Phase IV

U.S. Army - Fort Monmouth

Volume 1 - Report Guide Document for a Comprehensive Asbestos Survey in Various Buildings at Fort Monmouth, New Jersey

Contract Number DACA51-91-D-0028

May 1993

Prepared for:

U.S. ARMY - FORT MONMOUTH
Directorate of Engineering and Housing
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REPORT GUIDE DOCUMENT
FOR A COMPREHENSIVE ASBESTOS SURVEY
IN VARIOUS BUILDINGS AT
FORT MONMOUTH, NEW JERSEY

CONTRACT NO. DACA51-91-D-0028

VOLUME 1

PHASE IV

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Weston Work Order Nos. 03886-077-001 and -002

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EXECUTIVE SUMMARY

Roy F. Weston, Inc. (WESTON®) was retained by the U.S. Army — Fort Monmouth to perform an asbestos survey of approximately 450,000 ft^2 of floor-space area at Fort Monmouth, New Jersey. Purposes of the survey included the following:

- Identify, sample, and document the presence of asbestos-containing materials (ACM).
- Perform exposure assessment and rank hazards.
- Develop preliminary cost estimates for asbestos removal and replacement.
- Make recommendations for the implementation of a program to manage and control asbestos in these buildings.
- Develop a computer software program and database to facilitate management of data.

Table 1-1 lists all buildings surveyed and inspected at Fort Monmouth during the Phase IV survey. This table also includes all "walk-through" and similar buildings. Walk-through surveys were conducted for the purpose of establishing whether the walk-through building is similar to the referenced building with respect to construction and suspect materials. Buildings were classified as similar based on information provided by Fort Monmouth. No actual survey of any type was performed in the similar buildings. The data presented on walk-through and similar buildings provide a general guideline on the type and quantity of ACM that can be expected to be found in these buildings; however, since no sampling or analysis was performed in these buildings, these data should be used only as a management tool for establishing priorities for future asbestos management and abatement actions.

Exposure assessments utilizing the Army's TRADOC protocol were performed for all building areas in which friable ACM was identified. TRADOC Priority Index Ratings (PIR) range from over 1,000,000 (long-term corrective measures should be initiated immediately)

explanation of the TRADOC PIR. Recommendations for management and control of ACM in each of the surveyed buildings are provided in the individual building reports contained in Volumes 2A and 2B. Findings and recommendations for each building are also summarized in Table 1-2.

Table 1-1

List of Inspected and Similar Buildings
Phase IV

Building Number	Building Designation	Gross Ft^2	Survey Type	Reference Building
110	Storage	50	CI	0
142	Box Crate Shop	6,316	CI	0
157	Ammo. Building	852	CI	0
161	Maintenance Shop	3,348	CI	0
164	Maintenance Shop	3,200	S	165
165	Maintenance Shop	4,720	CI	0
166	Repair Shop	8,017	CI	0
170	Storage	3,000	CI	0
171	Storage	3,000	CI	0
201	Gas Meter	218	Demolished	0
202	Family Housing Units A & B	6,590	CI	0
210	Communication Equipment	7,200	CI	0
275	Museum	7,432	CI	0
276	Administration	2,744	CI	0
277	Administration	12,600	CI	0
289	Supply	4,102	CI	0
293	Battery Testing	6,622	CI	0
294	Storehouse	4,272	CI	0
295	Administration	9,000	CI	0
401	Administration	2,280	Demolished	0
406	Storehouse	2,749	W	443
410	Administration	4,720	W	443
412	Safety/First Aid	1,144	CI	0
426	Administration	4,720	W	443
433	Storehouse	1,296	S	412
434	Administration	2,888	CI	0
436	Storehouse	1,378	S	412
443	Maintenance Shop	4,720	CI	0
458	Storage	4,720	CI	0
475	Administration	2,727	S	434
480	Supply	9,267	CI	0
481	Make-It-Happen Center	9,267	CI	0
483	Electrical/Work Control Shop	6,612	CI	0
485	Plumbing Maintenance	2,908	CI	0

Table 1-1

List of Inspected and Similar Buildings
Phase IV
(Continued)

Building Number	Building Designation	Gross Ft^2	Survey Type	Reference Building
497	Storage	3,000	CI	0
498	Storage	1,223	CI	0
499	Courthouse	2,040	CI	0
545	Administration	9,402	CI	0
550	Administration	9,267	CI	0
563	Thrift Shop	8,894	CI	0
565	Liquor Store	2,000	CI	0
616	Administration	1,500	W	826
620	Det. Day Room	1,500	S	826
686	Warehouse	5,929	CI	0
695	Administration	6,433	CI	0
699	Service Station	1,769	CI	0
701	Red Cross	1,676	CI	0
801	Outdoor Recreation	9,267	CI	0
804	Warehouse	9,267	W	801
810	Veterinary Clinic	3,222	CI	0
826	Storehouse	1,520	CI	0
828	MEDDAC	4,720	W	866
866	Monmouth House	4,720	CI	0
886	Warehouse	4,608	CI	0
901	Instruction Building	12,897	CI	0
919	Heat Plant	296	Demolished	0
921	Heat Plant	385	Demolished	0
922	Heat Plant	296	Demolished	0
976	Warehouse	26,880	CI	0
977	Provost Marshall	18,675	CI	0
978	Switch Station	988	Demolished	0
983	Dog Kennel	1,924	CI	0
1006	Credit Union	5,100	CI	0
1010	Information Center	2,600	CI	0
1076	Hospital Boiler House	3,387	CI	0
2018	Warehouse	3,205	CI	0
2044	Storehouse	2,360	CI	0
2275	Chapel	3,334	CI	0

Table 1-1

List of Inspected and Similar Buildings
Phase IV
(Continued)

Building Number	Building Designation	Gross Ft^2	Survey Type	Reference Building
2469	Gas Plant	144	Demolished	0
2531	Storage	3,226	CI	0
2535	Laboratory	736	CI	0
2542	Storehouse	696	CI	0
2542-A	Distribution Building	264	Demolished	0
2543	Heat Plant	972	CI	0
2561	Dispatch Building	1,200	CI	0
2562	Warehouse	1,120	CI	0
2564	Warehouse/Repair Shop	6,364	CI	0
2567	Post Exchange	1,335	CI	0
2570	Storehouse	254	CI	0
2607	Storehouse	950	Demolished	0
9006	Administration	3,082	CI	0
9012	Heat Plant	960	CI	0
9013	Laboratory	5,100	CI	0
9014	Heat Plant	216	S	9030
9027	Administration	3,604	CI	0
9028	Heat Plant	456	S	9030
9029	Administration	3,604	CI	0
9030	Heat Plant	456	CI	0
9033	Heat Plant	566	S	9030
9035	Heat Plant	882	CI	0
9038	Heat Plant	2,220	CI	0
9043	Signal Administration	7,149	CI	0
9044	Motor Pool	5,100	CI	0
9045	Laboratory	11,737	CI	0
9046	Storage	480	CI	0
9047	Administration	4,484	CI	0
9049	Switching Station	3,746	CI	0
9051	Administration	4,484	S	9045
9053	Administration	4,501	S	9045
9059	Telephone Exchange	2,778	CI	0
9064	Heat Plant	874	CI	0
9079	Clinic	1,512	Demolished	0

Table 1-1

List of Inspected and Similar Buildings
Phase IV
(Continued)

Building Number	Building Designation	Gross Ft^2	Survey Type	Reference Building
9080	Sewage Plant	1,308	CI	0
9083	Maintenance Shop	1,976	CI	0
9084	Administration	1,880	CI	0
9085	Metal Shop	1,876	CI	0
9086	Administration	585	CI	0
9088	Storage	3,200	CI	0
9089	Administration	4,000	CI	0
9092	Laboratory	1,105	CI	0
9094	Storage	1,105	CI	0
9097	Laboratory	1,218	S	9359
9100	Heat Plant	1,536	CI	0
9102	Storage	1,536	CI	0
9105	Storage	1,122	CI	0
9116	Storage	2,186	CI	0
9120	Storage	168	CI	0
9124	Laboratory	80	Demolished	0
9162	Administration	2,356	CI	0
9312	Storage	420	CI	0
9334	Storage	410	CI	0
9342	Storage	288	CI	0
9344	Hydrogen Shed	233	CI	0
9345	Metal Shop	800	CI	0
9350	Storage	240	CI	0
9359	Laboratory	2,500	CI	0
9383	Laboratory	203	Demolished	0
9400	Administration	1,600	CI	0
9401	Laboratory	6,307	W	9013
9654	Laboratory	7,108	Demolished	0

Legend:

CI = Complete Inspection
S = Similar Building
W = Walk-through Building

Table 1-2

Summary of Building Findings and Recommendations

Building Number	Asbestos Present Yes/No	Asbestos Material	Estimated Abatement Costs (AADAP Areas Only)	Estimated Abatement Costs (Total Removal)	Comments
110	No				No ACM found in the building
142	Yes	• Pipe insulation • Floor tile	$6,900	$74,400	Qualifies for AADAP in warehouse
157	No				No ACM found in the building
161	Yes	• Floor tile • Linoleum • Transite panel • Exhaust insulation		$11,900	Building scheduled for demolition
165	Yes	• Floor tile • Transite panel		$26,500	O&M program
166	No				No ACM found in the building
170	Yes	• Transite panel		$9,400	Qualifies for AADAP in storage area
171	Yes	• Transite panel		$9,400	Qualifies for AADAP in storage area
202	Yes	• Floor tile		$13,200	O&M program
210	Yes	• Floor tile		$10,000	O&M program
275	Yes	• Floor tile • Pipe insulation • Transite panel • Wall tile		$159,500	O&M program
276	Yes	• Transite panel • Pipe/fitting insulation • Floor tile/linoleum • Tank insulation		$77,600	O&M program
277	Yes	• Pipe insulation and fitting insulation • Floor tile • Breeching	$4,600	$134,400	Qualifies for AADAP in small arms repair shop
289	Yes	• Floor tile		$7,600	O&M program
293	Yes	• Floor tile • Lab tabletop		$41,800	O&M program

Table 1-2

Summary of Building Findings and Recommendations (Continued)

Building Number	Asbestos Present Yes/No	Asbestos Material	Estimated Abatement Costs (AADAP Areas Only)	Estimated Abatement Costs (Total Removal)	Comments
294	Yes	• Pipe insulation and fitting insulation • Floor tile	$28,200	$40,800	Qualifies for AADAP in Garages 1 and 2, NBC office, NBC Room 1, and storage
295	Yes	• Floor tile		$61,600	O&M program
406	N/A	• Floor tile			Walk-through building; suspect ACM present in building
410	N/A	• Transite panel • Floor tile/linoleum • Expansion cloth			Walk-through building; suspect ACM present in building
412	Yes	• Floor tile • Transite panel		$19,900	O&M program
426	N/A	• Floor tile/linoleum • Transite panel • Expansion cloth			Walk-through building; suspect ACM present in the building
434	Yes	• Floor tile • Pipe insulation and fitting insulation	$14,800	$30,900	Qualifies for AADAP in open office area
443	Yes	• Transite panel		$7,200	Building scheduled for demolition
458	Yes	• Expansion cloth		$5,700	Building scheduled for demolition
480	Yes	• Floor tile • Transite panel		$99,500	O&M program
481	Yes	• Floor tile		$3,700	O&M program
483	Yes	• Pipe insulation • Floor tile • Transite panel	$99,500	$341,000	Qualifies for AADAP in equipment room, garage, janitor's closet, Storage 1, latrine, and Office 1
485	Yes	• Floor tile • Transite panel		$25,300	O&M program
497	Yes	• Floor tile		$30,300	O&M program
498	Yes	• Floor tile		$12,400	O&M program
499	Yes	• Floor tile		$11,400	O&M program

Table 1-2

Summary of Building Findings and Recommendations (Continued)

Building Number	Asbestos Present Yes/No	Asbestos Material	Estimated Abatement Costs (AADAP Areas Only)	Estimated Abatement Costs (Total Removal)	Comments
545	Yes	• Transite panel		$17,400	O&M program
550	No				No ACM found in the building
563	Yes	• Breeching insulation • Floor tile		$82,700	O&M program
565	No				No ACM found in the building
616	N/A	• Transite panel • Floor tile			Walk-through building; suspect ACM present in the building
686	Yes	• Floor tile		$41,700	Building scheduled for demolition
695	Yes	• Floor tile		$51,700	O&M program
699	Yes	• Floor tile		$12,100	O&M program
701	Yes	• Floor tile • Transite panel • Boiler gasket		$36,100	O&M program
801	No				No ACM found in the building
804	N/A	• Linoleum • Floor tile			Walk-through building; suspect ACM present in the building
810	No				No ACM found in the building
826	Yes	• Floor tile		$7,300	O&M program
828	N/A	• Pipe insulation and fitting insulation • Floor tile • Tank insulation			Walk-through building; suspect ACM present in the building
866	Yes	• Tank insulation • Floor tile • Pipe insulation	$37,300	$91,400	Qualifies for AADAP in mechanical room
886	Yes	• Linoleum		$9,000	O&M program
901	Yes	• Floor tile • Transite panel board		$195,000	O&M program

Table 1-2

Summary of Building Findings and Recommendations (Continued)

Building Number	Asbestos Present Yes/No	Asbestos Material	Estimated Abatement Costs (AADAP Areas Only)	Estimated Abatement Costs (Total Removal)	Comments
976	Yes	• Ceiling/wall insulation • Pipe insulation • Transite panel		$1,690,500	Qualifies for AADAP in crawl space above ceiling, Storage 2, Chill Room III, Deep Freezers I and II, public bathroom, dry storage/Storage 3, Storage 1, meat cooler, Receiving Areas 1 and 2, Record Storage 1 and 2, and pipe passage
977	Yes	• Pipe insulation		$201,600	O&M program
983	No				No ACM found in the building
1006	No				No ACM found in the building
1010	Yes	• Floor tile		$29,600	O&M program
1076	Yes	• Floor tile		$8,100	O&M program
2018	Yes	• Duct insulation		$5,000	O&M program
2044	Yes	• Transite panel • Floor tile		$8,100	O&M program
2275	No				No ACM found in the building
2531	Yes	• Floor tile		$31,900	O&M program
2535	Yes	• Floor tile • Transite panel		$11,700	O&M program
2542	Yes	• Ceiling insulation		$5,700	O&M program
2543	Yes	• Pipe insulation		$5,300	O&M program
2561	Yes	• Transite panel		$5,800	O&M program
2562	Yes	• Floor tile		$5,900	O&M program
2564	Yes	• Transite panel board		$5,700	O&M program
2567	Yes	• Floor tile		$17,400	O&M program
2570	No				No ACM found in the building
9006	Yes	• Floor tile • Pipe insulation		$81,500	O&M program
9012	No				No ACM found in the building
9013	Yes	• Floor tile		$46,700	O&M program

Table 1-2

Summary of Building Findings and Recommendations (Continued)

Building Number	Asbestos Present Yes/No	Asbestos Material	Estimated Abatement Costs (AADAP Areas Only)	Estimated Abatement Costs (Total Removal)	Comments
9027	Yes	• Pipe insulation • Floor tile	$105,300	$141,300	Qualifies for AADAP in the attic
9029	Yes	• Pipe insulation • Floor tile • Blown-in ceiling insulation	$150,000	$194,900	Qualifies for AADAP in the attic
9030	No				No ACM found in the building
9035	Yes	• Pipe insulation		$21,800	O&M program
9038	Yes	• Floor tile		$8,800	O&M program
9043	Yes	• Pipe insulation • Floor tile		$149,300	O&M program
9044	Yes	• Transite panel • Floor tile • Pipe insulation		$144,300	O&M program
9045	Yes	• Floor tile		$92,700	O&M program
9046	No				No ACM found in the building
9047	Yes	• Floor tile		$37,200	O&M program
9049	Yes	• Transite panel • Pipe insulation • Lab tabletop/lab gloves • Floor tile • Mud packing		$18,900	Building scheduled for demolition
9059	Yes	• Pipe insulation • Floor tile	$8,200	$32,100	Qualifies for AADAP in Areas 1 and 2, men's room, and women's room
9064	No				No ACM found in the building
9080	Yes	• Boiler/tank insulation		$13,300	O&M program
9083	Yes	• Linoleum • Floor tile		$18,600	O&M program
9084	Yes	• Floor tile		$21,800	O&M program
9085	Yes	• Floor tile		$21,000	O&M program

Table 1-2

Summary of Building Findings and Recommendations (Continued)

Building Number	Asbestos Present Yes/No	Asbestos Material	Estimated Abatement Costs (AADAP Areas Only)	Estimated Abatement Costs (Total Removal)	Comments
9086	Yes	• Floor tile • Pipe insulation		$23,300	O&M program
9088	Yes	• Floor tile		$32,300	O&M program
9089	Yes	• Floor tile • Pipe insulation • Transite panel	$27,600	$66,000	Qualifies for AADAP in break room, Classrooms 1 and 2, Conference Room 2, Mechanical Room 1, Office 2, Storage 1, and men's room
9092	No				No ACM found in the building
9094	Yes	• Linoleum • Transite panel		$10,100	O&M program
9100	No				No ACM found in the building
9102	No				No ACM found in the building
9105	Yes	• Floor tile		$15,700	O&M program
9116	Yes	• Floor tile • Ceiling (exhaust flue) insulation		$27,600	O&M program
9120	No				Building scheduled for demolition. No ACM found in the building
9162	Yes	• Transite panel • Floor tile • Duct insulation • Boiler insulation • Expansion cloth	$25,500	$43,400	Qualifies for AADAP in women's room, men's room, Offices 1 through 5, open office area, secretary area, and mechanical room
9312	Yes	• Asbestos pipe • Transite panel board • Debris • Asbestos cloth		$7,800	Building scheduled for demolition
9334	No				No ACM found in the building
9342	Yes	• Floor tile		$9,200	O&M program
9344	No				No ACM found in the building. Scheduled for demolition

Table 1-2

Summary of Building Findings and Recommendations (Continued)

Building Number	Asbestos Present Yes/No	Asbestos Material	Estimated Abatement Costs (AADAP Areas Only)	Estimated Abatement Costs (Total Removal)	Comments
9345	Yes	• Floor tile		$13,400	O&M program
9350	No				No ACM found in the building
9359	Yes	• Boiler (interior) insulation • Transite panel • Asbestos cloth		$9,700	O&M program
9400	Yes	• Floor tile		$19,400	O&M program
9401	N/A	• Floor tile			Walk-through building; suspect ACM present in the building

SECTION 2
INTRODUCTION

2.1 PURPOSE AND OBJECTIVES

The U.S. Army — Fort Monmouth is engaged in efforts to improve the safety and the living and work environments of people associated with the facilities it services. As an ongoing part of these efforts, the U.S. Army engaged Roy F. Weston, Inc. (WESTON®) to perform an asbestos survey of various buildings at Fort Monmouth, New Jersey.

