

ASBESTOS ABATEMENT PROJECT SPECIFICATION MANUAL

**Ferry Farm Elementary School
20 Pendleton Road
Stafford, Virginia 22405**

Prepared for:
Jenn Spindle
STAFFORD COUNTY PUBLIC SCHOOLS
31 Stafford Avenue
Stafford, Virginia 22554

Prepared by:



APEX COMPANIES, LLC
9700 Capital Court, Suite 100
Manassas, Virginia 20110
November 1, 2019



November 1, 2019

Jenn Spindle
Stafford County Public Schools
31 Stafford Avenue
Stafford, Virginia 22554

Re: Asbestos Abatement Project Specification Manual
Ferry Farm Elementary School
20 Pendleton Road
Stafford, Virginia 22405

Dear Mr. Sullivan:

Apex Companies, LLC (Apex), is pleased to submit this *Asbestos Abatement Project Specification Manual* for Ferry Farm Elementary School located at 20 Pendleton Road in Stafford, Virginia.

Apex appreciates the opportunity to be of service to the Stafford County Public Schools on this project. If you have questions or comments regarding the information in this report or if I can be of further assistance, please do not hesitate to contact Apex Companies, LLC at (703) 396-6730.

Sincerely,

APEX COMPANIES, LLC

A blue ink signature of Barrett McMullan, consisting of several fluid, overlapping strokes.

Barrett McMullan
Project Manager

A black ink signature of Michael May, featuring a large, stylized 'M' and 'M' followed by a few smaller strokes.

Michael May
Project Designer

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>
00100	Summary of Work
00200	Regulations and Standards
00300	Removal of Asbestos-Containing Materials (ACMs)
00400	Regulated Areas
00500	Worker Protection
00600	Respiratory Protection
00700	Disposal of ACMs
00800	Submittals
00900	Air Monitoring

SECTION 00100 - SUMMARY OF ABATEMENT WORK

The following is an asbestos abatement specification that is to be followed during the asbestos abatement project at Ferry Farm Elementary School located at 20 Pendleton Road in Stafford, Virginia. Asbestos abatement activities will be performed at the school prior to the planned renovations of the school building. The removal of asbestos-containing materials will be performed by a Commonwealth of Virginia-licensed asbestos abatement contractor.

Asbestos abatement activities that will be performed at the subject property are as follows:

- A. Removal of asbestos-containing floor mastic and associated floor tile within various areas of the subject property, which have been labeled on attached drawings. The materials are located in the basement level and the art room closets. The basement level materials total approximately 9,000 square feet of 12"x12" floor tile and mastic. The art room materials total approximately 232 square feet of 12"x12" floor tile and mastic. Abatement activities of floor tile and mastic will be performed in demarcated regulated areas, under negative pressure utilizing high efficiency particulate air (HEPA) filters. Removal of floor tile and mastic will be performed utilizing wet methods. Abatement methods will not involve sanding, grinding, or abrading of the material.
- B. Removal of approximately 1,600 square feet of asbestos containing glue dots behind chalkboards and bulletin boards located throughout the school building (eight (8) classrooms and one (1) clinic office).

Refer to Section 00300 for detailed abatement procedures.

SECTION 00200 - REGULATIONS AND STANDARDS

A. SUMMARY

1. This section sets forth governmental regulations and industry standards that are included and incorporated herein by reference and made a part of this scope of work.
2. This section also sets forth those notices and permits that must be applied for and received or that must be given to governmental agencies before the start of work.
3. Requirements include adherence to work practices and procedures set forth in applicable codes, regulations, and standards.

B. APPLICABILITY OF CODES AND REGULATIONS: Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable codes, regulations, and standards have the same force and effect.

C. CONTRACTOR RESPONSIBILITY

1. The Contractor shall assume full responsibility and liability for compliance with all applicable federal, state, and local regulations pertaining to work practices, transport, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site.
2. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable federal, state, and local regulations.
3. The Contractor shall hold the Owner (Stafford County Public Schools) and Consultant (Apex Companies, LLC) harmless for failure to comply with any applicable work, transport, disposal, safety, health, or other regulation on the part of himself, his employees, or his subcontractors.

