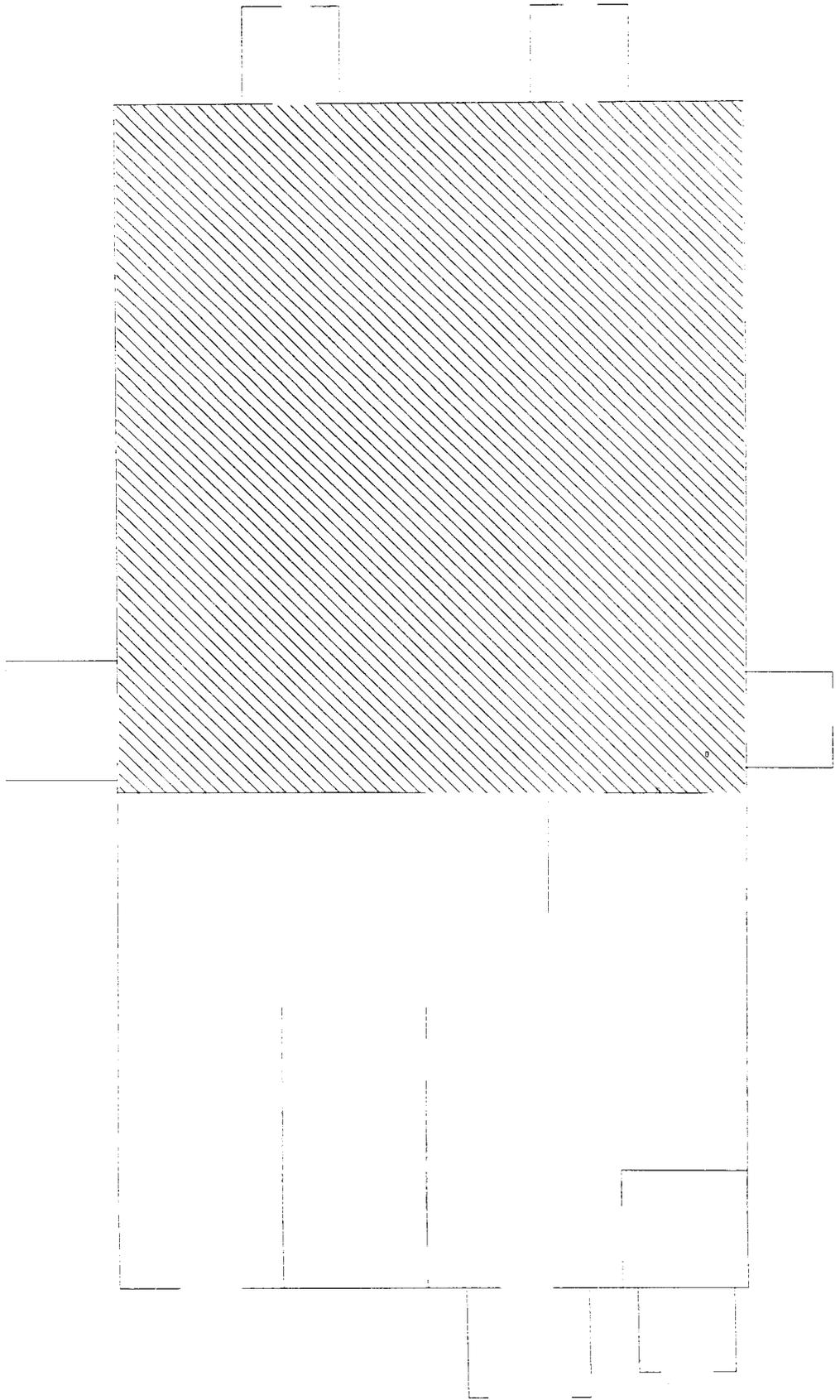
BULL DING 3204, 3205, 3207

ASBESTOS SURVLY
DARTON 96-D-0005
FM/05

REISZ ENGINEERING



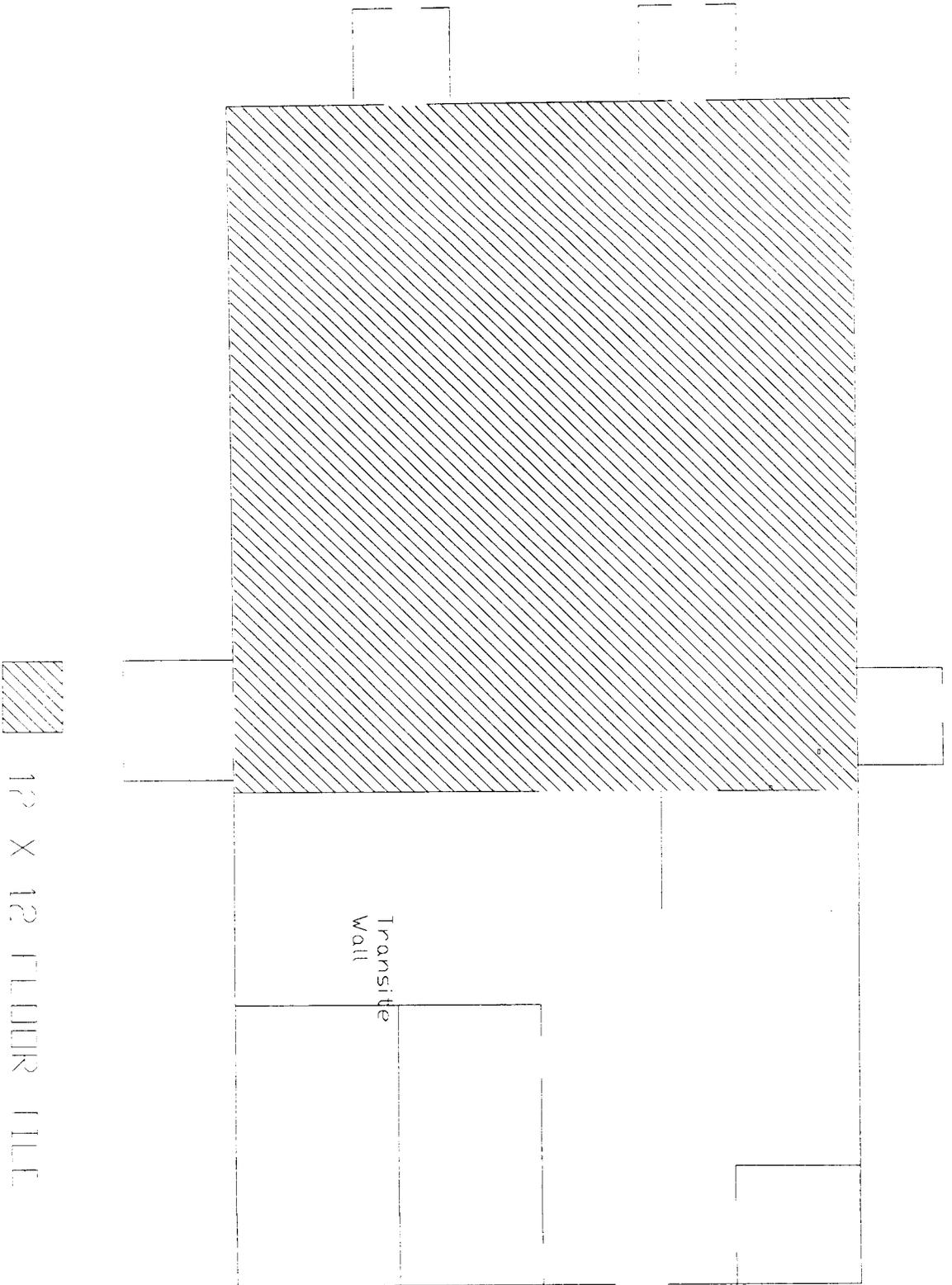
9 X 9 MILLIM TILE



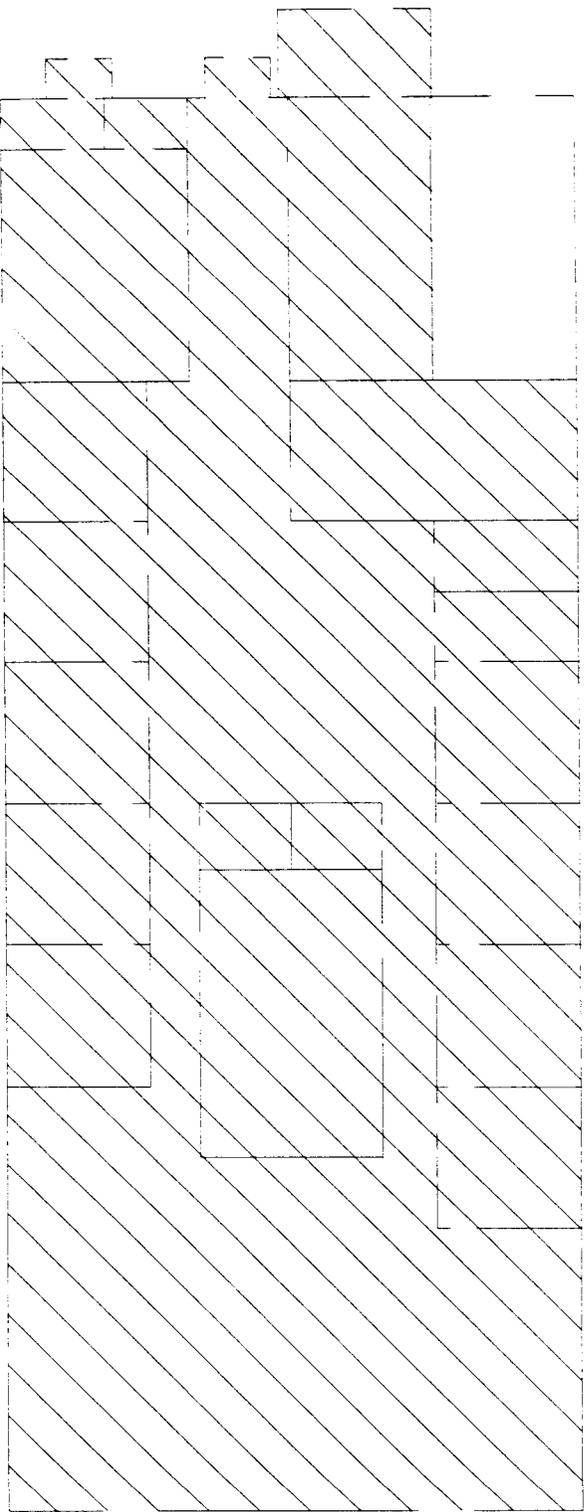
BUILDING 3298, 3209, 3210

ASBESTOS SURVEY
DAB102-05 D-0005
1/17/05

REISZ ENGINEERING



 12 X 12 FLOOR TILE



12 X 12 FLOOR PLAN

BUILDING 3211

ASBESTOS SURVEY
DATE 02-96-D-0005
1M705

REISZ ENGINEERING

APPENDIX E

SELECTED ACM PHOTOGRAPHS

**ASBESTOS CONTAINING BUILDING MATERIALS
SURVEY REPORT**

**BUILDING(S): 3214, 3251-3253, 3270-3281, 3291-3295,
and 3297**