The survey was performed under Contract No. DACA51-91-D-0028. The scope of work is included in Appendix A.

The objectives of this survey are for WESTON to:

- Identify, sample, and document the presence of ACM.
- Perform exposure assessments and rank hazards.
- Develop preliminary cost estimates for asbestos removal and replacement.
- Make recommendations for implementation of a program to manage and control asbestos in the surveyed buildings.
- Develop a computer database of all surveyed buildings.

2.2 SUMMARY OF WORK PERFORMED

2.2.1 General

WESTON developed a written Survey Work Plan describing tasks and procedures needed to fulfill the requirements of the contract. WESTON held briefings for the building managers/occupants prior to the start of the building survey.

2.2.2 Records Review

WESTON has reviewed available plans of the buildings. For some buildings, only partial plans or no plans at all could be found. Information discovered during the records review was used in the survey/sampling program and in the preparation of this report.

2.2.3 Survey of Facilities

The buildings were inspected visually to determine the locations of materials suspected of containing asbestos (suspect material). Each occurrence of suspect material was either sampled or correlated with another occurrence of the material that had already been sampled elsewhere in the building by WESTON technicians. All samples were returned for analysis to WESTON's laboratory according to established chain-of-custody procedures (see Appendix B for analytical results and quality assurance information). Estimated quantities of suspect ACM were provided, and any factors that tend to increase the cost of abatement were noted. The physical condition of the suspect material and other factors affecting exposure assessment were documented.

Photographs were taken of some sample locations. No photographs were taken where such photography might compromise security.

2.2.4 Exposure Assessment

As a part of the survey and sampling program, WESTON surveyors gathered exposure assessment information for each homogeneous area using the Asbestos Facility Inventory Forms. The Asbestos Facility Rating/Ranking Form is used to summarize the worst case found in each building and to rank that facility according to its rating score as compared to other buildings. The purpose of an exposure assessment is to help in the prioritization of areas for abatement.

2.2.5 Format of Building Reports

Each building surveyed during Phase IV is reported separately as a Building Report that is contained in Volumes 2A and 2B. These building reports, the subsections of text within each report, pages, and tables are numbered with the building number as a prefix. Within each building report, data are presented in text and tables. Drawings have been prepared to show sample locations in each building and are included as part of this report.

The text of each Building Report typically consists of three subsections that include general information and overall analytical results of the particular building inspection, a discussion of exposure assessment, and recommendations.

An explicit summary of data for each building is presented in five tables. Table 1 shows the analytical results for bulk samples collected during the survey/sampling program (including sample numbers, material descriptions, and sample locations). Tables 2 and 3 list the total ACM quantity. Table 4 shows the exposure assessment outcome of all friable ACM, and Table 5 lists the total estimated cost of removal and replacement for each type of ACM.

Drawings were prepared from record drawings supplied by the U.S. Army. WESTON converted the supplied floor plans into new drawings and added sample locations noted as testing positive or negative for asbestos.

Photographic documentation of demonstrative sample locations is included.

SECTION 3
ISSUES COMMON TO ALL BUILDINGS

3.1 TERMINOLOGY

3.1.1 Suspect vs. Asbestos-Containing Materials

For most types of material that contain asbestos, there is a similar or equivalent material that does not contain asbestos. For example, some types of floor tile contain asbestos and some do not. As a result, all such material (e.g., floor tile or insulation on tanks, fittings, pipes, and air ducts) is considered suspect material, but only a portion contains asbestos. Laboratory analysis by a qualified microscopist is necessary to distinguish ACM from non-ACM. The analytical results presented in the individual building reports should be referenced to determine which suspect materials contain asbestos. Any suspect material of unknown asbestos content should be handled as if it were ACM.

3.1.2 Positive vs. Negative Analytical Results

A "positive" analytical result signifies a material that contains asbestos and that should be considered ACM for the purposes of remedial action. The U.S. Environmental Protection Agency (EPA) defines ACM as material that contains greater than 1% asbestos. Material with 1% or less than 1% asbestos is, technically, not considered ACM and may be excluded from any plan of remedial action. WESTON, however, recommends that any material that contains asbestos (even material with 1% or less than 1%) be handled as ACM for the following reasons:

- Most materials that are analyzed to contain 1% or less than 1% asbestos are vinyl floor tile. Because fibers of asbestos are concealed by the vinyl matrix, it is necessary to dissolve these samples in strong solvents. While this procedure allows unambiguous identification of asbestos, a visual estimate of asbestos content tends to be less precise, because most of the sample has been dissolved. Consequently, a result of 1% or less than 1% asbestos content for floor tile is subject to a precision error of more than 2%.

- Rare instances of non-floor tile material containing 1% or less than 1% asbestos have been established. The potential risk for this material, although small, is not altogether absent. In fact, the percentage of asbestos content in ACM is only one of several factors considered in the exposure assessment methodology (Subsection 3.5.) used in this survey.

- Federal, state, and local regulations are prone to revision in the future and may be extended to include material with 1% or less than 1% asbestos in much the same way that EPA has extended the definition of ACM beyond its original scope to include nonfriable material (defined in Subsection 3.1.3.).

Consistent with these considerations, any material that contains asbestos (even 1% or less than 1%) is considered positive and is reported with associated estimated cost in each building-by-building report.

3.1.3 Friable vs. Nonfriable ACM

A friable material is one that is easily crumbled, pulverized, or reduced to a powder under hand pressure. This is a gradational attribute and constitutes an important aspect of ACM because of a relationship between friability and the likelihood of asbestos fibers becoming airborne. As a friable material is reduced to powder, asbestos fibers within the material become readily airborne, resulting in a potential respiratory hazard to building occupants. Conversely, a nonfriable material in good condition presents a relatively lower potential hazard, since asbestos fibers are locked down by the enclosing matrix.

This general relationship between friability and potential risk of exposure should be supplemented by knowledge of additional factors, such as physical condition of the ACM, accessibility to populations, duration of exposure, planned maintenance activities, etc. These factors are among those considered and documented for exposure assessments described in Subsection 3.5.

Common varieties of friable ACM include insulation on pipes, pipe fittings, and boilers or tanks; wall or ceiling surfacing; insulation on air ducts; and related HVAC components

insulated with sprayed or trowelled material. Nonfriable ACM is generally limited to vinyl floor tile and various applications of transite paneling.

3.1.4 Remedial Action — Abatement Options

"Abatement" refers to any action that tends to reduce or diminish. In the area of remedial action for ACM, current state-of-the-art methods for reduction of airborne asbestos fibers consist of three options:

- Encapsulation: Coating the exterior surface of ACM with a compound (encapsulant) for the purpose of locking down any fibers that would, otherwise, become airborne.
- Enclosure: The construction of airtight barriers in order to isolate ACM from the rest of the building interior.
- Removal: The removal of ACM and replacement with nonasbestos materials. This is usually done by enclosing and isolating the entire building area to perform "gross removal" or, for jobs of a small scale, isolation of the material in specially designed plastic bags for "glovebag removal."

Ultimately, removal is the only final solution to asbestos hazards, because ACM continues to remain in place under the options of encapsulation and enclosure. Encapsulation and enclosure are sometimes less costly than removal in the short term; however, the end result of each of these alternatives increases the cost of removal. Regardless of which alternative (or combination of alternatives) is chosen pending the ACM's final removal, it is necessary to manage and monitor the ACM under an established Operations and Maintenance (O&M) Program.

3.2 O&M PROGRAM

Asbestos abatement consists of several activities carried out systematically and pursuant to guidelines established by appropriate professional experts, such as industrial hygienists, architect-engineers, risk managers, legal counsel, and others. Such complex operations require extensive resources and are limited by the availability of time and money.

Because it is not feasible to conduct immediate, one-time removal of asbestos from all areas of each building, an O&M Program should be established as a part of an Asbestos Management Plan to manage ACM safely during the interim period prior to its removal. Because of ongoing maintenance activities, some ACM may be removed during the time between preparation of this report and implementation of the O&M Program. Consequently, locations where this ACM has been removed should be designated and documented during the initiation of the program.

The main objective of an O&M Program is to manage the ACM in place safely and to minimize future fiber release of airborne asbestos fibers. Specific objectives include the following:

- Provide specific operating information for use by general building staff, building maintenance personnel, and outside contractors.
- Provide a relatively safe working environment for all personnel until such time as all ACM is removed from all buildings.
- Minimize potential future fiber release from ACM.
- Monitor the condition of all ACM.
- Provide communication of pertinent information to all affected parties and personnel.
- Identify training requirements for specific personnel.
- Outline a plan for respiratory protection and medical surveillance for personnel who may be exposed to ACM during the course of their work.

A good O&M Program having the above-listed objectives will provide the following information in detail:

- Description of program management
- Requirements of warnings and notifications
- Outline of general responsibilities
- Outline of training requirements
- Outline of workers' practices

- Outline of building inspection requirements
- Outline of air monitoring requirements

Information on the development of a comprehensive O&M Program can come from several sources. EPA's "purple book," entitled "Guidance for Controlling Asbestos-Containing Materials in Buildings" (EPA 560/5-85-024, June 1985), and its "green book," entitled "Managing Asbestos in Place," are recommended. An Asbestos Program Coordinator should oversee the development, installation, and day-to-day operation of the O&M Program.

3.3 RECOMMENDATIONS REGARDING NONASBESTOS MATERIALS

3.3.1 Items That Should Be Discarded and Replaced

Certain nonasbestos materials may have to be removed, discarded, and replaced due either to potential contamination or to the likelihood of damage during ACM removal. These materials include such items as the following:

- Pipe insulation adjacent to ACM fittings.
- Duct insulation adjacent to ACM tape.
- Electrical conduit, light fixtures, air-handling ducts, and other hardware located on or attached to ACM.
- Drop ceiling panels littered with ACM debris.

Although these potentially contaminated items could be either wet-wiped clean or HEPA-vacuumed by the asbestos contractor, WESTON recommends replacement of these items because decontamination and reinstallation, though feasible, usually are not cost-effective.

3.3.2 Items That May Be Cleaned and/or Vacuumed

Some items, such as metal and vinyl furniture, may be readily wet-wiped clean and removed by the asbestos contractor prior to removal of ACM. The replacement of other items, such as very large auditorium drapes and curtains, may be more costly than the time and expense

of HEPA vacuuming. Ultimately, the decision of whether to restore or replace nonasbestos materials should be made on a case-by-case basis by the Fort Monmouth DEH in consultation with an asbestos contractor, an architect/engineer consultant, or another qualified person.

3.4 INTERPRETING COST DATA

A cost estimate for asbestos removal and replacement with non-ACM is included in each Building Report. A discussion of the method used to calculate and the limitations of these cost estimates is included in the following subsections.

3.4.1 Cost-Estimating Approach

An understanding of the procedures used to calculate the estimated costs presented in each facility report provides an increased comprehension of how the data should be interpreted. The removal cost estimates are generated by the following procedures:

Step 1: Quantities recorded in the field are totaled for each material within each building.

Step 2: The quantities are multiplied by a unit cost. This unit cost includes the removal of ACM and reinsulation or refinishing with non-ACM material. These unit costs are developed by WESTON through the collection of information from asbestos contractors and replacement material manufacturers and by applying necessary assumptions. The costs generated in this step are totaled as Removal and Replacement Cost.

Step 3: Fifteen percent of the total reached in Step 2 is calculated for contingency. This cost is added to the previous total.

Step 4: Ten percent of the total calculated in Step 3 is estimated for engineering design services. This cost is added to the previous total.

Step 5: Ten percent of the previous total is used to estimate the cost of project monitoring during the abatement/construction period. This cost is added to the previous total to complete the total estimate for this building.

3.4.2 Contingency and Its Impact

The purpose of including a contingency factor is to recognize the possibility of "unknowns" that could affect the eventual project cost. Usually these "unknowns" are more precisely examined and accounted for during the engineering design phase. At this point, no design details have been gathered to determine what procedures will be used in each removal situation (i.e., phasing, glovebag methods, gross removal methods, etc.) and no engineering analysis has been performed.

If additional "unknowns" other than those discovered during the detailed design (e.g., deteriorated pipes, structurally unsound substrates, facility use restraints) are discovered during future design work, the project cost may possibly be exceeded even with this included contingency factor. Alternatively, the increase in the number of appropriate abatement technologies may lower the eventual abatement cost below the total cost given here, which includes the contingency factor.

3.4.3 Engineering Design Fee and Its Impact

According to the Federal Property and Administration Services Act of 1949 (41 USC 254, CFR 1-4.1005-1(b)), the design fee under an Architect-Engineer (A-E) consultant contract shall not exceed 6% of the estimated construction award amount, as determined at the time the A-E contract is awarded; however, cost estimates in this document use a 10% design fee to include field activities, surveying, review meetings, and other design-phase functions not normally covered in the 6% fee. Because small projects are very difficult to design cost effectively, it is assumed that several small projects would be combined to allow a minimum design fee of $15,000.

3.4.4 Project Monitoring Fee and Its Impact

The cost of project monitoring and inspection is estimated as 10% of the total construction cost; however, as with the engineering design fee, a firm will seldom contract to perform

such services for 10% of total construction costs for very small projects. Usually a daily rate is charged for these services.

3.4.5 Limitations of Cost Estimates

For budgetary and programming purposes, this cost-estimating approach is useful as a general framework. It is important to stress that these cost estimates include various assumptions that may change from building to building. Other assumptions (i.e., air monitoring fee, engineering design fee, and contingency) are explicitly incorporated in components of the cost-estimating method and have already been described in the preceding discussion. In all cases, it is assumed that all ACM will be removed from the building as part of a single abatement project. Although the real and estimated costs for individual buildings may deviate greatly (one way or the other) from the 15% contingency fee, the average total cost for a large number of buildings should agree with 15% of the estimated total cost for those buildings.

In addition to these factors, a number of strategic decisions will affect the cost and should be considered in formulation of long-term plans:

- Are small projects (buildings with total ACM abatement and replacement costs of less than $50,000) undertaken singly or as a group? Several components of the total cost (e.g., the engineering design fee) can be distributed over similar buildings that comprise a single project. As individual projects, however, such costs add up.

- Is an additional cost (such as alternate space) necessary to maintain critical functions (such as a computer installation)? If removal of ACM can be coordinated with change of users for facilities, the disruption of critical functions can be kept to a minimum.

- What are the current and (likely) future regulatory controls on abatement of different types of material? For example, if nonfriable material is not regulated as strictly as friable ACM, immediate removal of that nonfriable material (even contrary to the two preceding strategic considerations) may be more cost-effective than delayed action if stricter future regulations are expected.

- What time of year is a particular project to be undertaken? Many components, such as steam pipes, furnaces, and heat exchangers, are under minimal use during summer months. Because those systems must be shut down before insulation is removed, the disruption to the building functions and costs for alternate heating will be minimal for projects scheduled for milder seasons. Likewise for family housing units, it may be expedient to coordinate project scheduling with occupant vacation plans or vacancy due to military transfer.

3.5 EXPOSURE ASSESSMENT

In order to prioritize additional assessment and abatement action, which may be required for facilities that contain hazardous ACM, an Asbestos Priority Index System was developed in conjunction with the TRADOC Asbestos Deficiency Abatement Project Program for use by U.S. Army facilities. Because several subjective factors, such as condition of material, material friability, accessibility, facility usage, etc., enter into the algorithm formula calculations, the indices provide relative rather than absolute ratings and rankings of hazard potential. Because of the subjective factors, individual judgment of the surveyor enters into the results of a rating index. Nevertheless, the Asbestos Priority Index System can be a useful tool in prioritizing areas and ranking facilities for further study and possible abatement actions if it is used properly as a qualitative hazard assessment guide. Exposure assessment requires the survey personnel to assign a quantity to seven factors: material friability, accessibility, condition, level of activity, number of normal occupants, level of exposure, and occupancy duration. An eighth factor, percent asbestos content, is assigned upon receipt of analytical results.