D. FEDERAL CODES AND REGULATIONS: Federal regulations and/or requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials include, but are not limited to, the following:

- Occupational Exposure to Asbestos, Final Rules Title 29, Part 1910, of the Code of Federal Regulations
- Respiratory Protection: Title 29, Part 1910, Section 134 of the Code of Federal Regulations
- Construction Industry: Title 29, Part 1926, Section 1101 of the Code of Federal Regulations
- Access to Employee Exposure and Medical Records: Title 29, Part 1910, Section 1020 of the Code of Federal Regulations
- Hazard Communication: Title 29, Part 1910, Section 1200 of the Code of Federal Regulations
- Specifications for Accident Prevention Signs and Tags: Title 29, Part 1910, Section 145 of the Code of Federal Regulations
- U.S. Department of Transportation (DOT), including, but not limited to:



- Hazardous Substance: Title 49, Part 171 and 172 of the Code of Federal Regulations
- U.S. Environmental Protection Agency (EPA), including but not limited to:
- Asbestos Abatement Projects: Worker Protection Rule, Title 40 Part 763, Subpart G of the Code of Federal Regulations
- Asbestos Hazard Emergency Response Act (AHERA) Regulation: Asbestos in Schools Final Rule & Notice, Title 40, Part 763, Subpart E of the Code of Federal Regulations
- Training Requirements of the AHERA Regulation: Asbestos Containing Materials in Schools, Final Rule & Notice, Title 40, Part 763, Subpart E, Appendix C of the Code of Federal Regulations
- National Emission Standard for Hazardous Air Pollutants (NESHAPS): National Emission Standard for Asbestos, Title 40, Part 61, Subpart A, and Subpart M (Revised Subpart B) of the Code of Federal Regulations

E. STATE CODES AND REGULATIONS:

Commonwealth of Virginia

- Title 16 Virginia Code (VAC), Agency 25, Chapter 20 (16VAC25-20-30), Regulation Concerning Licensed Asbestos Contractor Notification, Asbestos Project Permits, and Permit Fees.
- Title 16 Virginia Code (VAC), Agency 25, Chapter 30, Regulations for Asbestos Emissions Standards for Demolition and Renovation Construction Activities and the Disposal of Asbestos-Containing Construction Wastes – Incorporation by Reference 40 CFR 61.140 through 61.156.

F. NOTICES

1. Commonwealth of Virginia: Send written notification as required by Commonwealth of Virginia's regulations.
2. Abatement activities of the identified ACMs are scheduled to be performed in the fall of 2019.

G. PERMITS: All asbestos-containing waste is to be transported by an entity maintaining a current "Industrial Waste Hauler Permit" specifically for ACM, as required for transporting of waste ACM to a disposal site.

H. LICENSES: Maintain current licenses as required by applicable Commonwealth of Virginia or local jurisdiction for the removal, transporting, disposal, or other regulated activity relative to the work of this Contract. Post all notices required by applicable federal, state, and local regulations.

SECTION 0300 - REMOVAL OF ASBESTOS-CONTAINING MATERIALS (ACMs)

A. REMOVAL OF ASBESTOS-CONTAINING FLOOR TILE AND ASSOCIATED BLACK MASTIC

1. Removal of floor tile and associated black mastic will be performed in a demarcated regulated area under negative air pressure utilizing HEPA filters.
2. The floor tile will be wetted with amended water prior to removal and maintained in a wet condition by misting with amended water with a low-pressure spraying system.
3. Removal operations shall entail the lifting of the floor tile from the floor. The floor tile shall not be sanded, grinded, or abraded in a manner, which could cause it to become friable. The black floor tile mastic will be removed with chemical solvents in a non-friable state manner.
4. Clean the floor and work area using disposable cloths wetted with water, with surfactant, or apply encapsulant. When these surfaces have dried, clean with a HEPA-filtered vacuum.
5. Remove the floor tile and mastic from the regulated area in disposal bags or drums and all waste will be placed in the contractor's on-site dumpster or box truck. The waste shall be disposed of in accordance to federal and state disposal regulations for Category II non-friable asbestos-containing materials.