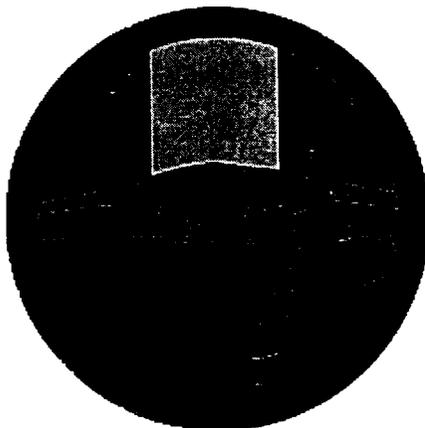
**ASBESTOS CONTAINING BUILDING MATERIALS SURVEY
MISCELLANEOUS
BUILDINGS (3200s)**

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 (3200s)

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

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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 multiple 3200 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. Some of the buildings referenced in this survey contain only non-friable ACM. Others contain friable, while some have no PACM. Refer to Appendix B for types and quantities of materials in individual buildings. These buildings serve as office, barracks and storage for the Alabama National Guard.

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 in various buildings. 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

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A narrative description of all Presumed ACM identified during the survey is given below.

FRIABLE ACM

None

NON FRIABLE ACM

Four types of non-friable presumed ACM were found in the buildings. 1) transite, 2) 9x9 floor tile, 3) 12x12 floor tile, and 4) mastics associated vinyl floor tile.