3.5.1 Methodology

Each area of suspect ACM within a facility is inventoried and a preliminary assessment of conditions is made using the Asbestos-Containing Material Evaluation and Priority Index Form. The field inventory data are combined with the analytical results to provide a

completed data form. Depending on the field and analytical results, three possible conditions of exposure assessment exist:

- No Suspect Material (NSM) was found or sampled in the building space, so an index value of 0 is assigned.
- Suspect material was located and sampled, but bulk analysis yielded negative results. Exposure assessments of non-ACM are assigned an index value of 0.
- Suspect material was located, sampled, and tested positive for asbestos. In these cases, the exposure assessment algorithm then generates an index value other than 0 for the space.

3.5.2 Priority Value Ranking

The TRADOC methodology utilizes a Priority Action Guide with three categories of recommended action. These categories are defined in Table 3-1. Table 3-2 (found at the end of this section) presents a prioritized listing, from highest priority ranking (priority index code "C," which correlates with a priority index number of 1,000 and greater), through median priority ranking (priority index code "B," which correlates with a priority index number of 100 or greater, but less than 1,000), to the lowest priority ranking (priority index code "A," which correlates with a priority index number of less than 100) of the friable materials surveyed in all the buildings included in this contract.

3.5.2.1 Evaluation Factors

For this method of exposure assessment, the potential for exposure depends on the following:

- Material Friability: The ACM inherent friability (the degree to which the fibrous material is not bonded together or sealed and, therefore, may potentially release fibers). For the tabulated Friability factor, 3 represents High; 2, Medium; and 1, Low Friability.
- Occupant Accessibility: ACM accessibility and occupation of building are factors of exposure potential. If the material is vulnerable to human activity

Table 3-1

Property Action Guide*

Priority Index Value	Recommended Action Categories
Less than 100	A long-term corrective measure can usually be deferred; however, the building should be surveyed each year for evidence of change in conditions (deterioration) or occupancy level. Interim control measures should be initiated as directed in an O&M Program.
100 but Less than 1,000	Review management special considerations/ remarks, as necessary, to further analyze the situation for justified action; defer unless these considerations justify long-term control measures. Interim control measures should be initiated as directed in an O&M Program.
1,000 and Greater	Army Asbestos Deficiency Abatement Project (AADAP) for long-term corrective measures should be initiated as recommended.

*From TRADOC Chapter 6.

NOTE:

The asbestos priority index value produced by this technique is designed for rating areas containing ACM in a relative fashion only and should not be interpreted beyond this purpose.

The asbestos priority index value indicates the relative potential for personnel exposure to airborne asbestos fibers.

or is subject to accidental or intentional contact, it should be considered an accessible exposure. For the tabulated Accessibility factor, 3 represents High; 2, Medium; and 1, Low Accessibility.

- Material Condition: ACM current condition of damage or deterioration can cause potential friable material surface fiber release. Damage to material integrity indicates the extent of existing contamination and the degree of potential contamination. This element is a combination of the quality of installation, adhesion of the friable material to the underlying surface, cohesion of the material itself, and material aging. Evidence of debris is often a good clue to the condition of material, which may vary from minor deterioration to widespread and severe material disintegration. For the tabulated Condition factor, 1 represents Good and 2 represents Poor Condition.

- Level of Activity: Level of activity can contribute to the initial damage of the material or contribute to the further degradation and deterioration of the material. For the tabulated Level of Activity factor, 3 represents High; 2, Medium; and 1, Low Level of Activity.

- Number of Assigned Occupants: The number of assigned occupants whose activities are conducted on a routine basis in the rooms containing the ACM.

- Average Exposure Hours: The number of hours in a 40-hour week during which the rooms containing ACM are occupied.

3.5.3 Ranking of Nonfriable Materials

The discussion of friable versus nonfriable material clearly categorizes materials by a simple hand-performed test. This categorizing is adequate for most materials; however, WESTON categorizes certain nonfriable material in the classification of friable materials because of the material's tendency to become friable by normal wear and tear, and the potential for fiber release by everyday activities. One such material, transite board, is used in wall and ceiling construction and may be rendered friable when hammered, mechanically abraded, or machined by ordinary maintenance and occupant activities. Because of the high potential for such activities, WESTON has forced the TRADOC methodology and assigned a priority index value to these nonfriable materials.

3.6 CHANGES IN EXPOSURE POTENTIAL

Friable asbestos is deemed to pose current hazards, and nonfriable asbestos is deemed to pose potential hazards. As conditions change and activities proceed in the future, additional hazards may arise. In brief, the following activities and conditions should be monitored by appropriate personnel acquainted with the proper actions necessary to reduce the likelihood for exposure:

- Change of exposure potential
- Change of building use
- Renovation activity involving ACM
- Changes in regulatory standards

3.6.1 Change of Exposure Potential

As ACM is removed/replaced, the corresponding risk assessments need to be revised to reflect the revised condition of "No Hazard." Prior to that point, these materials will tend to deteriorate physically over time, thereby increasing the risk of potential exposure. A regular schedule of reassessment will enable recognition of and response to any sudden change in conditions.

3.6.2 Change of Building Use

Associated with the change in a building's use may be changes in risk assessment factors. These include population changes and changes in wall and floor materials. Consequently, reassessment of potential risk of exposure should be part of even those building-use changes that do not directly involve work on ACM.

3.6.3 Changes in Regulatory Standards

As a qualitative issue, the hazards of asbestos to human health are well accepted and addressed in federal, state, and local regulations. The quantitative aspects of this issue are currently changing. In the future, as the levels of risk become better correlated with levels of exposure, standards may be prone to change. Changes in regulatory standards resulting from these developments should be monitored in the future.

TABLE 3.2

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
0483	FK803	EQUIPMENT ROOM	<4" PIPE FITTING	C	1.880E06	3	3	2	3	4	40.00	60
0483	FK803	GARAGE	<4" PIPE FITTING	C	1.880E06	3	3	2	3	4	40.00	60
0483	FK803	GARAGE	<4" PIPE FITTING	C	1.880E06	3	3	2	3	4	40.00	60
0483	FK804	EQUIPMENT ROOM	<4" PIPE RUN	C	1.880E06	3	3	2	3	4	40.00	50
0483	FK804	GARAGE	<4" PIPE RUN	C	1.880E06	3	3	2	3	4	40.00	50
0483	FK804	GARAGE	<4" PIPE RUN	C	1.880E06	3	3	2	3	4	40.00	50
0483	FK805	GARAGE	<4" PIPE RUN	C	6.800E05	3	3	2	3	4	40.00	20
0170	FK897	STORAGE	TRANSITE PANEL BOARD	C	1.700E05	3	3	2	3	2	20.00	35
0171	FK897	STORAGE	TRANSITE PANEL BOARD	C	1.700E05	3	3	2	3	2	20.00	35
0171	FK897	STORAGE	TRANSITE PANEL BOARD	C	1.700E05	3	3	2	3	2	20.00	35
0277	FK911	SMALL ARMS REPAIR	<4" PIPE RUN	C	1.700E05	3	3	1	3	1	40.00	40
0483	FK803	JANITORIAL CLOSET	<4" PIPE FITTING	C	1.660E05	3	3	2	2	2	40.00	60
0483	FK803	STORAGE 1	<4" PIPE FITTING	C	1.660E05	3	3	2	2	2	40.00	60
0483	FK804	JANITORIAL CLOSET	<4" PIPE RUN	C	1.660E05	3	3	2	2	2	40.00	50
0483	FK804	LATRINE	<4" PIPE RUN	C	1.660E05	3	3	2	2	2	40.00	50
0483	FK804	STORAGE 1	<4" PIPE RUN	C	1.660E05	3	3	2	2	2	40.00	50
0483	FK804	STORAGE 1	<4" PIPE RUN	C	1.660E05	3	3	2	2	2	40.00	50
0294	FK790	GARAGE 1	<4" PIPE FITTING	C	1.550E05	3	2	2	3	10	10.00	25
0294	FK790	GARAGE 2	<4" PIPE FITTING	C	1.550E05	3	2	2	3	10	10.00	25
0294	FK790	NBC OFFICE	<4" PIPE FITTING	C	1.550E05	3	2	2	3	10	10.00	25
0294	FK790	NBC ROOM 1	<4" PIPE FITTING	C	1.550E05	3	2	2	3	10	10.00	25
0294	FK790	STORAGE	<4" PIPE FITTING	C	1.550E05	3	2	2	3	10	10.00	25
0294	FK791	GARAGE 1	<4" PIPE RUN	C	1.550E05	3	2	2	3	10	10.00	35
0294	FK791	GARAGE 2	<4" PIPE RUN	C	1.550E05	3	2	2	3	10	10.00	35
0294	FK791	NBC OFFICE	<4" PIPE RUN	C	1.550E05	3	2	2	3	10	10.00	35
0294	FK791	NBC ROOM 1	<4" PIPE RUN	C	1.550E05	3	2	2	3	10	10.00	35
0294	FK791	STORAGE	<4" PIPE RUN	C	1.550E05	3	2	2	3	10	10.00	35

Priority Index Codes
A [=] Long Term Corrective Measure
B [=] Review Management Special Considerations/Remarks
C [=] Army Asbestos Deficiency Abatement Project

Priority Index Numbers Are In Scientific Notation

Exposure Factors
1 [=] Material Friability
2 [=] Occupant Accessability
3 [=] Material Condition
4 [=] Level Of Activity
5 [=] Number Of Assigned Occupants

TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
0483	FK803	EQUIPMENT ROOM	<4" PIPE FITTING	C	1.200E05	3	2	2	2	4	40.00	60
0483	FK804	EQUIPMENT ROOM	<4" PIPE RUN	C	1.200E05	3	2	2	2	4	40.00	50
0434	FK816	OPEN OFFICE	<4" PIPE FITTING	C	6.360E04	3	2	2	1	12	40.00	40
0277	FK908	SMALL ARMS REPAIR	<4" PIPE FITTING	C	6.200E04	3	3	1	3	1	40.00	21
0277	FK908	SMALL ARMS REPAIR	<4" PIPE FITTING	C	6.200E04	3	3	1	3	1	40.00	21
0277	FK909	SMALL ARMS REPAIR	<4" PIPE RUN	C	6.200E04	3	3	1	3	1	40.00	30
0483	FK805	STORAGE 1	<4" PIPE RUN	C	6.000E04	3	3	2	2	2	40.00	20
0483	FK803	OFFICE 1	<4" PIPE FITTING	C	4.400E04	3	2	1	2	4	40.00	60
0483	FK803	STORAGE 1	<4" PIPE FITTING	C	4.400E04	3	2	1	2	4	40.00	60
0483	FK804	OFFICE 1	<4" PIPE RUN	C	4.400E04	3	2	1	2	4	40.00	50
0976	FK867	CRAWLSPACE ABV CEIL	<4" PIPE FITTING	C	4.400E04	3	3	1	2	4	40.00	25
0976	FK867	STORAGE 2	<4" PIPE FITTING	C	4.400E04	3	3	1	2	4	40.00	25
0976	FK870	CHILL ROOM III	TRANSITE PANEL BOARD	C	4.400E04	3	3	1	2	4	40.00	30
0976	FK870	DEEP FREEZER I	TRANSITE PANEL BOARD	C	4.400E04	3	3	1	2	4	40.00	30
0976	FK870	DEEP FREEZER II	TRANSITE PANEL BOARD	C	4.400E04	3	3	1	2	4	40.00	30
0142	FK774	WAREHOUSE-E. WALL	<4" PIPE RUN	C	3.000E04	2	3	2	2	2	40.00	40
0142	FK774	WAREHOUSE-N. WALL	<4" PIPE RUN	C	3.000E04	2	3	2	2	2	40.00	40
0142	FK774	WAREHOUSE-W. WALL	<4" PIPE RUN	C	3.000E04	2	3	2	2	2	40.00	40
9312	FK731	STORAGE AREA	TRANSITE PANEL BOARD	C	2.280E04	2	2	1	2	12	40.00	50
0866	FK857	MECHANICAL ROOM	<4" PIPE FITTING	C	1.240E04	3	2	2	3	1	8.00	35
0866	FK858	MECHANICAL ROOM	<4" PIPE RUN	C	1.240E04	3	2	2	3	1	8.00	10
0866	FK859	MECHANICAL ROOM	4-8" PIPE FITTING	C	1.240E04	3	2	2	3	1	8.00	20
0866	FK860	MECHANICAL ROOM	4-8" PIPE RUN	C	1.240E04	3	2	2	3	1	8.00	35
0866	FK861	MECHANICAL ROOM	BOILERS/TANKS	C	1.240E04	3	2	2	3	1	8.00	35
0976	FK873	PUBLIC BATHROOM	<4" PIPE FITTING	C	1.240E04	3	3	1	3	1	8.00	30
9312	FK730	STORAGE AREA	GASKET	C	8.280E03	2	2	1	2	12	40.00	27
9162	FK966	LADIES' BATHROOM	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25

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TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
9162	FK966	MEN'S BATHROOM	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25
9162	FK966	OFFICE 1	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25
9162	FK966	OFFICE 2	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25
9162	FK966	OFFICE 3	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25
9162	FK966	OFFICE 4	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25
9162	FK966	OFFICE 5	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25
9162	FK966	OPEN OFFICE AREA	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25
9162	FK966	SECRETARY AREA	TRANSITE PANEL BOARD	C	8.280E03	2	2	1	2	12	40.00	25
0976	FK866	CRAWLSPACE ABV CEIL	<4" PIPE RUN	C	7.600E03	3	3	1	2	4	40.00	5
0976	FK866	STORAGE 2	<4" PIPE RUN	C	7.600E03	3	3	1	2	4	40.00	5
0976	FK868	DRY STORAGE/STOR. 3	PLASTER CEILINGS & WALLS	C	7.600E03	3	3	1	2	4	40.00	1
0976	FK868	STORAGE 1	PLASTER CEILINGS & WALLS	C	7.600E03	3	3	1	2	4	40.00	1
0976	FK869	MEAT COOLER	PLASTER CEILINGS & WALLS	C	7.600E03	3	3	1	2	4	40.00	2
0976	FK869	RECEIVING AREA 1	PLASTER CEILINGS & WALLS	C	7.600E03	3	3	1	2	4	40.00	2
0976	FK869	RECEIVING AREA 2	PLASTER CEILINGS & WALLS	C	7.600E03	3	3	1	2	4	40.00	2
0976	FK869	RECORD STORAGE 1	PLASTER CEILINGS & WALLS	C	7.600E03	3	3	1	2	4	40.00	2
0976	FK869	RECORD STORAGE 2	PLASTER CEILINGS & WALLS	C	7.600E03	3	3	1	2	4	40.00	2
9029	FK991	ATTIC	4-8" PIPE FITTING	C	6.000E03	3	2	2	2	1	8.00	55
9029	FK991	ATTIC	4-8" PIPE FITTING	C	6.000E03	3	2	2	2	1	8.00	55
9029	FK992	ATTIC	4-8" PIPE RUN	C	6.000E03	3	2	2	2	1	8.00	65
9029	FK994	ATTIC	INSULATION BOARD	C	6.000E03	3	2	2	2	1	8.00	57
0434	FK817	OPEN OFFICE	<4" PIPE RUN	C	3.960E03	3	2	2	1	12	40.00	3
9089	FK966	BREAK ROOM	TRANSITE PANEL BOARD	C	3.800E03	2	2	2	2	4	20.00	25
9089	FK966	CLASSROOM 1	TRANSITE PANEL BOARD	C	3.800E03	2	2	2	2	4	20.00	25
9089	FK966	CLASSROOM 2	TRANSITE PANEL BOARD	C	3.800E03	2	2	2	2	4	20.00	25
9089	FK966	CONFERENCE ROOM 2	TRANSITE PANEL BOARD	C	3.800E03	2	2	2	2	4	20.00	25
9089	FK966	MECHANICAL ROOM 1	TRANSITE PANEL BOARD	C	3.800E03	2	2	2	2	4	20.00	25