B. REMOVAL OF ASBESTOS-CONTAINING GLUE DOTS BEHIND BOARDS

1. Removal of glue dots will be performed in a demarcated regulated area under negative air pressure utilizing HEPA filters.
2. The glue dots will be wetted with amended water prior to removal and maintained in a wet condition by misting with amended water with a low-pressure spraying system.
3. Removal operations shall entail the lifting of the glue dots from the wall. The glue dots shall not be sanded, grinded, or abraded in a manner, which could cause it to become friable. The remaining mastic, if any, will be removed with chemical solvents in a non-friable state manner.
4. Clean the floor and work area using disposable cloths wetted with water, with surfactant, or apply encapsulant. When these surfaces have dried, clean with a HEPA-filtered vacuum.
5. Remove the glue dots from the regulated area in disposal bags or drums and all waste will be placed in the contractor's on-site dumpster or box truck. The waste shall be disposed of in accordance to federal and state disposal regulations for Category II non-friable asbestos-containing materials.

SECTION 00400 - REGULATED AREAS

- A. SECURING WORK AREA: Secure the work area from access by the public, occupants, staff, or users of the building. Accomplish this, where possible, by locking doors, windows, or other means of access to the area, or by constructing critical barriers. A minimum of one single decontamination must be present at the subject property during abatement activities of ACMs.
- B. DEMARCATION OF REGULATED AREA: Demarcate each regulated area with a plastic drop sheet as described below. Post warning signs as required by 29 CFR 1926. Where the controlled area is in a large area, such as in part of a classroom or hallway area, delineate the area with 3-inch wide polyethylene ribbon with the printed warning, "CAUTION: ASBESTOS REMOVAL." Install this ribbon between 3 and 4 feet above the floor.
- C. GENERAL PROCEDURES
 - 1. The following precautions and procedures have application to work specified in this section. Workers must exercise caution to avoid excessive release of asbestos fibers into the air:
 - a. Setup and management of the controlled area is to be under the supervision of an OSHA Competent Person. Do not allow eating, drinking, smoking, chewing tobacco or gum, or application of cosmetics in the regulated area.
 - b. Before the start of work, comply with the requirement for worker protection and the requirement for respiratory protection.
 - c. Shut down any air-handling equipment bringing air into or out of the regulated area. Seal all openings, supply and exhaust vents and connectors within the work area with 6-mil polyethylene sheeting secured and completely sealed with duct tape. One layer of black or non-translucent 6-mil polyethylene will be placed over any windows in the work areas where the general public can view the work.

SECTION 00500 - WORKER PROTECTION

A. DESCRIPTION OF WORK

1. This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards.

B. WORKER TRAINING

1. **AHERA ACCREDITATION:** Where required by regulations, all workers are to be accredited as abatement workers as required by the AHERA regulation 40 CFR 763, Appendix C to Subpart E, April 30, 1987.
2. **STATE AND LOCAL LICENSE:** All workers are to be trained, certified, and licensed as required by Commonwealth of Virginia regulations.
3. In accordance with 29 CFR 1926, train all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures.

C. SUBMITTALS

1. Before the start of work, submit the following to the Consultant for review. Do not start work until these submittals have been reviewed by the Consultant and approved.
2. **REPORT FROM MEDICAL EXAMINATION:** The examination shall have been conducted within the last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the work area. Submit for each worker, as a minimum, the following:
 - a. Worker's name and last four digits of Social Security number.
 - b. A written opinion from the examining physician including, at a minimum, the following:
 - Whether the worker has any detected medical health impairment from exposure to asbestos.
 - Whether the worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
 - Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
 - A statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
 - A statement that the worker is able to wear and use the type of respiratory protection proposed for the project and is able to work safely in an environment conducive to producing heat stress in the worker.

D. PROTECTIVE CLOTHING

1. **COVERALLS:** Provide disposable full-body coveralls with integral head and foot covers and require that they be worn by all workers in the work area. Provide a sufficient number for all required changes for all workers in the work area.
2. **BOOT COVERS:** Provide disposable boot covers with non-skid soles and, where required, OSHA-approved foot protection for all workers. Boot covers shall not be worn out of the work area or off the sheet plastic drop layer for any reason. Boot covers may be decontaminated, bagged, and carried from one work area to another.
3. **HARD HATS:** Provide hard hats as required by OSHA for all workers. Require hard hats to be worn at all times while work is in progress that may potentially cause head injury. Provide hard hats of a type with plastic strap-type suspension. Hats shall be thoroughly cleaned and decontaminated before leaving the regulated work area.
4. **EYE PROTECTION:** Provide goggles or safety glasses as required by OSHA for all workers involved in scraping, spraying, or any other activity that may potentially cause eye injury. Thoroughly clean, decontaminate, and seal goggles in disposal-type containers before removing from the work area at the end of the work.
5. **GLOVES:** Provide work gloves to all workers and require that they be worn at all times in the work area. Do not remove gloves from the work area. Dispose of them as asbestos-contaminated waste at the end of the work.