- 1) Presumed asbestos containing transite sheeting is found around the flue penetrations in the following buildings:
B3251 B3252 B3253
- 2) Presumed asbestos containing 9x9 inch floor tile and mastic is found in the following buildings:
B3251 B3252 B3253 B3272 B3247 B3278 B3279 B3280 B3291 B3292
- 3) Presumed asbestos containing 12x12 inch floor tile and mastic is found in the following buildings:
B3214 B3251 B3252 B3253 B3270 B3271 B3272 B3273 B3274 B3275 B3276 B3277
B3278 B3279 B3280 B3281 B3295 B3297

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 these buildings.

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.

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to locate and identify asbestos containing building materials at Buildings 3201-3211 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 December 1997, Reisz Engineering accredited Asbestos Inspectors performed inspections of these buildings for the purpose of identifying building materials suspected to contain asbestos. Buildings 3201-3211 are single story structures of similar construction. The buildings range in size from 3,179 sq. ft. to 4,156 sq. ft. Based on information provided by Fort McClellan representatives the buildings were constructed beginning in 1953. 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 and/or 9x9 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 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

- Cementitious hand-formed pipe fitting insulation
- White, powdery TSI on hot water tanks
- Brown, air-cell type pipe insulation

Miscellaneous Material

- 12x12 vinyl floor tile
- 9x9 vinyl floor tile
- Vinyl flooring mastics
- Transite on some kitchen and mechanical room walls

7.0 ASBESTOS INSPECTION AND SAMPLING RESULTS

A total of 30 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, and 2) brown, air-cell type straight-run pipe insulation.

- 1) A friable, hand-formed, asbestos containing insulation compound is applied to the fittings located in various locations both within the buildings. This material was found to be in Good to Fair condition depending on the building and area.
- 2) A brown, air-cell type asbestos containing material is found on straight runs of pipes located in all buildings except 3211. Some buildings have pipes that 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

Three types of non-friable ACM was found in the majority of the buildings. 1) transite panels located in kitchen areas of all buildings except 3207 & 3211, 2) 9x9 inch floor tile, and 3) mastics associated with 9x9 and 12x12 vinyl floor tile. 12x12 inch floor tile found in the majority of the buildings is presumed to contain asbestos.

- 1) Asbestos containing transite panels can be found on the walls around ovens in the kitchen areas of all buildings except 3207 & 3211.
- 2) Asbestos containing 9x9 inch floor tile is found in Building 3206.
- 3) Black, asbestos containing mastics are present below vinyl floor tiles found in all of 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. The asbestos containing materials may be subject to routine maintenance activities that could involve significant disturbance. Those materials include the pipe fitting and straight-run insulation located within the buildings. Based upon the aforementioned conditions, abatement of friable asbestos containing materials associated with these buildings should be considered. 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 3201-3211 during December, 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*
B3214	12X12 floor tile and mastic	4000 sq. ft.	\$9240
B3251,3252,3253	12x12 floor tile and mastic	5000 sq. ft. per bldg	\$11500 per bldg.
	9x9 floor tile and mastic	80 sq. ft. per bldg	\$200
	Transite flue insulation	8 sq. ft. per bldg	\$100
B3270,3271	12x12 floor tile and mastic	2750 sq. ft. per bldg	\$6275 per bldg.
B3272	12x12 floor tile and mastic	240 sq. ft.	\$600
B3273	12x12 floor tile and mastic	2,750 sq. ft.	\$6325
B3274	12x12 floor tile and mastic	950 sq. ft.	\$2200
	9x9 floor tile and mastic	1800 sq. ft.	\$4140
B3275,3276,3277, 3281	12x12 floor tile and mastic	2750 sq. ft.	\$6325 per bldg.
B3278	12x12 floor tile and mastic	2500 sq. ft.	\$5750
	9x9 floor tile and mastic	250 sq. ft.	\$600
B3279	12x12 floor tile and mastic	2700 sq. ft.	\$6210
	9x9 floor tile and mastic	50 sq. ft.	\$150
B3280	12x12 floor tile and mastic	2500 sq. ft.	\$5750

	9x9 floor tile and mastic	250 sq. ft.	\$600
B3291, 3292	9x9 floor tile and mastic	2750 sq. ft. per bldg	\$6325 per bldg.
B3295, 3297	12x12 floor tile and mastic	1000 sq. ft. per bldg	\$2300 per bldg.

***Includes all air monitoring and design fees**

APPENDIX B

LIST OF BUILDINGS

BUILDING NUMBER

3214

3251

3252

3253

3270

3271

3272

3273

3274

3275

3276

3277

3278

3279

3280

3281

3291

3292

3295

3297