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TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
9089	FK966	OFFICE 2	TRANSITE PANEL BOARD	C	3.800E03	2	2	2	2	4	20.00	25
9089	FK966	STORAGE 1	TRANSITE PANEL BOARD	C	3.800E03	2	2	2	2	4	20.00	25
9089	FK967	MEN'S ROOM	<4" PIPE FITTING	C	3.800E03	2	2	2	2	4	20.00	23
0976	FK869	PIPE PASSAGE	PLASTER CEILINGS & WALLS	C	2.200E03	3	3	1	3	1	8.00	2
0976	FK872	PUBLIC BATHROOM	<4" PIPE RUN	C	2.200E03	3	3	1	3	1	8.00	3
9162	HF505	MECHANICAL ROOM	EXPANSION JOINTS	C	2.200E03	3	2	1	2	1	8.00	40
9162	HF506	MECHANICAL ROOM	BOILERS/TANKS	C	2.200E03	3	2	1	2	1	8.00	55
0277	FK911	AC ROOM 2ND FLOOR	<4" PIPE RUN	C	1.060E03	2	2	2	2	1	8.00	40
9027	FK998	ATTIC	4-8" PIPE FITTING	C	1.060E03	3	2	2	1	1	8.00	45
9027	FK998	ATTIC	4-8" PIPE FITTING	C	1.060E03	3	2	2	1	1	8.00	45
9027	FK999	ATTIC	4-8" PIPE RUN	C	1.060E03	3	2	2	1	1	8.00	60
0483	FK803	LATRINE	<4" PIPE FITTING	B	7.600E02	3	2	1	1	4	4.00	60
9044	FK961	ROOM 11-MEN'S ROOM	4-8" PIPE RUN	B	7.600E02	2	2	1	2	2	8.00	60
9089	FK968	MEN'S ROOM	<4" PIPE RUN	B	6.600E02	2	2	2	2	4	20.00	2
9089	FK968	SOUTH WALL	<4" PIPE RUN	B	6.600E02	2	2	2	2	4	20.00	2
0277	FK908	AC ROOM 2ND FLOOR	<4" PIPE FITTING	B	3.800E02	2	2	2	2	1	8.00	21
0277	FK908	BOILER RM-MATL STORG	<4" PIPE FITTING	B	3.800E02	2	2	2	2	1	8.00	21
0277	FK908	STORAGE ROOM	<4" PIPE FITTING	B	3.800E02	2	2	2	2	1	8.00	21
0277	FK909	BOILER RM-MATL STORG	<4" PIPE RUN	B	3.800E02	2	2	2	2	1	8.00	30
0277	FK909	BOILER ROOM	<4" PIPE RUN	B	3.800E02	2	2	2	2	1	8.00	30
0277	FK909	HALLWAY 1	<4" PIPE RUN	B	3.800E02	2	2	2	2	1	8.00	30
0277	FK909	HALLWAY 2	<4" PIPE RUN	B	3.800E02	2	2	2	2	1	8.00	30
0277	FK909	SECURED STORAGE	<4" PIPE RUN	B	3.800E02	2	2	2	2	1	8.00	30
0277	FK909	STORAGE ROOM	<4" PIPE RUN	B	3.800E02	2	2	2	2	1	8.00	30
9094	FK974	EXTERIOR SKIRT(WALL)	TRANSITE PANEL BOARD	B	3.800E02	2	2	1	2	1	8.00	40
9029	FK993	ATTIC	4-8" PIPE RUN	B	3.800E02	3	2	2	2	1	8.00	7
0443	FK705	EXTERIOR LOWER WALL	EXTERIOR SIDING	B	3.450E02	2	2	1	2	10	2.00	30

Priority Index Codes
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Priority Index Numbers Are In Scientific Notation

Exposure Factors
1 [=] Material Friability
2 [=] Occupant Accessability
3 [=] Material Condition
4 [=] Level Of Activity
5 [=] Number Of Assigned Occupants

TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
0275	FK746	EAST WALL	TRANSITE PANEL BOARD	B	3.450E02	2	2	1	2	20	1.00	25
0275	FK746	WEST WALL	TRANSITE PANEL BOARD	B	3.450E02	2	2	1	2	20	1.00	25
0275	FK749	EAST WALL	ACOUSTICAL WALL TILE	B	3.450E02	2	2	1	2	20	1.00	30
0275	FK749	WEST WALL	ACOUSTICAL WALL TILE	B	3.450E02	2	2	1	2	20	1.00	30
0866	FK857	1ST FLR BATHROOM	<4" PIPE FITTING	B	3.000E02	2	2	1	1	10	10.00	35
0866	FK857	2ND FLR BATHROOM	<4" PIPE FITTING	B	3.000E02	2	2	1	1	10	10.00	35
0866	FK858	1ST FLR BATHROOM	<4" PIPE RUN	B	3.000E02	2	2	1	1	10	10.00	10
0866	FK858	2ND FLR BATHROOM	<4" PIPE RUN	B	3.000E02	2	2	1	1	10	10.00	10
9044	FK960	ROOM 11-MEN'S ROOM	4-8" PIPE FITTING	B	2.760E02	2	2	1	2	2	8.00	30
0977	FK901	E.WING/PIPE GALLEY 1	<4" PIPE FITTING	B	2.750E02	3	2	2	2	1	1.00	18
0977	FK901	E.WING/PIPE GALLEY 2	<4" PIPE FITTING	B	2.750E02	3	2	2	2	1	1.00	18
0977	FK902	E.WING/PIPE GALLEY 1	<4" PIPE RUN	B	2.750E02	3	2	2	2	1	1.00	35
0977	FK902	E.WING/PIPE GALLEY 2	<4" PIPE RUN	B	2.750E02	3	2	2	2	1	1.00	35
2543	FK928	STORAGE ROOM	<4" PIPE RUN	B	2.750E02	3	2	2	2	1	1.00	35
9043	FK953	LADIES ROOM	<4" PIPE FITTING	B	2.400E02	2	2	1	1	4	20.00	30
9006	FK984	ATTIC 1	<4" PIPE FITTING	B	1.840E02	2	2	2	1	1	8.00	60
9006	FK984	ATTIC 2	<4" PIPE FITTING	B	1.840E02	2	2	2	1	1	8.00	60
9006	FK984	MECH. ROOM	<4" PIPE FITTING	B	1.840E02	2	2	2	1	1	8.00	60
9006	FK985	ATTIC 1	<4" PIPE RUN	B	1.840E02	2	2	2	1	1	8.00	40
9006	FK985	ATTIC 2	<4" PIPE RUN	B	1.840E02	2	2	2	1	1	8.00	40
9006	FK985	MECH. ROOM	<4" PIPE RUN	B	1.840E02	2	2	2	1	1	8.00	40
0161	HF520	GARAGE-EXHAUST	TRANSITE PANEL BOARD	B	1.840E02	2	2	2	1	1	8.00	50
0161	HF520	GARAGE-UPPER LEVEL	TRANSITE PANEL BOARD	B	1.840E02	2	2	2	1	1	8.00	50
0161	HF523	MECHANICAL ROOM	INSULATION BOARD	B	1.840E02	2	2	2	1	1	8.00	45
9035	FK976	PIPE TUNNEL	4-8" PIPE RUN	B	1.380E02	2	2	1	2	1	8.00	10
9162	HF504	MECHANICAL ROOM	AIR HANDLING EQUIPMENT	B	1.380E02	3	2	1	2	1	8.00	4
9059	HF528	AREA 1	<4" PIPE FITTING	B	1.380E02	2	2	1	2	1	8.00	23

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TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
9059	HF528	AREA 2	<4" PIPE FITTING	B	1.380E02	2	2	1	2	1	8.00	23
9059	HF528	MEN'S ROOM	<4" PIPE FITTING	B	1.380E02	2	2	1	2	1	8.00	23
9359	FK731	GENERATOR ROOM	TRANSITE PANEL BOARD	B	1.325E02	3	3	1	1	1	1.00	50
0275	FK741	ATTIC	4-8" PIPE FITTING	B	1.325E02	3	2	2	1	1	1.00	50
0275	FK742	ATTIC	4-8" PIPE RUN	B	1.325E02	3	2	2	1	1	1.00	65
0275	FK742	OFFICE 200	4-8" PIPE RUN	B	1.325E02	3	2	2	1	1	1.00	65
0275	FK743	ATTIC	4-8" PIPE FITTING	B	1.325E02	3	2	2	1	1	1.00	50
0275	FK744	ATTIC	4-8" PIPE RUN	B	1.325E02	3	2	2	1	1	1.00	50
0276	FK768	MECHANICAL ROOM	<4" PIPE RUN	B	1.325E02	3	2	2	1	1	1.00	45
0276	FK769	CRAWLSPACE	4-8" PIPE FITTING	B	1.325E02	3	2	2	1	1	1.00	40
0276	FK769	MECHANICAL ROOM	4-8" PIPE FITTING	B	1.325E02	3	2	2	1	1	1.00	40
0563	FK885	BOILER ROOM	INSULATION BOARD	B	1.325E02	2	3	2	2	1	1.00	15
0545	FK831	EXTERIOR WALL SKIRT	TRANSITE PANEL BOARD	B	1.160E02	2	1	1	2	20	40.00	40
0545	FK831	MECHANICAL ROOM	TRANSITE PANEL BOARD	A	6.600E01	2	2	1	1	1	8.00	40
0277	FK910	BOILER ROOM	GASKET	A	6.600E01	2	2	2	2	1	8.00	2
9027	HF500	ATTIC	4-8" PIPE RUN	A	6.600E01	3	2	2	1	1	8.00	3
0886	FK862	OFFICE 1	INSULATION BOARD	A	6.000E01	2	2	1	2	2	10.00	7
0480	FK798	BATHRM-OUTSIDE WALL	TRANSITE PANEL BOARD	A	4.800E01	2	1	1	3	4	40.00	35
0480	FK798	JANITOR'S CLOSET	TRANSITE PANEL BOARD	A	4.800E01	2	1	1	3	4	40.00	35
0480	FK798	LADIES ROOM	TRANSITE PANEL BOARD	A	4.800E01	2	1	1	3	4	40.00	35
0480	FK798	MAIN-OFF.-N&E WALLS	TRANSITE PANEL BOARD	A	4.800E01	2	1	1	3	4	40.00	35
0480	FK798	MAIN-OFF.-OUTSDEWALL	TRANSITE PANEL BOARD	A	4.800E01	2	1	1	3	4	40.00	35
0480	FK798	MEN'S ROOM	TRANSITE PANEL BOARD	A	4.800E01	2	1	1	3	4	40.00	35
0480	FK798	OFFICE 1- SOUTH WALL	TRANSITE PANEL BOARD	A	4.800E01	2	1	1	3	4	40.00	35
0480	FK798	OFFICE 1-OUTSDE WALL	TRANSITE PANEL BOARD	A	4.800E01	2	1	1	3	4	40.00	35
0275	FK746	LOBBY	TRANSITE PANEL BOARD	A	4.750E01	3	2	2	1	1	1.00	25
0276	FK767	MECHANICAL ROOM	<4" PIPE FITTING	A	4.750E01	3	2	2	1	1	1.00	35

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TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
0276	FK770	CRAWLSPACE	4-8" PIPE RUN	A	4.750E01	3	2	2	1	1	1.00	35
0276	FK770	MECHANICAL ROOM	4-8" PIPE RUN	A	4.750E01	3	2	2	1	1	1.00	35
0276	FK771	MECHANICAL ROOM	BOILERS/TANKS	A	4.750E01	3	2	2	1	1	1.00	25
0276	FK772	CRAWLSPACE	<4" PIPE FITTING	A	4.750E01	3	2	2	1	1	1.00	30
0276	FK773	CRAWLSPACE	<4" PIPE RUN	A	4.750E01	3	2	2	1	1	1.00	25
9086	HF501	OFFICE AREA-ABV.CEIL	<4" PIPE FITTING	A	4.640E01	2	1	1	2	8	40.00	51
9086	HF502	OFFICE AREA-ABV.CEIL	<4" PIPE RUN	A	4.640E01	2	1	1	2	8	40.00	65
9043	FK954	LADIES ROOM	<4" PIPE RUN	A	4.200E01	2	2	1	1	4	20.00	5
9043	FK954	ROOM 1	<4" PIPE RUN	A	4.200E01	2	2	1	1	4	20.00	5
0901	FK890	NORTHEAST WING-EXT.	TRANSITE PANEL BOARD	A	3.150E01	3	1	1	1	15	40.00	15
0901	FK890	NORTHWALL-EXTERIOR	TRANSITE PANEL BOARD	A	3.150E01	3	1	1	1	15	40.00	15
0901	FK890	NORTHWEST WING-EXT.	TRANSITE PANEL BOARD	A	3.150E01	3	1	1	1	15	40.00	15
0165	FK766	MECHANICAL ROOM	TRANSITE PANEL BOARD	A	2.400E01	2	2	1	1	4	2.00	20
9059	HF529	AREA 1	<4" PIPE RUN	A	2.400E01	2	2	1	2	1	8.00	1
9059	HF529	AREA 2	<4" PIPE RUN	A	2.400E01	2	2	1	2	1	8.00	1
9059	HF529	LADIES' ROOM	<4" PIPE RUN	A	2.400E01	2	2	1	2	1	8.00	1
9059	HF529	MEN'S ROOM	<4" PIPE RUN	A	2.400E01	2	2	1	2	1	8.00	1
9049	FK731	MECH. ROOM 1	TRANSITE PANEL BOARD	A	2.300E01	2	2	2	1	1	1.00	50
9043	FK955	ATTIC	4-8" PIPE FITTING	A	2.300E01	2	2	2	1	1	1.00	50
0275	FK741	MECHANICAL ROOM 2	4-8" PIPE FITTING	A	1.392E01	3	1	1	1	12	8.00	50
0275	FK742	MECHANICAL ROOM 2	4-8" PIPE RUN	A	1.392E01	3	1	1	1	12	8.00	65
9044	FK961	WORK BAY-(THRU-OUT)	4-8" PIPE RUN	A	1.160E01	2	1	1	2	2	40.00	60
9044	FK962	ROOM 5-UPPER LEVEL	<4" PIPE FITTING	A	1.160E01	2	1	1	2	2	40.00	65
9044	FK962	WORK BAY-ABOVE CEIL.	<4" PIPE FITTING	A	1.160E01	2	1	1	2	2	40.00	65
9044	FK963	ROOM 5-UPPER LEVEL	<4" PIPE RUN	A	1.160E01	2	1	1	2	2	40.00	40
9044	FK963	WORK BAY-ABOVE CEIL.	<4" PIPE RUN	A	1.160E01	2	1	1	2	2	40.00	40
0161	HF518	STORAGE 3	INSULATION BOARD	A	1.160E01	2	2	2	1	1	8.00	1

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TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
9043	FK953	ATTIC	<4" PIPE FITTING	A	8.250E00	2	2	2	1	1	1.00	30
9043	FK956	ATTIC	4-8" PIPE RUN	A	8.250E00	2	2	2	1	1	1.00	20
0277	FK911	ROOM 1	<4" PIPE RUN	A	6.720E00	2	1	2	1	12	8.00	40
9049	FK723	LABORATORY-1ST FL.	INSULATION BOARD	A	4.200E00	1	2	1	2	5	16.00	10
0293	FK723	OFFICE 2	INSULATION BOARD	A	4.200E00	1	2	1	2	5	16.00	10
0293	FK723	TESTING AREA	INSULATION BOARD	A	4.200E00	1	2	1	2	5	16.00	10
2535	FK812	BREAK ROOM	TRANSITE PANEL BOARD	A	4.200E00	1	2	1	2	5	16.00	30
0412	FK812	EXTERIOR WALLS	TRANSITE PANEL BOARD	A	4.200E00	1	2	1	2	5	16.00	30
9044	FK852	MECH. ROOM	TRANSITE PANEL BOARD	A	4.200E00	1	2	1	2	5	16.00	25
9044	FK852	ROOM 5	TRANSITE PANEL BOARD	A	4.200E00	1	2	1	2	5	16.00	25
2561	FK935	MECH. ROOM	TRANSITE PANEL BOARD	A	4.200E00	1	2	1	2	5	16.00	30
2564	FK935	MECH. ROOM	TRANSITE PANEL BOARD	A	4.200E00	1	2	1	2	5	16.00	30
2564	FK935	STORAGE	TRANSITE PANEL BOARD	A	4.200E00	1	2	1	2	5	16.00	30
2044	FK935	STOREROOM	TRANSITE PANEL BOARD	A	4.200E00	1	2	1	2	5	16.00	30
9044	FK960	WORK BAY-(THRU-OUT)	4-8" PIPE FITTING	A	4.200E00	2	1	1	2	2	40.00	30
9049	FK726	LATRINE	<4" PIPE RUN	A	4.000E00	2	3	2	1	1	1.00	1
0483	FK804	STORAGE 4	<4" PIPE RUN	A	3.240E00	3	1	2	1	1	8.00	50
9080	HF508	BASEMENT-MECH. ROOM	BOILERS/TANKS	A	3.240E00	3	1	2	1	1	8.00	50
9080	HF510	BASEMENT-MECH. ROOM	BOILERS/TANKS	A	3.240E00	3	1	2	1	1	8.00	50
9116	HF525	MECHANICAL ROOM	INSULATION BOARD	A	3.000E00	2	2	1	1	1	1.00	35
0277	FK908	ROOM 7	<4" PIPE FITTING	A	2.400E00	2	1	2	1	12	8.00	21
0277	FK909	ROOM 7	<4" PIPE RUN	A	2.400E00	2	1	2	1	12	8.00	30
0485	FK826	STORAGE 1	TRANSITE PANEL BOARD	A	1.480E00	2	1	1	1	4	40.00	25
9043	FK954	ATTIC	<4" PIPE RUN	A	1.450E00	2	2	2	1	1	1.00	5
0483	FK807	EXTERIOR WALLS	TRANSITE PANEL BOARD	A	1.160E00	3	1	2	1	1	8.00	25
0276	FK786	BREAKROOM	INSULATION BOARD	A	6.500E-1	2	1	1	1	10	40.00	3
0701	FK849	MECHANICAL ROOM	INSULATION BOARD	A	4.200E-1	3	1	1	1	1	8.00	25