E. **ADDITIONAL PROTECTIVE EQUIPMENT:** Disposable coveralls and footwear covers shall be provided by the Contractor for the Owner, Consultant, and any other authorized representatives who may inspect the job site. All items mentioned above shall be supplied at no cost to the Owner, Consultant or any other authorized representatives who may inspect the job site.

F. GENERAL

1. Provide worker and authorized visitor protection as required by the most stringent OSHA and/or EPA standards applicable to the work. Only persons who have been previously fit tested and are approved for wearing a respirator shall be allowed to enter areas requiring respiratory protection.
2. **PROTECTIVE EQUIPMENT:** At the start of each work shift, put on new disposable coveralls, and put on a clean respirator.
 - a. **RESPIRATORS:** Instruct and train each worker in proper respirator use and require that each worker always wear a respirator, properly fitted on the face, in the work area.
 - b. **COVERALLS:** All workers shall wear disposable, full-body coveralls with integral head and footwear covers in the work area.

G. **CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT:** Following this section is a "Certificate of Worker's Acknowledgment." A completed form is required for every worker who will be performing abatement activities and/or wearing a respirator.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

Project Name: Ferry Farm Elementary School

Date: _____

Project Address: 20 Pendleton Road, Stafford, Virginia 22405

Contractor's Name: _____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You will be trained in safe work practices and in the use of the equipment found on the job. You will receive a medical examination. These things are to have been done at no cost to you. By signing this certification, you are assuring the Owner that your employer has met these obligations to you.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators and informed of the type respirator to be used on the above-referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: I have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course included the following:

- physical characteristics of asbestos
- health hazards associated with asbestos
- respiratory protection
- negative air systems
- work practices including hands-on or on-job-training
- personal decontamination procedures
- air monitoring, personnel and area

MEDICAL EXAMINATION: I have had a medical examination within the past twelve (12) months, which was paid for by employer. This examination included health history, pulmonary function tests, and may have included an evaluation of a chest x-ray.

Signature _____

Printed Name _____

Social Security Number _____

Witness _____



SECTION 00600 - RESPIRATORY PROTECTION

A. DESCRIPTION OF WORK

1. Instruct and train each worker involved in asbestos abatement in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face, in the work area from the start of any operation that may cause airborne asbestos fibers until the work area is completely decontaminated.
2. Use respiratory protection appropriate for the fiber level encountered in the work place or as required from other toxic or oxygen-deficient situations encountered.
3. The Contractor shall ensure use of the appropriate respiratory protection for the work being performed and recognizes that these requirements are only minimum acceptable standards.

B. STANDARDS

1. Except to the extent that more stringent requirements are written directly into the Contract Documents, the following regulations and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herein.
2. Where there is a conflict in the requirements set forth in these regulations and standards, the more stringent requirements shall apply.
 - a. OSHA - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards, with special attention to the following:
 - 29 CFR 1910 (General Industry Regulations)
 - 29 CFR 1910.1001 (Asbestos Regulations)
 - 29 CFR 1910.134 (Respirator Regulations)
 - 29 CFR 1926 (Construction Industry Regulations)
 - 29 CFR 1926.1101 (Asbestos Regulations)

All other OSHA standards as published in GSA PBS Specification 01546.

- b. ANSI - American National Standard Practices for Respiratory Protection, ANSI Z88.2-1980.
- c. CGA - Compressor Gas Association Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration" and Specification G-7-1 "Commodity Specification for Air."
- d. MSHA - Mine Safety and Health Administration.
- e. NIOSH - National Institute for Occupational Safety and Health.

C. DELIVERY

1. Deliver replacement parts, etc., not otherwise labeled by NIOSH or MSHA to the job site in manufacturer's containers.



D. AIR-PURIFYING RESPIRATORS

1. **FILTER CARTRIDGES:** Provide, at a minimum, HEPA-type filters labeled with NIOSH and MSHA certification for "Radionuclides, Radon Daughters, Dust, Fumes and Mists, including Asbestos-Containing Dusts and Mists." These filters should be color-coded in accordance with ANSI Z28.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.
2. **NON-PERMITTED RESPIRATORS:** Do not use single-use, disposable, quarter-face or half-face respirators.

E. POWERED-AIR PURIFYING RESPIRATOR (PAPR)

1. **RESPIRATOR BODIES:** Provide full face-piece type respirators with nose cups for full face-piece respirators and, at a minimum, the current NIOSH/MSHA-approved respirator body.
2. **FILTER CARTRIDGE:** Provide, at a minimum, HEPA-type cartridges approved by current NIOSH/MSHA regulations and certified for use in atmospheres containing asbestos dust.
3. **BATTERY PACKS:** Provide, at a minimum, one extra battery pack for each respirator so that one can be charging while one is in use.
4. **BELTS:** Provide non-cloth belts capable of being decontaminated in shower.

F. GENERAL

1. **RESPIRATORY PROTECTION PROGRAM:** Comply with ANSI Z88.2 - 1980 "Practices for Respiratory Protection" and OSHA 29 CFR 1910 and 1926.
2. Require that respiratory protection be used at all times when there is any possibility of a disturbance of ACM, whether intentional or accidental.

G. FIT-TESTING

1. Require that each time an air-purifying respirator is put on, it be checked for proper fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 - 1980.

H. REQUIRED MINIMUM PROTECTION

1. Provide respiratory protection as indicated below. Determine the proper level of protection by dividing the expected or actual airborne fiber counts in the work area by the "protection factors" given below. The level of respiratory protection that supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below the exposure limit (0.01 f/cc) is the minimum level of protection allowed.
2. The eight-hour time-weighted average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed 0.1 f/cc. For the purpose of this section, fibers are defined as all fibers, regardless of composition, as counted in the NIOSH Method 7400 procedure.

3. Full face-piece, air-purifying, high-efficiency, dual-cartridge, negative-pressure respirators or full face-piece, powered air-purifying, positive-pressure respirators shall be required for all personnel engaged in full containment abatement projects.
4. Negative-pressure, air-purifying, high-efficiency, dual-cartridge, negative-pressure respirators shall be required for all personnel engaged in abatement activities other than full containment work.

I. RESPIRATORY PROTECTION FACTORS

RESPIRATOR TYPE	PROTECTION FACTOR
<i>Air Purifying:</i> Negative-pressure respirator HEPA filter, half face-piece	10
<i>Air Purifying:</i> Negative-pressure respirator HEPA filter, full face-piece	50
<i>Powered Air-Purifying (PAPR):</i> Positive-pressure respirator HEPA, half face-piece	1,000
<i>Type-C supplied-air:</i> Positive-pressure respirator Pressure-demand or other positive-pressure mode Full face-piece	1,000

J. AIR-PURIFYING RESPIRATORS

1. **NEGATIVE-PRESSURE:** Supply a sufficient quantity of respirator filters approved for asbestos, so that workers can change filters during the workday. Require that respirators be wet-rinsed, and filters discarded each time a worker or authorized visitor leaves the work area. Store respirators and filters at the job site in the clean change room and protect them totally from exposure to asbestos prior to their use.
2. **POWERED AIR-PURIFYING, FULL FACE MASK:** Supply a sufficient quantity of high-efficient respirator filters approved for asbestos so that workers and authorized visitors can change filters at any time that flow through the face-piece decreases to the level at which the manufacturer recommends filter replacement. Require entire exterior housing or respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, be washed each time a worker and authorized visitor leaves the work area. Caution should be used to avoid shorting battery pack during washing. HEPA elements in filter cartridges be protected from wetting during shower.

SECTION 00700 - DISPOSAL OF ACMs

- A. DESCRIPTION OF WORK: This section describes the disposal of ACMs. Disposal includes packaging of asbestos-containing waste materials.
- B. DISPOSAL BAGS: Provide 6-mil thick leak-tight labeled polyethylene bags.
- C. GENERAL
 - 1. All waste is to be hauled by a waste hauler with all required licenses from all state and local authorities having jurisdiction.
 - 2. Load all asbestos-containing waste material into disposal bags or leak-tight drums. All ACM is to be contained in one of the following ways:
 - a. Two 6-mil polyethylene disposal bags
 - b. Leak-tight drums
 - c. Two layers of 6-mil polyethylene
 - 3. Protect the interior of the truck or dumpster with critical barriers. Carefully load containerized waste in fully enclosed dumpsters, trucks, or other appropriate vehicles for transport. Exercise care before and during transport to ensure that no unauthorized persons have access to the ACM.
 - 4. Do not store containerized ACM outside the work area. Take containers from the work area directly to a sealed truck or dumpster. Do not transport disposal-bagged ACM on open trucks. Label drums with the same warning labels as used on the bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as asbestos-containing waste and dispose of them in accordance with this Specification.
 - 5. Retain receipts from the landfill operator for the disposed-of ACM. At the completion of hauling and disposal of each load, submit a copy of the waste manifest, chain-of-custody form, and landfill receipt to the Consultant within 45 days.