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TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
0701	FK851	MECHANICAL ROOM	TRANSITE PANEL BOARD	A	4.200E-1	3	1	1	1	1	8.00	35
0701	FK852	EXTERIOR(LOWER)WALLS	TRANSITE PANEL BOARD	A	4.200E-1	3	1	1	1	1	8.00	25
9359	FK736	MECHANICAL ROOM	BOILERS/TANKS	A	2.500E-2	3	1	2	1	1	1.00	7
0977	FK901	E.WING/ABOVE CEILING	<4" PIPE FITTING	A	2.500E-2	2	1	2	1	1	1.00	18
0977	FK902	E.WING/ABOVE CEILING	<4" PIPE RUN	A	2.500E-2	2	1	2	1	1	1.00	35
9089	FK966	HALLWAY-MEN'S ROOM	TRANSITE PANEL BOARD	A	1.300E-2	1	1	1	2	2	40.00	25
0458	FK707	END WALLS	PLASTER CEILINGS & WALLS	A	0	1	2	2	1	0	0.00	0
0458	FK707	STORAGE RM-SIDE WALL	PLASTER CEILINGS & WALLS	A	0	1	2	2	1	0	0.00	0
0458	FK708	CEILING	PLASTER CEILINGS & WALLS	A	0	1	2	2	1	0	0.00	0
0458	FK708	STORAGE RM-SIDE WALL	PLASTER CEILINGS & WALLS	A	0	1	2	2	1	0	0.00	0
0458	FK708	STORGE-2NDFLR-WALLS	PLASTER CEILINGS & WALLS	A	0	1	2	2	1	0	0.00	0
0458	FK709	STORAGE ROOM-2ND FLR	INSULATION BOARD	A	0	1	2	2	1	0	0.00	0
0458	FK710	STORGE-2NDFLR-CEILNG	PLASTER CEILINGS & WALLS	A	0	1	2	2	1	0	0.00	0
0458	FK711	MECHANICAL ROOM	EXPANSION JOINTS	A	0	2	3	1	2	0	0.00	30
0458	FK712	MECHANICAL ROOM	INSULATION BOARD	A	0	2	3	1	2	0	0.00	0
0458	FK713	MECHANICAL ROOM	INSULATION BOARD	A	0	3	1	2	1	1	1.00	0
0443	FK715	LADIES' ROOM	INSULATION BOARD	A	0	2	2	1	2	10	2.00	0
0443	FK715	STORAGE ROOM-1ST FLR	INSULATION BOARD	A	0	2	2	1	2	10	2.00	0
0443	FK716	MECHANICAL RM- WALLS	INSULATION BOARD	A	0	2	2	1	2	10	2.00	0
0443	FK716	MECHANICAL RM-CEILNG	INSULATION BOARD	A	0	2	2	1	2	10	2.00	0
0443	FK716	STORAGE ROOM-1ST FLR	INSULATION BOARD	A	0	2	2	1	2	10	2.00	0
0443	FK716	STORAGE ROOM-1ST FLR	INSULATION BOARD	A	0	2	2	1	2	10	2.00	0
0443	FK717	OFFICE 3	INSULATION BOARD	A	0	1	1	1	1	0	0.00	0
0443	FK717	STORAGE ROOM-2ND FLR	INSULATION BOARD	A	0	2	2	1	2	10	2.00	0
0443	FK718	OFFICE 3	ACOUSTICAL WALL TILE	A	0	1	1	1	1	0	0.00	0
9044	FK719	MECH. ROOM	EXPANSION JOINTS	A	0	1	2	1	2	5	16.00	0
0443	FK719	MECHANICAL ROOM	EXPANSION JOINTS	A	0	1	1	1	1	0	0.00	0

Priority Index Codes
A [=] Long Term Corrective Measure
B [=] Review Management Special Considerations/Remarks
C [=] Army Asbestos Deficiency Abatement Project

Priority Index Numbers Are In Scientific Notation

Exposure Factors
1 [=] Material Friability
2 [=] Occupant Accessability
3 [=] Material Condition
4 [=] Level Of Activity
5 [=] Number Of Assigned Occupants

TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
9043	FK719	ROOM 3	EXPANSION JOINTS	A	0	1	2	1	2	5	16.00	0
0686	FK722	ENTIRE BLDG-CEILING	INSULATION BOARD	A	0	1	1	1	1	2	40.00	0
0686	FK722	MAIN SUPPLY ROOM	INSULATION BOARD	A	0	1	1	1	2	4	40.00	0
0686	FK722	MECH. ROOM- CEILING	INSULATION BOARD	A	0	1	1	1	1	2	40.00	0
0686	FK722	MECH. ROOM- WALLS	INSULATION BOARD	A	0	1	1	1	1	2	40.00	0
0686	FK722	REAR SUPPLY ROOM	INSULATION BOARD	A	0	1	1	1	1	2	40.00	0
9049	FK725	LATRINE	<4" PIPE FITTING	A	0	2	3	2	1	1	1.00	0
9049	FK735	MECH. ROOM 2	INSULATION BOARD	A	0	2	2	2	1	1	1.00	0
9359	FK738	MAIN AREA	INSULATION BOARD	A	0	3	3	1	1	1	1.00	0
9359	FK739	ROOM 1	CEILING TILE	A	0	3	3	1	1	1	1.00	0
0275	FK740	MECHANICAL ROOM 2	9-14" PIPE RUN	A	0	3	1	1	1	12	8.00	0
9045	FK748	1ST FL. - ENTIRE	CEILING BOARD	A	0	2	2	1	1	10	40.00	0
9045	FK748	2ND FL. - ENTIRE	CEILING BOARD	A	0	2	2	1	1	10	40.00	0
0275	FK748	DISPLAY AREA	CEILING BOARD	A	0	2	1	1	1	20	1.00	0
0275	FK748	STORAGE ROOM	CEILING BOARD	A	0	1	1	1	1	12	2.00	0
2535	FK753	ASSEMBLY AREA	CEILING BOARD	A	0	2	1	1	2	4	40.00	0
0166	FK753	CONFERENCE ROOM	CEILING BOARD	A	0	2	1	1	2	14	2.00	0
0166	FK753	ENTIRE FIRST FLOOR	CEILING BOARD	A	0	2	1	1	2	14	2.00	0
0166	FK756	ATTIC	EXPANSION JOINTS	A	0	2	1	1	2	14	2.00	0
0166	FK757	ATTIC	4-8" PIPE FITTING	A	0	1	1	1	1	1	1.00	0
0166	FK757	GARAGE	4-8" PIPE FITTING	A	0	1	1	1	1	1	1.00	0
0166	FK758	MECHANICAL ROOM	9-14" PIPE RUN	A	0	3	2	1	1	1	1.00	0
0165	FK760	OFFICE	CEILING TILE	A	0	2	2	1	1	4	2.00	0
0165	FK762	CLOSET	GASKET	A	0	2	2	1	1	4	2.00	0
0165	FK763	CLOSET	GASKET	A	0	2	2	1	1	4	2.00	0
0165	FK764	CLOSET	GASKET	A	0	2	2	1	1	4	2.00	0
0142	FK772	WAREHOUSE-ABOVE CEIL	<4" PIPE FITTING	A	0	2	1	2	1	0	0.00	30

Priority Index Codes
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Exposure Factors
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4 [=] Level Of Activity
5 [=] Number Of Assigned Occupants

TABLE 3.2
(continued)

EXPOSURE ASSESSMENTS - PRIORITY ORDER

FT. MONMOUTH - PHASE IV

BUILDING NO.	SAMPLE NO.	AREA	MATERIAL TYPE	PRIOR. INDEX CODE	PRIORITY INDEX NUMBER	EXPOSURE FACTORS 1	2	3	4	5	AVG. EXP. HOURS	% ASB.
0142	FK774	WAREHOUSE-ABOVE CEIL	<4" PIPE RUN	A	0	2	1	2	1	0	0.00	40
0295	FK779	MECH. ROOM	4-8" PIPE FITTING	A	0	3	3	1	1	1	1.00	0
0295	FK780	MECH. ROOM	9-14" PIPE FITTING	A	0	3	3	1	1	1	1.00	0
0295	FK781	FIRST FLR.- ENTIRE	CEILING TILE	A	0	3	1	1	1	50	40.00	0
0295	FK782	ATTIC	EXPANSION JOINTS	A	0	1	2	1	2	5	16.00	0
0289	FK783	ASSEMBLY AREA	CEILING BOARD	A	0	2	1	1	2	5	40.00	0
0289	FK783	COUNTER/LOBBY	CEILING BOARD	A	0	2	1	1	2	5	40.00	0
0289	FK783	OFFICE AREA	CEILING BOARD	A	0	2	1	1	2	5	40.00	0
0289	FK783	STORAGE ROOM 1	CEILING BOARD	A	0	2	1	1	2	5	40.00	0
0289	FK783	VAULT ROOM	CEILING BOARD	A	0	2	1	1	2	5	40.00	0
0276	FK787	OFFICE AREA	CEILING BOARD	A	0	2	1	1	1	10	40.00	0
0210	FK788	COMPUTER/FILES	CEILING TILE	A	0	3	1	1	1	12	8.00	0
0210	FK788	OFFICE AREA 1	CEILING TILE	A	0	3	1	1	1	12	8.00	0
0210	FK788	OFFICE AREA 2	CEILING TILE	A	0	3	1	1	1	12	8.00	0
0294	FK794	CARPENTER SHOP	CEILING TILE	A	0	2	2	1	1	10	20.00	0
0480	FK795	WAREHOUSE	CEILING BOARD	A	0	2	1	1	3	4	40.00	0
0483	FK808	MECHANICAL ROOM 1	9-14" PIPE RUN	A	0	3	2	1	3	1	8.00	0
0412	FK810	STORAGE AREA- ENTIRE	PLASTER CEILINGS & WALLS	A	0	1	2	1	2	5	16.00	0
0412	FK813	MECH. ROOM	GASKET	A	0	1	2	1	2	5	16.00	0
9006	FK814	1ST FL.- ENTIRE	CEILING BOARD	A	0	3	2	1	2	12	40.00	0
0434	FK814	OFFICE 1	CEILING BOARD	A	0	2	2	1	1	4	40.00	0
0434	FK814	OFFICE 2	CEILING BOARD	A	0	2	2	1	1	4	40.00	0
9162	FK814	OFFICE 4	CEILING BOARD	A	0	2	2	1	2	12	40.00	0
2567	FK814	STORE AREA	CEILING BOARD	A	0	2	1	1	2	4	40.00	0
0485	FK819	MECHANICAL ROOM	GASKET	A	0	1	3	1	2	1	8.00	0
0485	FK821	BATHROOM 2	CEILING BOARD	A	0	2	1	1	1	4	40.00	0
0485	FK821	OFFICE 1	CEILING BOARD	A	0	2	1	1	1	4	40.00	0

Priority Index Codes
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SECTION 4
BUILDING REPORTS

4.1 GENERAL

The individual building reports for each of the surveyed buildings are presented in numerical order in a separate bound volume. Where applicable, each building report includes a discussion of findings and recommendations, a sample location floor plan, sample photographs, and the following tabulated data:

- Table 1 - Bulk Sample Analysis Results
- Table 2 - Asbestos-Containing Materials
- Table 3 - Other Asbestos Containing Materials
- Table 4 - Exposure Assessments (Priority Order)
- Table 5 - Cost Estimate

Polarized Light Microscopy (PLM) with dispersion staining was used to analyze all bulk materials in accordance with the methods set forth in EPA 600/M4-82-020, as amended.

4.2 EXPOSURE ASSESSMENT

The relative potential risk of exposure to airborne asbestos was evaluated by the TRADOC ranking system. This system evaluates eight characteristics to generate a relative value of the Asbestos Priority Index. Only the most damaged instance of each area was assessed to generate the Asbestos Priority Index listed for that area in the exposure assessments tables. The value of the Priority Index may range from over 1,000,000, for the greatest relative potential risk, to 0, representing the least relative potential risk, according to material condition, material quantity, material friability, percent content of asbestos, exposure potential, number of personnel exposed, and facility usage. A detailed discussion of this assessment method is presented in the ISSUES COMMON TO ALL BUILDINGS section of this report. Table 3.2 presents a summary of the Asbestos Priority Index for each building surveyed in Phase IV of the survey project at Fort Monmouth, New Jersey.

4.3 RECOMMENDATIONS

WESTON recommends that all ACM be removed prior to major renovation or demolition of any building. Pending removal of ACM, buildings found to contain asbestos in any form should be included in a basewide O&M Program. (Note that because an O&M Program is basewide, its costs are not calculated for each building.) Any ACM that cannot be managed effectively under an O&M Program should be removed immediately.

APPENDIX A
SCOPE OF WORK

a. Site investigation to thoroughly examine existing conditions and establish a detailed scope of the work involved. A review of available as-built drawings and utility maps shall be included in this investigation.

b. Coordination with the Engineering Plans and Services Branch, and DEH personnel on the scope developed in a above, in order to insure that all existing and contemplated functional requirements are met.

c. The work shall include but not be limited to the following major elements of work:

1. Objectives:

(a) The purpose of this work order is to perform a comprehensive survey of buildings in order to locate, identify, and quantify the friable and nonfriable asbestos containing materials (ACM) in the buildings as listed herein. The data collected shall be documented and formatted to facilitate an assessment of the hazard potential to the building occupants and the development of an abatement plan. The collected data shall also be combined with existing information into a database which will provide an easily accessible inventory of all the information available with respect to asbestos.

2. Government Furnished Data:

(a) Design drawings and as-builts are available in the Engineering Plans and Services Division Office, Building 167, Riverside Avenue, Fort Monmouth, New Jersey for review. You will be required to print all copies of our as-built drawings necessary to do your site investigation on our ammonia printer and provide us with a log of the drawings printed.

(b) Available data on prior sampling or the use of nonasbestos materials will be provided to the architect/ engineering firm (A/E) prior to the start of the bulk sample survey on a given building.

3. Methodology:

(a) Sampling Plan. The A/E shall review the available data and drawings and visit the site to physically examine the suspect materials. The A/E shall then develop an asbestos sampling plan which will be subject to review and approval by the Government. The sampling plan shall be presented in a type-written report with supplementary sketches/drawings. The asbestos sampling plan shall include the following elements:

(1) Non-destructive bulk sampling shall be conducted of all suspected asbestos containing materials whether friable or nonfriable in nature and to also include dust and debris that are suspected of being asbestiform in nature. This will include both the interiors and exteriors of the buildings surveyed.

(2) Destructive bulk sampling shall be conducted only after consultation with and concurrence of the Contracting Officer (KO). The decision on concurrence will be provided within 10 days of the initial consultation.

(3) Presurvey briefings of selected groups of building occupants shall be provided by the A/E.

(4) The proposed schedule of sampling including day and time shall be provided by the A/E so that the installation may coordinate access to the appropriate areas and provide advance notice to the occupants. Sampling unless otherwise directed by the Contracting Officer will normally occur during the regular business day. Access and an escort will be provided by the Government.

The Government will also provide ladders as required by the A/E; however, the A/E shall provide handtools, lighting, and expendable supplies as needed.

(5) Sampling principles shall incorporate the guidance of EPA 560/5-85-030a October 1985, Asbestos in Buildings: Simplified Sampling for Friable Surfacing Materials as well as any additional requirements derived from Federal, State or local regulations.

(6) The A/E will specify the names of the individuals that will do the sampling and certify they are properly trained on how to sample. Inform the Directorate of Engineering and Housing so that they may set up (badges/letter) security clearance.

(b) Sampling:

(1) Sampling will be done on a randomized basis with 3 samples taken for homogeneous areas of suspected ACM less than 1,000 square feet in size, 5 samples taken for friable homogeneous areas 1,000 to 5,000 square feet in size, and 7 samples taken for homogeneous areas greater than 5,000 square feet. Three samples will be taken for each homogeneous linear system in excess of 50 feet suspected of being ACM with 1 sample taken for homogeneous linear systems of lesser length.

Suspected ACM joints will be tested on a 1 sample per joint basis up to 3 per system per category. Miscellaneous materials (i.e. ceiling tiles, floor tiles) will be sampled with 1 sample for homogeneous areas less than 1000 square feet, 2 samples for areas 1000 - 5000 square feet, and 3 samples for areas greater than 5000 square feet.

(2) Sample location will be identified on drawings. Labeling of sample sites will also be accomplished where the sampling sites are in inconspicuous locations. Photographs will be taken of representative sample locations with no more than 50% of the total sample sites to be photographed.

(3) For each sample the A/E will provide the following information: name of sampler, date of sampling, sample location description, sample source, unique sampling number, chain of custody information, condition of the material, exposure data, quantity of material, and related information/observations. Nonasbestos materials will also be required to be identified.

(4) The A/E will collect sufficient material for laboratory analysis.

(5) Sampling personnel shall wear respirators and protective clothing.

(6) The installation will be responsible for repair of openings or damage resulting from the need to access an area for sampling purposes or as direct result of the sampling itself. The A/E shall coordinate with the DEH to insure that all necessary repairs to openings are performed.

(7) Progress reports and availability to meet with Government Representatives will be required on a biweekly basis.

(c) Analysis of the Collected Samples:

(1) The laboratory utilized should participate in the EPA Bulk Sample Quality Assurance Program at Research Triangle Park, North Carolina; the National Voluntary Laboratory Accreditation program for asbestos; and/or have a contracting officer approved internal quality control program.