SECTION 00800 - SUBMITTALS

A. PRE WORK SUBMITTALS

1. Notices: Submit copies of required notices to Commonwealth of Virginia with proof of timely transmittal.
2. Licenses: Submit a copy of Asbestos Abatement Contractor's Commonwealth of Virginia license necessary to carry out the work.
3. Workers: Submit a list of all workers to be employed in the removal work. Present evidence that all workers have received proper training and are licensed as required by Commonwealth of Virginia; and the medical examinations required by OSHA 29 CFR 1926.
4. Insurance: Submit copies of current insurance.
5. A copy of the state or local license for the waste hauler.
6. The name and address of the landfill where the asbestos-containing waste materials are to be buried. Include the contact person's name and telephone number.

B. PRODUCT SUBMITTALS

1. Safety Data Sheets: Submit a Safety Data Sheet (SDS) for each material used on the project in accordance with OSHA - Hazard Communication Standard 29 CFR 1910.1200.

C. CLOSEOUT SUBMITTALS

1. Submit copies of waste disposal manifests.
2. Submit OSHA compliance air monitoring records conducted during the work.

SECTION 00900 - AIR MONITORING

A. AIR MONITORING

1. **WORK AREA ISOLATION:** The purpose of the Owner's air monitoring will be to detect faults in the work area isolation such as contamination of the building outside of the work area with airborne asbestos fibers, failure of filtration, or rupture in the negative-pressure system, and contamination of the exterior of the building with airborne asbestos fibers. Should any of the above occur, the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until authorized by the Consultant. The work shall be considered complete when the area is visually clean and airborne fiber levels have been reduced to the level specified in this section.
2. **WORK AREA AIRBORNE FIBER COUNT:** The Owner will monitor airborne fiber counts in the work area. The purpose of this air monitoring will be to detect airborne fiber counts that may significantly challenge the ability of the work area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.
3. **FIBERS:** "Fibers" as referred to in this section shall be either all fibers, regardless of composition as counted in the NIOSH 7400 Method of PCM analysis, or asbestos fibers of any size as counted using the NIOSH 7402 Method of TEM analysis.
4. **WORK AREA CLEARANCE:** To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Owner will sample and analyze air as outlined in this section. Any clearance air samples will be collected under aggressive conditions using a fan or leaf blower in containments.

B. BASELINE AIR SAMPLES

1. The Owner will secure the following air samples to establish a baseline before start of work.

LOCATION SAMPLED	NUMBER OF SAMPLES	SAMPLE ANALYSIS METHOD	VOLUME (Liters)	RATE (LPM)
Work Area	As needed	PCM	≥1,199	4-12

2. **SAMPLING SENSITIVITY:** The detection limit for PCM analysis as set forth in the analytical method used.
3. **BASELINE:** A baseline air sample will be run in each abatement area prior to abatement activities to determine the pre-abatement ambient fiber concentrations.

C. DAILY MONITORING AIR SAMPLES

1. From the start of work, the Owner may be taking the following samples on a daily basis:

LOCATION SAMPLED	NUMBER OF SAMPLES	SAMPLE ANALYSIS METHOD	DETECTION LIMIT (f/cc)	VOLUME (Liters)	RATE (LPM)
Work Area	1/5000 sf	PCM	0.1/0.01	60-3,000	2-12
Barrier	1	PCM	0.1/0.01	60-3,000	2-12
Clean Room	1	PCM	0.1/0.01	60-3,000	2-12
Load Out	1	PCM	0.1/0.01	60-3,000	2-12
Ambient	1	PCM	0.1/0.01	60-3,000	2-12
Exhaust	1	PCM	0.1/0.01	60-3,000	2-12
Outside	1	PCM	0.1/0.01	60-3,000	2-12

Additional samples may be taken at the Owner's or Consultant's discretion. If airborne fiber counts exceed allowed limits, additional samples will be taken as necessary to monitor fiber levels.

D. CLEARANCE AIR SAMPLES USING PHASE CONTRAST MICROSCOPY (PCM)

1. After completion of abatement work in containment work areas or sealed regulated areas which exceed 0.01f/cc during work activities will have TEM clearance air samples collected and analyzed as follows:

LOCATION SAMPLED	NUMBER OF SAMPLES	DETECTION LIMIT (f/cc)	MINIMUM VOLUME (Liters)	RATE (LPM)
Work Area	1-5 Samples	0.01 f/cc (PCM)	1,199	4-12

2. ANALYSIS: Fibers on each filter will be measured using NIOSH Method 7400, titled "Fibers," published in the NIOSH Manual of Analytical Methods, 3rd Edition, Second Supplement, August 1987.
3. RELEASE CRITERIA: Decontamination of the work site is complete when every work area sample is at or below the base line limit or the clean air clearance criterion of 0.01 f/cc. If any sample is above the limits, then the decontamination is incomplete and re-cleaning is required.

- E. SAMPLE CASSETTES: Samples will be collected on 25-mm cassettes with PCM filters of 0.8 micrometer mixed cellulose ester.



F. **SAMPLE VOLUMES:** The number and volume of air samples taken by the Owner will be in accordance with the schedules given above. Sample volumes given may vary depending upon the analytical method used.

G. **ANALYTICAL METHODS**

1. **GENERAL:** The methods outlined in this article will be used by the Owner in analyzing filters used to collect air sample. Sampling rates may be varied from printed standards to allow for high volume sampling.
2. **PHASE CONTRAST MICROSCOPY:** Samples will be analyzed using NIOSH Method 7400.

H. **FIBERS COUNTED**

1. The following procedure will be used to resolve any disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts.
2. "Airborne Fibers" referred to above include all fibers, regardless of composition, as counted in the NIOSH 7400 Method using "A" Counting Rules.

I. **ADDITIONAL TESTING:** The Contractor may conduct his own air monitoring and laboratory testing. If he elects to do this, the cost of such air monitoring and laboratory testing shall be at no additional cost to the Owner.

J. **PERSONAL MONITORING:** The Contractor shall perform all air monitoring required to meet OSHA Requirements for the maintenance of TWA fiber counts for the types of respiratory protection provided. The Owner will not be performing air monitoring to meet these OSHA requirements.

K. **AHERA CLEARANCE AIR SAMPLES USING TRANSMISSION ELECTRON MICROSCOPY (TEM):** In each homogenous full containment work area where 160 square feet or 260 linear feet of a friable material is removed, a minimum of 13 samples will be taken and analyzed as follows:

Location Sampled	Number of Samples	Sampling Sensitivity (f/cc)	Recommended Volume (Liters)	Rate (LPM)
Each work area	5	0.005	1,200 to 3,000	10-12
Outside each work area	5	0.005	1,200 to 3,000	10-12
Work area (blank)	1	0.005	0	Open for 30 seconds
Outside (blank)	1	0.005	0	Open for 30 seconds
Laboratory (blank)	1	0.005	0	Do not open



L. TEM ANALYTICAL METHODS

1. Analysis will be performed using the analytical method set forth in the AHERA Regulation 40 CFR Part 763 Appendix A.
2. "Asbestos structures" referred to in this section include asbestos fibers, bundles, clusters, or matrices, as defined by method of analysis.
3. Release Criteria: Decontamination of the work site is complete if either of the following two sets of conditions are met:
 - a. The average concentration of asbestos on the five work area samples does not exceed the clearance standard of 70 structures per square millimeter.
 - b. Average asbestos concentrations of work area samples are not statistically different from outside samples, as determined by the Z-test calculation found in 40 CFR Part 763, Subpart E, Appendix A (Z is less than or equal to 1.65). Should the contractor fail to meet the TEM clearance requirements, the contractor shall reimburse the owner for all additional cost to re-test the area.

M. SAMPLE CASSETTES: All TEM samples will be collected on filters of 0.45 micrometer mixed cellulose ester with 5.0-micron mixed cellulose ester backing filter.

N. AGGRESSIVE AIR SAMPLING: All clearance air samples will be collected under aggressive conditions using a fan or leaf blower.