(2) Samples collected shall be analyzed using polarized light microscopy with dispersion oil staining (PLM/DS) and x-ray diffraction if necessary. Personnel doing the laboratory analysis will be industrial hygienists with 2 years minimum experience in asbestos analysis.

(3) Progress reports on the laboratory phase and the availability to meet with Government representatives on this topic will be required on a biweekly basis.

(4) The A/E shall prepare a written report on the results of the asbestos sampling to serve as a comprehensive record of the sampling procedures, sample locations, and the results of the laboratory analysis. Submit one (1) original and 10 copies. It will also include the following at the minimum:

aa. Completed Building Inspection Form, Asbestos Priority Index Calculations, and Asbestos Containing Material Evaluation Form (all forms provided in Chapter 6 of TRADOC's Asbestos Management and Control Handbook - Enclosure 1).

bb. A summary sheet for each sample which details the sample identification number; the description where the sample was taken from, sample appearance, analysis procedure/preparation used; amount of material examined; type and percent of asbestos present; and type and percent of nonasbestos materials present.

cc. Hazard rankings.

dd. Cost estimates for abatement on a by building basis.

ee. Floor plans with sample numbers an the sample locations indicated.

ff. Recommendations on abatement or management on a by building basis.

(d) Database: Input the results of the current survey effort and any existing data provided by the installation which is determined to be valid into the previously developed installation database. In addition, changeover of the current system to informix operation under a unix environment as follows:

aa. Main Menu. This menu will provide access to the other screens in the program and will include the following options:

1. Input/Modify/Query Data
2. General Reports
3. Administrative Functions
4. Executive Summary

bb. Input/Modify/Query Data. This will allow the user to add new data, modify old data and query the system for one or more records and will include the following options:

1. Survey Data
2. Bulk Test Data
3. Exposure Assessment Data
4. Building Information

cc. Generate Reports to the Screen/Printer or File. This menu will allow the user to generate 5 reformatted files and output them to the screen, a printer or file. This menu will include the following:

1. Asbestos Containing Material Summary
2. Build Analysis Report
3. Cost Estimate
4. Exposure Assessment in Building Order
5. Exposure Assessment in Priority Order

dd. Administrative Functions. Most of the administrative functions will be provided through the Informix provided utilities (security and table maintenance). Cost data will also be manipulated through this screen. The administrative functions will include:

1. Cost Data Maintenance
2. Code Table Maintenance
3. Security Maintenance

(e) Disclosure: The A/E shall not make any public announcements or disclosures relative to information contained or developed under this Work Order except as authorized by the contracting officer. All subcontractors working under the A/E is bound by these same limitations.

(f) Conference: The A/E shall meet with the environmental engineer to discuss the sampling plan and final coordination of the field work. The A/E shall present the results of the survey and discuss any critical sites.

(g) Schedule:

(1) Sampling Plan: A copy of the proposed sampling plan shall be submitted to the environmental engineer for review and approval. The government will review the proposed sampling plan and furnish comments to the A/E within 30 days of receipt. Upon receipt of the governments review comments, the A/E shall schedule a meeting to discuss the comments with the government.

(2) Report on Asbestos Sampling Results: The A/E shall submit seven (7) copies of written report documenting the results of the asbestos sampling within 240 calendar days after written notice to proceed. The government will review the report and furnish comments to the A/E within 30 calendar days of receipt. The A/E shall incorporate the government's review comments and within 30 calendar days of receipt of the review comments submit to the government the originals and 15 copies of the completed report and a response to the review comments to facilitate government review.

(3) Complete map of all buildings inspected on post, marked by the phase they were inspected in (I, II, III or IV) and by the type of inspection (complete inspection, walk thru inspection, assumed similar inspection). Use colors and shapes to differentiate each of the above. The existing data base for Phases I, II, and III, and the data base for the proposed Phase IV Asbestos Survey shall be done in "INFORMIX" so that all of the Asbestos Survey data can be accessed in the new Intergraph System.

Completion Date:

Title I Services - Due 90 calendar days after receipt of executed document DD Form 1155.

Title II Services (Optional)** - Due 30 calendar days after completion of construction. The option for Title II Services may be exercised within 180 calendar days after acceptance of final design.

**No work will be initiated on Construction Services (Title II) prior to exercised of the option by the government and receipt of this contract.

The following pages excerpted from Engr Form 2180a, pages 2 thru 15, "Resume of Agreed Items of Work and Conditions", form a part of this contract.

All work to be performed in accordance with the terms and conditions of the above basic contract.

APPENDIX B

LABORATORY ANALYTICAL AND QUALITY ASSURANCE RESULTS

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/17/92 through 08/17/92

Print Date: 08/24/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK703	FT. MONMOUTH	458		ROOF SHINGLES	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK704	FT. MONMOUTH	443		ROOF SHINGLES	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK705	FT. MONMOUTH	443		TRANSITE SKIRT	--	--	--	GRAY	NON-FRIABLE	30	ND	ND	ND	30	No	10058
FK706	FT. MONMOUTH	458		LINOLEUM FLOOR	--	--	--	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK707	FT. MONMOUTH	458		GYPSUM BOARD	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK708	FT. MONMOUTH	458		GYPSUM BOARD	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK709	FT. MONMOUTH	458		LINOLEUM FLOOR	--	--	--	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK710	FT. MONMOUTH	458		GYPSUM BOARD	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK711	FT. MONMOUTH	458		EXPANSION GASKET	--	--	--	GRAY	NON-FRIABLE	30	ND	ND	ND	30	No	10058
FK712	FT. MONMOUTH	458		BOILER INSULATION	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK713	FT. MONMOUTH	458		GYPSUM BOARD	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK714	FT. MONMOUTH	443		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK715	FT. MONMOUTH	443		LINOLEUM FLOOR	--	--	--	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK716	FT. MONMOUTH	443		GYPSUM BOARD	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK717	FT. MONMOUTH	443		LINOLEUM FLOOR	--	--	--	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK718	FT. MONMOUTH	443		ACOUSTIC TILE	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK719	FT. MONMOUTH	443		EXPANSION CLOTH	--	--	--	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK720	FT. MONMOUTH	686		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	2	ND	ND	ND	2	No	10058
FK721	FT. MONMOUTH	686		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	1	ND	ND	ND	1	No	10058
FK722	FT. MONMOUTH	686		GYPSUM BOARD	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK723	FT. MONMOUTH	9049		LAB TABLE TOP	--	--	--	BLACK	NON-FRIABLE	10	ND	ND	ND	10	No	10058
FK724	FT. MONMOUTH	9049		GLOVES	--	--	--	WHITE	NON-FRIABLE	30	ND	ND	ND	30	No	10058
FK725	FT. MONMOUTH	9049		PIPE FITTING	--	--	<4"	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	10058

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/17/92 through 08/17/92

Print Date: 08/24/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK726	FT. MONMOUTH	9049		PIPE INSULATION	--	--	<4"	GRAY	FRIABLE	1	ND	ND	ND	1	No	10058
FK727	FT. MONMOUTH	9049		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	5	ND	ND	ND	5	No	10058
FK728	FT. MONMOUTH	9049		INSULATION MATERIAL	--	--	--	BROWN	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK729	FT. MONMOUTH	9344		ROOF SHEET	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK730	FT. MONMOUTH	9312		PIPE	--	--	--	WHITE	NON-FRIABLE	20	ND	7	ND	27	No	10058
FK731	FT. MONMOUTH	9312		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	50	ND	ND	ND	50	No	10058
FK732	FT. MONMOUTH	9120		ROOF SHINGLES	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK733	FT. MONMOUTH	9049		ROOF SHINGLES	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
FK734	FT. MONMOUTH	9049		MUD JOINT	--	--	--	GRAY	FRIABLE	7	ND	ND	ND	7	No	07323
FK735	FRT. MONMOUTH	9049		GYPSUM BOARD	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK736	FRT. MONMOUTH	9359		BOILER INSULATION	--	--	--	GRAY	FRIABLE	5	2	ND	ND	7	No	07323
FK737	FRT. MONMOUTH	9359		CLOTH INSULATION	--	--	--	GRAY	FRIABLE	65	ND	ND	ND	65	No	07323
FK738	FRT. MONMOUTH	9359		GYPSUM BOARD	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK739	FT. MONMOUTH	9359		ACOUSTIC CEIL. TILE	--	--	1 X 1	WHITE	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK740	FT. MONMOUTH	275		FLUE INSULATION	--	--	9-14"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK741	FT. MONMOUTH	275		FITTING INSULATION	--	--	4-8"	GRAY	FRIABLE	50	ND	ND	ND	50	No	07323
FK742	FT. MONMOUTH	275		RUN INSULATION	--	--	4-8"	GRAY	FRIABLE	65	ND	ND	ND	65	No	07323
FK743	FT. MONMOUTH	275		FITTING INSULATION	--	--	4-8"	GRAY	FRIABLE	50	ND	ND	ND	50	No	07323
FK744	FT. MONMOUTH	275		RUN INSULATION	--	--	4-8"	GRAY	FRIABLE	50	ND	ND	ND	50	Yes	07323
FK745	FT. MONMOUTH	275		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	5	ND	ND	ND	5	No	07323
FK746	FT. MONMOUTH	275		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	25	ND	ND	ND	25	No	07323
FK747	FT. MONMOUTH	275		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK748	FT. MONMOUTH	275		CEILING BOARD	--	--	2 X 2	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/17/92 through 08/17/92

Print Date: 08/24/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK749	FT. MONMOUTH	275		WALL TILE	--	--	1 X 2	GRAY	FRIABLE	30	ND	ND	ND	30	Yes	07323
FK750	FT. MONMOUTH	275		FLOOR TILE	--	--	9 X 9	TAN	NON-FRIABLE	5	ND	ND	ND	5	No	07323
FK751	FT. MONMOUTH	275		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	5	ND	ND	ND	5	No	07323
FK752	FT. MONMOUTH	275		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	10	ND	ND	ND	10	No	07323
FK753	FT. MONMOUTH	166		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK754	FT. MONMOUTH	166		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK755	FT. MONMOUTH	166		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK756	FT. MONMOUTH	166		EXPANSION CLOTH	--	--	--	BLUE	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK757	FT. MONMOUTH	166		FITTING INSULATION	--	--	4-8"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK758	FT. MONMOUTH	166		INSULATION	--	--	9-14"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK759	FT. MONMOUTH	165		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	3	ND	ND	ND	3	No	10058
FK760	FT. MONMOUTH	165		ACOUSTIC CEIL. TILE	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK761	FT. MONMOUTH	165		FLOOR TILE	--	--	12X12	RED	NON-FRIABLE	2	ND	ND	ND	2	No	10058
FK762	FT. MONMOUTH	165		INSULATION	--	--	2 X 2	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK763	FT. MONMOUTH	165		GASKETS	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	07323
FK764	FT. MONMOUTH	165		GASKETS/INSULATION	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	07323
FK765	FT. MONMOUTH	165		LINOLEUM FLOOR	--	--	--	GREEN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK766	FT. MONMOUTH	165		TRANSITE PANEL	--	--	--	BROWN	NON-FRIABLE	20	ND	ND	ND	20	Yes	07323
FK767	FT. MONMOUTH	276		FITTING	--	--	<4"	GRAY	FRIABLE	10	25	ND	ND	35	No	07323
FK768	FT. MONMOUTH	276		INSULATION	--	--	<4"	GRAY	FRIABLE	10	20	15	ND	45	Yes	07323
FK769	FT. MONMOUTH	276		FITTING	--	--	4-8"	GRAY	FRIABLE	25	15	ND	ND	40	No	07323
FK770	FT. MONMOUTH	276		INSULATION	--	--	4-8"	GRAY	FRIABLE	25	10	ND	ND	35	No	07323
FK771	FT. MONMOUTH	276		TANK INSULATION	--	--	--	GRAY	FRIABLE	25	ND	ND	ND	25	No	07323

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/17/92 through 08/17/92

Print Date: 08/24/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK772	FT. MONMOUTH	276		FITTING	--	--	<4"	GRAY	FRIABLE	30	ND	ND	ND	30	No	07323
FK773	FT. MONMOUTH	276		INSULATION	--	--	<4"	GRAY	FRIABLE	25	ND	ND	ND	25	Yes	10434
FK774	FT. MONMOUTH	142		PIPE INSULATION	--	--	<4"	GRAY	FRIABLE	40	ND	ND	ND	40	Yes	10434
FK775	FT. MONMOUTH	142		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	7	ND	ND	ND	7	Yes	10434
FK776	FT. MONMOUTH	295		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	10	ND	ND	ND	10	No	10434
FK777	FT. MONMOUTH	295		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK778	FT. MONMOUTH	295		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	10	ND	ND	ND	10	Yes	10434
FK779	FT. MONMOUTH	295		PIPE FITTING	--	--	4-8"	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	10434
FK780	FT. MONMOUTH	295		PIPE FITTING	--	--	9-14"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK781	FT. MONMOUTH	295		CEILING PANELS	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK782	FT. MONMOUTH	295		EXPANSION CLOTH	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	10434
FK783	FT. MONMOUTH	289		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK784	FT. MONMOUTH	289		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK785	FT. MONMOUTH	289		FLOOR TILE	--	--	12X12	GREEN	NON-FRIABLE	1	ND	ND	ND	1	No	07323
FK786	FT. MONMOUTH	276		LINOLEUM	--	--	--	BROWN	NON-FRIABLE	3	ND	ND	ND	3	Yes	07323
FK787	FT. MONMOUTH	276		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK788	FT. MONMOUTH	210		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK789	FT. MONMOUTH	210		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	5	ND	ND	ND	5	No	07323
FK790	FT. MONMOUTH	294		PIPE FITTING	--	--	<4"	GRAY	FRIABLE	25	ND	ND	ND	25	No	07323
FK791	FT. MONMOUTH	294		PIPE INSULATION	--	--	<4"	GRAY	FRIABLE	35	ND	ND	ND	35	Yes	07323
FK792	FT. MONMOUTH	294		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	10	ND	ND	ND	10	No	07323
FK793	FT. MONMOUTH	294		PIPE INSULATION	--	--	<4"	BROWN	FRIABLE	1	ND	ND	ND	1	Yes	10434
FK794	FT. MONMOUTH	294		CEILING PANELS	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10434

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/17/92 through 08/17/92

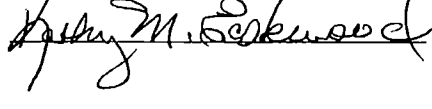
Print Date: 08/24/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK795	FT. MONMOUTH	480		GYPSUM BOARD	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK796	FT. MONMOUTH	480		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	2	ND	ND	ND	2	Yes	10434
FK797	FT. MONMOUTH	480		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	2	ND	ND	ND	2	Yes	10434
FK798	FT. MONMOUTH	480		TRANSITE PANEL	--	--	--	GREEN	NON-FRIABLE	35	ND	ND	ND	35	Yes	10434
FK799	FT. MONMOUTH	481		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	7	ND	ND	ND	7	No	10434
FK800	FT. MONMOUTH	481		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK801	FT. MONMOUTH	481		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10434

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

Results Approved for Transmittal by:



August 24, 1992
(Date)

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/24/92 through 08/24/92

Print Date: 08/31/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK802	FT. MONMOUTH	483		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	8	ND	ND	ND	8	No	10058
FK803	FT. MONMOUTH	483		PIPE FITTING	--	--	<4"	WHITE	FRIABLE	60	ND	ND	ND	60	Yes	10058
FK804	FT. MONMOUTH	483		PIPE INSULATION	--	--	<4"	WHITE	FRIABLE	25	25	ND	ND	50	No	10058
FK805	FT. MONMOUTH	483		PIPE INSULATION	--	--	<4"	GRAY	FRIABLE	20	ND	ND	ND	20	Yes	10058
FK806	FT. MONMOUTH	483		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	8	ND	ND	ND	8	No	10058
FK807	FT. MONMOUTH	483		TRANSITE SIDING	--	--	--	GRAY	NON-FRIABLE	25	ND	ND	ND	25	No	10058
FK808	FT. MONMOUTH	483		PIPE INSULATION	--	--	9-14"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK809	FT. MONMOUTH	412		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	5	ND	ND	ND	5	No	10058
FK810	FT. MONMOUTH	412		GYPSUM BOARD	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK811	FT. MONMOUTH	412		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	6	ND	ND	ND	6	No	10058
FK812	FT. MONMOUTH	412		TRANSITE PANELS	--	--	--	GRAY	NON-FRIABLE	30	ND	ND	ND	30	No	10058
FK813	FT. MONMOUTH	412		GASKET	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK814	FT. MONMOUTH	434		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK815	FT. MONMOUTH	434		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	5	ND	ND	ND	5	No	10058
FK816	FT. MONMOUTH	434		PIPE FITTING	--	--	<4"	WHITE	FRIABLE	40	ND	ND	ND	40	No	10058
FK817	FT. MONMOUTH	434		PIPE INSULATION	--	--	<4"	GRAY	FRIABLE	3	ND	ND	ND	3	Yes	10058
FK818	FT. MONMOUTH	434		BREECH	--	--	9-14"	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK819	FT. MONMOUTH	485		GASKET	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK820	FT. MONMOUTH	485		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	5	ND	ND	ND	5	No	10058
FK821	FT. MONMOUTH	485		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK822	FT. MONMOUTH	485		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	1	ND	ND	ND	1	No	10058
FK823	FT. MONMOUTH	485		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK824	FT. MONMOUTH	485		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/24/92 through 08/24/92

Print Date: 08/31/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK825	FT. MONMOUTH	485		FLOOR TILE	--	--	12X12	RED	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK826	FT. MONMOUTH	485		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	25	ND	ND	ND	25	No	10058
FK827	FT. MONMOUTH	499		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	5	ND	ND	ND	5	No	10058
FK828	FT. MONMOUTH	499		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK829	FT. MONMOUTH	497		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	4	ND	ND	ND	4	No	10058
FK830	FT. MONMOUTH	498		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	5	ND	ND	ND	5	No	10058
FK831	FT. MONMOUTH	545		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	40	ND	ND	ND	40	No	10058
FK832	FT. MONMOUTH	545		MUD ON FURNACE	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK833	FT. MONMOUTH	545		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK834	FT. MONMOUTH	545		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK835	FT. MONMOUTH	545		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK836	FT. MONMOUTH	550		FLOOR TILE	--	--	12X12	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK837	FT. MONMOUTH	550		CEILING BOARD	--	--	2 X 4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK838	FT. MONMOUTH	550		ACOUSTIC WALL	--	--	12X12	TAN	FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK839	FT. MONMOUTH	550		FLOOR TILE	--	--	12X12	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10434
FK840	FT. MONMOUTH	550		FURNACE INSULATION	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10434
FK841	FT. MONMOUTH	550		FURNACE GASKET	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10434
FK842	FT. MONMOUTH	699		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	2	ND	ND	ND	2	No	10058
FK843	FT. MONMOUTH	695		ACOUSTIC TILE	--	--	12X12	TAN	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK844	FT. MONMOUTH	695		PIPE FITTING	--	--	4-8"	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK845	FT. MONMOUTH	695		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	5	ND	ND	ND	5	No	10058
FK846	FT. MONMOUTH	695		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	10	ND	ND	ND	10	No	10058
FK847	FT. MONMOUTH	695		PIPE INSULATION	--	--	9-14"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/24/92 through 08/24/92

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AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK848	FT. MONMOUTH	701		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	10	ND	ND	ND	10	No	10058
FK849	FT. MONMOUTH	701		GASKET MATERIAL	--	--	2"	GRAY	NON-FRIABLE	25	ND	ND	ND	25	No	10058
FK850	FT. MONMOUTH	701		MUD JOINT	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK851	FT. MONMOUTH	701		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	35	ND	ND	ND	35	No	10058
FK852	FT. MONMOUTH	701		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	25	ND	ND	ND	25	No	10058
FK853	FT. MONMOUTH	801		FLOOR TILE	--	--	12X12	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK854	FT. MONMOUTH	826		FITTING INSULATION	--	--	<4"	GRAY	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK855	FT. MONMOUTH	826		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK856	FT. MONMOUTH	826		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	2	ND	ND	ND	2	No	10058
FK857	FT. MONMOUTH	866		FITTING INSULATION	--	--	<4"	WHITE	FRIABLE	35	ND	ND	ND	35	No	10058
FK858	FT. MONMOUTH	866		RUN INSULATION	--	--	<4"	GRAY	FRIABLE	10	ND	ND	ND	10	Yes	10058
FK859	FT. MONMOUTH	866		FITTING INSULATION	--	--	4-8"	WHITE	FRIABLE	20	ND	ND	ND	20	Yes	10058
FK860	FT. MONMOUTH	866		RUN INSULATION	--	--	4-8"	WHITE	FRIABLE	20	15	ND	ND	35	No	10058
FK861	FT. MONMOUTH	866		TANK INSULATION	--	--	--	WHITE	FRIABLE	35	ND	ND	ND	35	No	10058
FK862	FT. MONMOUTH	886		LINOLEUM	--	--	--	BROWN	NON-FRIABLE	7	ND	ND	ND	7	No	10058
FK863	FT. MONMOUTH	810		FLOOR TILE	--	--	12X12	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK864	FT. MONMOUTH	901		BREECHING	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK865	FT. MONMOUTH	976		WALL INSULATION	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK866	FT. MONMOUTH	976		RUN INSULATION	--	--	<4"	GREEN	NON-FRIABLE	5	ND	ND	ND	5	Yes	10058
FK867	FT. MONMOUTH	976		FITTING INSULATION	--	--	<4"	WHITE	FRIABLE	20	5	ND	ND	25	No	10058
FK868	FT. MONMOUTH	976		WALL INSULATION	--	--	--	BLACK	NON-FRIABLE	1	ND	ND	ND	1	Yes	10058
FK869	FT. MONMOUTH	976		CEILING INSULATION	--	--	--	BLACK	NON-FRIABLE	2	ND	ND	ND	2	Yes	07323
FK870	FT. MONMOUTH	976		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	30	ND	ND	ND	30	No	07323

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/24/92 through 08/24/92

Print Date: 08/31/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK871	FT. MONMOUTH	976		EXPANSION JOINT	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK872	FT. MONMOUTH	976		RUN INSULATION	--	--	<4"	GRAY	NON-FRIABLE	3	ND	ND	ND	3	Yes	07323
FK873	FT. MONMOUTH	976		FITTING INSULATION	--	--	<4"	GRAY	FRIABLE	30	ND	ND	ND	30	No	07323
FK874	FT. MONMOUTH	563		FITTING INSULATION	--	--	<4"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK875	FT. MONMOUTH	563		FITTING INSULATION	--	--	4-8"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK876	FT. MONMOUTH	563		CEILING PANELS	--	--	4 X 2	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK877	FT. MONMOUTH	563		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	5	ND	ND	ND	5	No	07323
FK878	FT. MONMOUTH	563		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	10	ND	ND	ND	10	No	10058
FK879	FT. MONMOUTH	563		FLOOR TILE	--	--	9 X 9	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK880	FT. MONMOUTH	563		CEILING PANEL	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK881	FT. MONMOUTH	563		CEILING PANEL	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	No	10058
FK882	FT. MONMOUTH	563		PIPE INSULATION	--	--	<4"	GRAY	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK883	FT. MONMOUTH	563		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	10058
FK884	FT. MONMOUTH	563		PIPE FITTING	--	--	<4"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	10058
FK885	FT. MONMOUTH	563		PIPE INSULATION	--	--	9-14"	WHITE	FRIABLE	15	ND	ND	ND	15	No	10058

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/24/92 through 08/24/92

Print Date: 08/31/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH AM CR OT TL	LAYERS	ANALYST

Results Approved for Transmittal by:

Kathryn M. Eastenwood

August 31, 1992

(Date)

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/31/92 through 08/31/92

Print Date: 09/08/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK886	FT. MONMOUTH	901		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	2	ND	ND	ND	2	No	06067
FK887	FT. MONMOUTH	901		ACOUSTIC TILE	--	--	2X4	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06067
FK888	FT. MONMOUTH	901		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	2	ND	ND	ND	2	No	06067
FK889	FT. MONMOUTH	901		FLOOR TILE	--	--	9X9	BROWN	NON-FRIABLE	7	ND	ND	ND	7	No	06067
FK890	FT. MONMOUTH	901		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	15	ND	ND	ND	15	Yes	06067
FK891	FT. MONMOUTH	866		FLOOR TILE	--	--	9X9	GREEN	NON-FRIABLE	2	ND	ND	ND	2	No	06067
FK892	FT. MONMOUTH	866		FLOOR TILE	--	--	12X12	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	No	06067
FK893	FT. MONMOUTH	866		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	06067
FK894	FT. MONMOUTH	866		FLOOR TILE	--	--	12X12	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	06067
FK895	FT. MONMOUTH	866		ACOUSTIC TILE	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06067
FK896	FT. MONMOUTH	565		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	No	06067
FK897	FT. MONMOUTH	171		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	35	ND	ND	ND	35	Yes	06067
FK898	FT. MONMOUTH	293		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	7	ND	ND	ND	7	Yes	06067
FK899	FT. MONMOUTH	983		FLOOR TILE	--	--	12X12	--	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	06067
FK900	FT. MONMOUTH	983		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	06067
FK901	FT. MONMOUTH	977		PIPE FITTING INS	--	--	<4"	GRAY	FRIABLE	18	ND	ND	ND	18	No	06067
FK902	FT. MONMOUTH	977		PIPE RUN INS	--	--	<4"	GRAY	FRIABLE	35	ND	ND	ND	35	No	06067
FK903	FT. MONMOUTH	977		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	06067
FK904	FT. MONMOUTH	977		CEIL. BOARD	--	--	2X2	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06067
FK905	FT. MONMOUTH	977		SHEET FLOORING	--	--	12X12	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	06067
FK906	FT. MONMOUTH	977		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	06067

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/31/92 through 08/31/92

Print Date: 09/08/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK907	FT. MONMOUTH	977		PIPE FITTING INS	--	--	9-14"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
FK908	FT. MONMOUTH	277		PIPE FITTING INS	--	--	<4"	WHITE	FRIABLE	21	ND	ND	<1	21	Yes	06016
FK909	FT. MONMOUTH	277		PIPE RUN INS	--	--	<4"	WHITE	FRIABLE	30	ND	ND	ND	30	Yes	06016
FK910	FT. MONMOUTH	277		BREECHING	--	--	--	WHITE	FRIABLE	2	ND	ND	ND	2	Yes	06016
FK911	FT. MONMOUTH	277		PIPE RUN INS	--	--	<4"	GRAY	FRIABLE	40	ND	ND	ND	40	Yes	06016
FK912	FT. MONMOUTH	277		FLOOR TILE	--	--	9X9	BROWN	NON-FRIABLE	7	ND	ND	ND	7	Yes	06016
FK913	FT. MONMOUTH	277		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	<1	ND	ND	ND	<1	Yes	06016
FK914	FT. MONMOUTH	277		FLOOR TILE	--	--	9X9	GREEN	NON-FRIABLE	7	ND	ND	ND	7	Yes	06016
FK915	FT. MONMOUTH	277		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	5	ND	ND	ND	5	Yes	06016
FK916	FT. MONMOUTH	1076		BOILER/TANK INS	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
FK917	FT. MONMOUTH	277		CEIL. BOARD	--	--	2X2	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
FK918	FT. MONMOUTH	1076		BOILER/TANK INS	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
FK919	FT. MONMOUTH	1076		BOILER HEADER INSUL.	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
FK920	FT. MONMOUTH	1076		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	<1	ND	ND	ND	<1	No	06016
FK921	FT. MONMOUTH	1076		EXHAUST INSUL.	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	06016
FK922	FT. MONMOUTH	1010		FLOOR TILE	--	--	9X9	TAN	NON-FRIABLE	3	ND	ND	<1	3	Yes	06016
FK923	FT. MONMOUTH	1010		EXPANSION JOINTS	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	06016
FK924	FT. MONMOUTH	977		ACOUSTIC TILE	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
FK925	FT. MONMOUTH	1006		ACOUSTIC TILE	--	--	2X2	TAN	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
FK926	FT. MONMOUTH	1006		ACOUSTIC TILE	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
FK927	FT. MONMOUTH	1006		PIPE FITTING INS	--	--	<4"	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-001-0000

Receipt Date 08/31/92 through 08/31/92

Print Date: 09/08/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH AM CR OT TL	LAYERS	ANALYST

Results Approved for Transmittal by:

September 8, 1992

(Date)

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-002-0000

Receipt Date 09/28/92 through 09/28/92

Print Date: 10/19/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK928	FT. MONMOUTH	2543		PIPE INSULATION	--	--	<4"	GRAY	FRIABLE	15	20	ND	ND	35	No	07323
FK929	FT. MONMOUTH	2543		BREECH INSULATION	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK930	FT. MONMOUTH	2542		CEILING INSULATION	--	--	--	GRAY	FRIABLE	65	ND	ND	ND	65	No	07323
FK931	FT. MONMOUTH	2535		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	5	ND	ND	ND	5	No	07323
FK932	FT. MONMOUTH	2535		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	3	ND	ND	ND	3	No	07323
FK933	FT. MONMOUTH	2561		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
FK934	FT. MONMOUTH	2561		MUD PACKING	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
FK935	FT. MONMOUTH	2564		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	30	ND	ND	ND	30	No	07323
FK936	FT. MONMOUTH	2564		MUD PACKING	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
FK937	FT. MONMOUTH	2275		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
FK938	FT. MONMOUTH	2567		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	<1	ND	ND	ND	<1	Yes	07323
FK939	FT. MONMOUTH	2044		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	10	ND	ND	ND	10	Yes	07323
FK940	FT. MONMOUTH	2044		FLOOR TILE	--	--	12X12	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK941	FT. MONMOUTH	2044		BUILDING PAPER	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
FK942	FT. MONMOUTH	2018		LINOLEUM	--	--	--	--	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK943	FT. MONMOUTH	2018		LINOLEUM	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK944	FT. MONMOUTH	2018		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK945	FT. MONMOUTH	202		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
FK946	FT. MONMOUTH	202		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	1	ND	ND	ND	1	Yes	07323
FK947	FT. MONMOUTH	202		FLOOR TILE	--	--	12X12	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK948	FT. MONMOUTH	202		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	3	ND	ND	ND	3	No	07323

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-002-0000

Receipt Date 09/28/92 through 09/28/92

Print Date: 10/19/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK949	FT. MONMOUTH	9047		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	2	ND	ND	ND	2	No	07323
FK950	FT. MONMOUTH	9064		BREECH INSULATION	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK951	FT. MONMOUTH	9043		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	2	ND	ND	ND	2	No	07323
FK952	FT. MONMOUTH	9043		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	2	ND	ND	ND	2	No	07323
FK953	FT. MONMOUTH	9043		FITTING INSULATION	--	--	<4"	GRAY	FRIABLE	30	ND	ND	ND	30	Yes	07323
FK954	FT. MONMOUTH	9043		PIPE INSULATION	--	--	<4"	GRAY	FRIABLE	5	ND	ND	ND	5	Yes	07323
FK955	FT. MONMOUTH	9043		PIPE FITTING	--	--	4-8"	GRAY	FRIABLE	50	ND	ND	ND	50	Yes	07323
FK956	FT. MONMOUTH	9043		PIPE INSULATION	--	--	4-8"	GRAY	FRIABLE	20	ND	ND	ND	20	No	07323
FK957	FT. MONMOUTH	9044		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	1	ND	ND	ND	1	No	07323
FK958	FT. MONMOUTH	9044		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	<1	ND	ND	ND	<1	No	07323
FK959	FT. MONMOUTH	9044		FLOOR TILE	--	--	9 X 9	RED	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK960	FT. MONMOUTH	9044		FITTING INSULATION	--	--	4-8"	GRAY	FRIABLE	30	ND	ND	ND	30	Yes	07323
FK961	FT. MONMOUTH	9044		PIPE RUN	--	--	4-8"	GRAY	FRIABLE	60	ND	ND	ND	60	Yes	07323
FK962	FT. MONMOUTH	9044		FITTING INSULATION	--	--	<4"	GRAY	FRIABLE	65	ND	ND	ND	65	Yes	07323
FK963	FT. MONMOUTH	9044		PIPE RUN	--	--	<4"	GRAY	FRIABLE	40	ND	ND	ND	40	Yes	07323
FK964	FT. MONMOUTH	9044		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	7	ND	ND	ND	7	No	07323
FK965	FT. MONMOUTH	9089		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	5	ND	ND	ND	5	No	07323
FK966	FT. MONMOUTH	9089		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	25	ND	ND	ND	25	Yes	07323
FK967	FT. MONMOUTH	9089		FITTING INSULATION	--	--	<4"	GRAY	FRIABLE	20	3	ND	ND	23	Yes	07323
FK968	FT. MONMOUTH	9089		PIPE RUN	--	--	<4"	GRAY	FRIABLE	2	ND	ND	ND	2	Yes	06016
FK969	FT. MONMOUTH	9045		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	<1	ND	ND	ND	<1	Yes	06016

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-002-0000

Receipt Date 09/28/92 through 09/28/92

Print Date: 10/19/92

	AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
	FK970	FT. MONMOUTH	9083		LINOLEUM	--	--	--	RED	NON-FRIABLE	<1	ND	ND	ND	<1	Yes	06016
	FK971	FT. MONMOUTH	9083		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	2	ND	ND	ND	2	No	06016
	FK972	FT. MONMOUTH	9083		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	8	ND	ND	ND	8	Yes	06016
	FK973	FT. MONMOUTH	9094		LINOLEUM	--	--	--	RED	NON-FRIABLE	<1	ND	ND	ND	<1	Yes	06016
	FK974	FT. MONMOUTH	9094		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	40	ND	ND	ND	40	No	06016
	FK975	FT. MONMOUTH	9035		BREECH INSULATION	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
	FK976	FT. MONMOUTH	9035		PIPE INSULATION	--	--	4-8"	BLACK	FRIABLE	10	ND	ND	ND	10	Yes	06016
	FK977	FT. MONMOUTH	9085		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	5	ND	ND	ND	5	No	06016
	FK978	FT. MONMOUTH	9085		ACOUSTIC TILE	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
	FK979	FT. MONMOUTH	9085		ACOUSTIC TILE	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	06016
	FK980	FT. MONMOUTH	9006		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	7	ND	ND	ND	7	No	06016
	FK981	FT. MONMOUTH	9006		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	7	ND	ND	ND	7	No	06016
	FK982	FT. MONMOUTH	9006		ACOUSTIC TILE	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
	FK983	FT. MONMOUTH	9006		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	3	ND	ND	ND	3	No	07323
	FK984	FT. MONMOUTH	9006		FITTING INSULATION	--	--	<4"	GRAY	FRIABLE	60	ND	ND	ND	60	No	07323
	FK985	FT. MONMOUTH	9006		PIPE RUN	--	--	<4"	GRAY	FRIABLE	40	ND	ND	ND	40	No	07323
	FK986	FT. MONMOUTH	9012		BREECH INSULATION	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
	FK987	FT. MONMOUTH	9030		BREECH INSULATION	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
*	FK988	FT. MONMOUTH	623		LINOLEUM	--	--	--	BROWN	NON-FRIABLE	1	ND	ND	ND	1	Yes	07323
	FK989	FT. MONMOUTH	9345		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	3	ND	ND	ND	3	Yes	07323

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

* This sample consists of three distinct layers. Asbestos (10%) was detected in the adhesive mastic layer only. The percentage estimate reported was determined by considering the sample as a composite.

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-002-0000

Receipt Date 09/28/92 through 09/28/92

Print Date: 10/19/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH AM CR OT TL	LAYERS	ANALYST

Results Approved for Transmittal by:

October 19, 1992

(Date)

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-002-0000

Receipt Date 10/07/92 through 10/07/92

Print Date: 10/13/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
FK990	FT. MONMOUTH	9029		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	7	ND	ND	ND	7	No	07323
FK991	FT. MONMOUTH	9029		FITTING INSULATION	--	--	4-8"	GRAY	FRIABLE	55	ND	ND	ND	55	Yes	07323
FK992	FT. MONMOUTH	9029		PIPE RUN INSULATION	--	--	4-8"	GRAY	FRIABLE	65	ND	ND	ND	65	No	07323
FK993	FT. MONMOUTH	9029		PIPE RUN INSULATION	--	--	<4"	GRAY	NON-FRIABLE	7	ND	ND	ND	7	No	07323
FK994	FT. MONMOUTH	9029		CEILING INSULATION	--	--	--	GRAY	FRIABLE	7	50	ND	ND	57	No	07323
FK995	FT. MONMOUTH	9029		ACOUSTIC TILE	--	--	--	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
FK996	FT. MONMOUTH	9013		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	3	ND	ND	ND	3	Yes	07323
FK997	FT. MONMOUTH	9013		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	7	ND	ND	ND	7	No	07323
FK998	FT. MONMOUTH	9027		FITTING INSULATION	--	--	4-8"	GRAY	FRIABLE	45	ND	ND	ND	45	No	07323
FK999	FT. MONMOUTH	9027		PIPE RUN INSULATION	--	--	4-8"	GRAY	FRIABLE	60	ND	ND	ND	60	No	07323
HF500	FT. MONMOUTH	9027		PIPE RUN INSULATION	--	--	4-8"	GRAY	NON-FRIABLE	3	ND	ND	ND	3	Yes	07323
HF501	FT. MONMOUTH	9086		FITTING INSULATION	--	--	<4"	GRAY	FRIABLE	50	1	ND	ND	51	Yes	07323
HF502	FT. MONMOUTH	9086		PIPE RUN INSULATION	--	--	<4"	GRAY	FRIABLE	65	ND	ND	ND	65	No	07323
HF503	FT. MONMOUTH	9162		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	7	ND	ND	ND	7	No	07323
HF504	FT. MONMOUTH	9162		DUCT INSULATION	--	--	--	WHITE	FRIABLE	3	1	ND	ND	4	Yes	07323
HF505	FT. MONMOUTH	9162		EXPANSION CLOTH	--	--	--	WHITE	NON-FRIABLE	40	ND	ND	ND	40	No	07323
HF506	FT. MONMOUTH	9162		BOILER INSULATION	--	--	--	GRAY	FRIABLE	55	ND	ND	ND	55	Yes	07323
HF507	FT. MONMOUTH	9342		FLOOR TILE	--	--	9 X 9	BLACK	NON-FRIABLE	5	ND	ND	ND	5	No	07323
HF508	FT. MONMOUTH	9080		BOILER INSULATION	--	--	--	GRAY	FRIABLE	50	ND	ND	ND	50	Yes	07323
HF509	FT. MONMOUTH	9080		BOILER INSULATION	--	--	--	GRAY	FRIABLE	50	ND	ND	ND	50	Yes	07323
HF510	FT. MONMOUTH	9080		TANK INSULATION	--	--	--	GRAY	FRIABLE	50	ND	ND	ND	50	Yes	07323

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-002-0000

Receipt Date 10/07/92 through 10/07/92

Print Date: 10/13/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH	AM	CR	OT	TL	LAYERS	ANALYST
HF511	FT. MONMOUTH	9080		TANK INSULATION	--	--	--	GRAY	FRIABLE	50	ND	ND	ND	50	No	07323
HF512	FT. MONMOUTH	9080		LINOLEUM	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
HF513	FT. MONMOUTH	9080		CEILING BOARD	--	--	--	WHITE	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
HF514	FT. MONMOUTH	2531		FLOOR TILE	--	--	12X12	TAN	NON-FRIABLE	3	ND	ND	ND	3	No	07323
HF515	FT. MONMOUTH	9088		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	7	ND	ND	ND	7	No	07323
HF516	FT. MONMOUTH	161		FLOOR TILE	--	--	9 X 9	GREEN	NON-FRIABLE	5	ND	ND	ND	5	No	07323
HF517	FT. MONMOUTH	161		FLOOR TILE	--	--	9 X 9	GRAY	NON-FRIABLE	7	ND	ND	ND	7	No	07323
HF518	FT. MONMOUTH	161		LINOLEUM	--	--	--	BROWN	NON-FRIABLE	1	ND	ND	ND	1	Yes	07323
HF519	FT. MONMOUTH	161		CEILING BOARD	--	--	--	WHITE	NON-FRIABLE	ND	ND	ND	ND	ND	Yes	07323
HF520	FT. MONMOUTH	161		TRANSITE PANEL	--	--	--	GRAY	NON-FRIABLE	50	ND	ND	ND	50	No	07323
HF521	FT. MONMOUTH	161		FIRE BLANKET	--	--	--	BROWN	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
HF522	FT. MONMOUTH	161		ROOF SHINGLES	--	--	--	BLACK	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
HF523	FT. MONMOUTH	161		EXHAUST INSULATION	--	--	--	GRAY	FRIABLE	45	ND	ND	ND	45	No	07323
HF524	FT. MONMOUTH	161		EXPANSION CLOTH	--	--	--	GRAY	NON-FRIABLE	ND	ND	ND	ND	ND	No	07323
HF525	FT. MONMOUTH	9116		EXHAUST INSULATION	--	--	--	GRAY	FRIABLE	35	ND	ND	ND	35	No	07323
HF526	FT. MONMOUTH	9116		FLOOR TILE	--	--	9 X 9	BROWN	NON-FRIABLE	7	ND	ND	ND	7	No	07323
HF527	FT. MONMOUTH	9116		CEILING TILE	--	--	12X12	WHITE	FRIABLE	ND	ND	ND	ND	ND	Yes	07323
HF528	FT. MONMOUTH	9059		FITTING INSULATION	--	--	<4"	GRAY	FRIABLE	20	3	ND	ND	23	No	07323
HF529	FT. MONMOUTH	9059		PIPE RUN INSULATION	--	--	<4"	GRAY	NON-FRIABLE	<1	ND	ND	ND	<1	Yes	07323
HF530	FT. MONMOUTH	9059		CEILING INSULATION	--	--	--	GRAY	FRIABLE	ND	ND	ND	ND	ND	No	07323

RESULTS LEGEND

CH - Chrysotile AM - Amosite CR - Crocidolite OT - Other TL - Total ND - None Detected

POLARIZED LIGHT MICROSCOPY
BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 03886-077-002-0000

Receipt Date 10/07/92 through 10/07/92

Print Date: 10/13/92

AO LAB ID NO.	CLIENT/CLIENT ID	BLDG	HA	MATERIAL TYPE	SYSTEM	LOCATION	SIZE	COLOR	FRIABILITY	RESULTS CH AM CR OT TL	LAYERS	ANALYST

Results Approved for Transmittal by:

Chris L. Taylor

October 13, 1992

(Date)

OPTICAL MICROSCOPY LABORATORY
QUALITY ASSURANCE MANUAL FOR
POLARIZED LIGHT MICROSCOPY

ROY F. WESTON, INC.
1635 Pumphrey Avenue
Auburn, AL 36830

APPROVED FOR USE

Executive Vice President — Date: 2-26-92

Quality Control Coordinator — Date: 2-26-92

Copy _____ of _____

INTRODUCTION

The Polarized Light Microscopy Laboratory functions as a unit of the Optical Microscopy Laboratory at WESTON. The primary purpose of this unit is to analyze bulk materials suspected of containing asbestiform minerals, using polarized light microscopy (PLM). The analytical methods and procedures used in the laboratory are in compliance with the U.S. Environmental Protection Agency "Interim Method for the Determination of Asbestos in Bulk Insulation Samples," EPA 600/M4-020, December 1982, as amended.

This Quality Assurance Manual describes the objectives, policies, functions, organization, quality assurance (QA) and quality control (QC) activities designed to achieve data quality goals. This manual presents practices used by the Polarized Light Microscopy Laboratory to ensure that data quality and laboratory procedures are consistent with quality assurance standards. The specific objectives of this QA program are to:

- Define the responsibilities of all personnel involved in the laboratory organization.

- Assist in the early recognition of deficiencies which might affect the quality of data, by means of efficient quality assurance and quality control activities

- Enable the Laboratory Director and Laboratory Supervisor to take necessary action to ensure the validity of laboratory data.

- Produce precise, accurate, comprehensive, and comparable data.

In order to ensure that revisions of methods used by the laboratory are implemented, this Quality Assurance Manual is reviewed annually from the date of last revision or whenever a problem is identified. The maintenance of the QA Program and the associated QA Manual is the responsibility of the laboratory-designated Quality Control Coordinator (QCC).

INTERNAL QUALITY CONTROL CHECKS

The Polarized Light Microscopy Laboratory assures the accuracy and consistency of its analysts through a strict quality control program. This program includes: testing with internal standards, duplicate or blind analyses, (at least five percent) inter-operator tests, blank analyses, periodic calibrations and equipment maintenance, and documentation of all activities. The laboratory also practices a QC procedure which involves a replicate analysis of at least ten percent of the total number of analyses performed.

In the event that asbestos is reported by only one analyst (A, B, or C), that analyst will have the opportunity to demonstrate its presence. If the analyst is successful, the result for that sample will be determined by resolution.

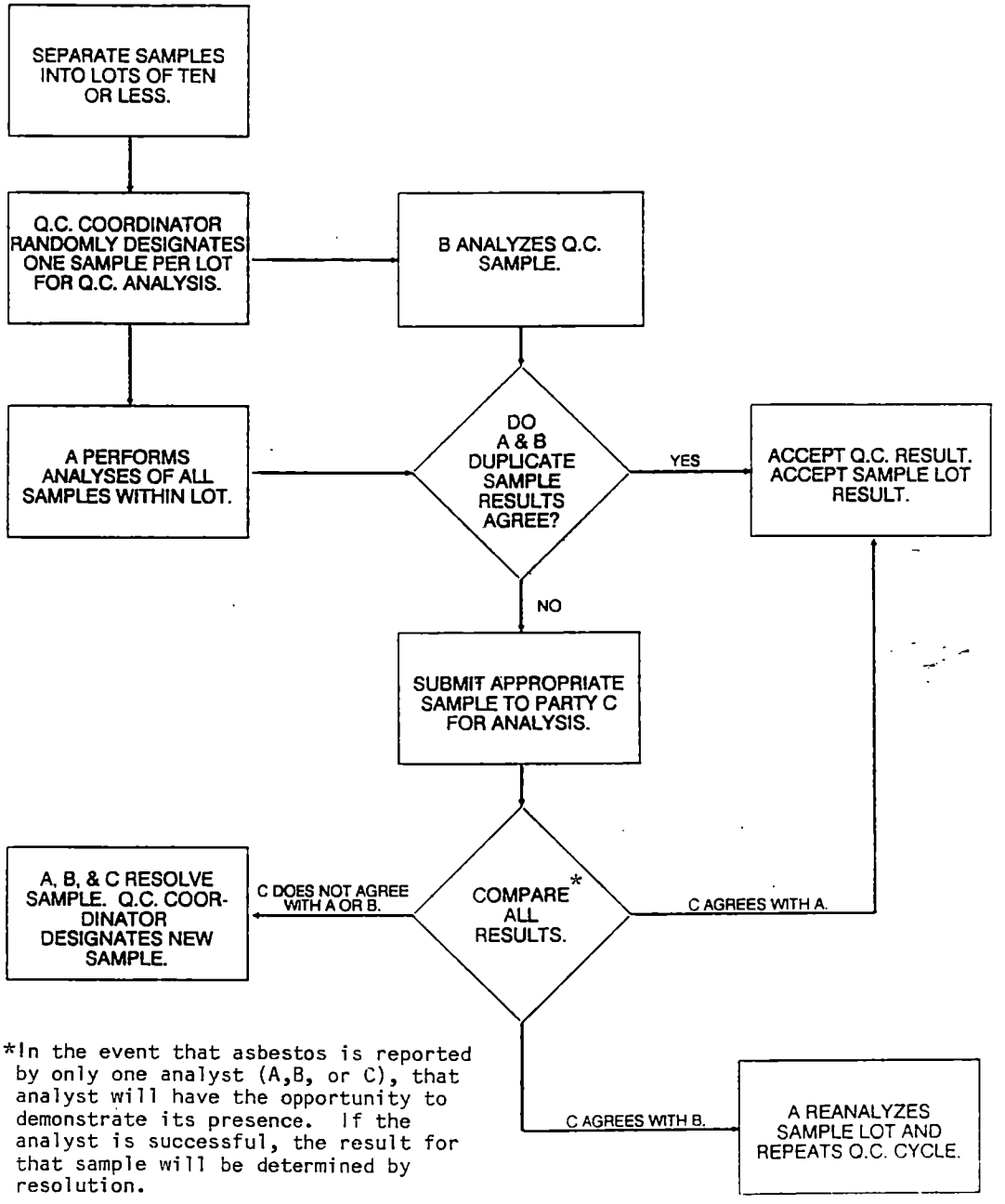
If situations involving quality control occur which cannot be resolved within existing parameters, the Laboratory Supervisor and Quality Control Coordinator will jointly agree on and document a course of action.

Figure 1 depicts a quality control program flow chart for bulk samples. These QC checks are detailed in Section 6 of the PLM Laboratory's Standard Operating Procedures.

To prevent cross-contamination of samples, the analyst will clean his or her tools in a drop of 1.55 R.I. Liquid at least every tenth sample. The slide mount will be examined for the presence of asbestos. If asbestos is detected, the analyst will reanalyze any samples which have results that might have been caused by contaminated tools.

In the event that an analyst's proficiency drops below 95% based on replicate analysis over a three month period (or a minimum of 50 sample lots), then retraining will be initiated. The retraining will consist of four hours of analysis of standards and six hours of analysis of other samples previously analyzed. This retraining will be closely supervised.

QUALITY CONTROL PROGRAM FLOWCHART
FOR BULK SAMPLE ANALYSIS



*In the event that asbestos is reported by only one analyst (A,B, or C), that analyst will have the opportunity to demonstrate its presence. If the analyst is successful, the result for that sample will be determined by resolution.

A = Analyst who performs analyses of sample lot which contains designated Q.C. sample.
B = Analyst who performs analysis of Q.C. sample.
C = Third party analyst who performs analysis of Q.C. sample.

C:\MISC\QC-LABMA.CHP

FIGURE .1 QUALITY CONTROL PROGRAM FLOW CHART FOR BULK SAMPLE ANALYSIS

PERFORMANCE AUDITS

The Polarized Light Microscopy Laboratory assures a high standard of quality through constant participation in the NVLAP Round-Robin accreditation program, in-house, as well as advanced training courses for analysts, seminar participation, and inter-laboratory testing. The training and seminar participation are not necessarily auditing tools but are reviewed periodically to ensure the analysts are receiving and therefore utilizing the most current and acceptable methods.

Although only one analyst's results per round are reported in the NVLAP accreditation program, each analyst separately participates by analyzing, recording, and reporting test sample results to the QCC. These results are useful in evaluating the laboratory's performance on an individual analyst basis, because each analyst's results can be compared to the reference asbestos percentages reported by the NVLAP/NIST. Inter-laboratory testing affords the laboratory the opportunity to compare its results and subsequently its procedures with those of another laboratory. In this case, each laboratory reports its results for the same or a duplicate sample.

These auditing practices are designed to monitor the capability and performance of the analysts. It is the responsibility of the QCC to oversee performance testing and the maintenance of the data generated from these audits. The scheduling of such audits is also the responsibility of the QCC.

Each analyst's training, qualifications, and test performances are documented in his/her personnel folder. For a description of the in-house training program, see the WESTON Training Program for Asbestos Identification Using Polarized Light Microscopy.