

SECTION 02 82 13.01 SUMMARY OF WORK

PART 1 GENERAL

1.01 GENERAL

- A. Include all Work listed below, including items listed in the Request for Proposal #24 and Addendum provided by Union County Government and incidentals thereto. Require that all skilled phases of the Work be executed by craftsmen experienced in their respective trades.
- B. Contractor shall verify and require that all materials and methods used are consistent with materials and methods for established safe asbestos removal, and consistent with the Contract Documents.
- C. Contractor may subcontract any phase or portion of the Work. However, such subcontract shall not relieve Contractor or subcontractor from enforcing the use of all required safety equipment and supplies by the subcontractor and his employees during any phase of the Work.
- D. Hold all meetings with appropriate parties as scheduled and as otherwise necessary to accomplish the work of the Contract Documents. Meetings shall include, but are not limited to, the following:
 - 1. Pre-abatement conference. Mandatory attendance by Contractor's key personnel, including project manager, field superintendent, foreman, and all subcontractors' key personnel.
 - 2. Other meetings considered necessary by Contractor or as requested by Owner.

1.02 SUMMARY OF WORK

- A. Removal and Disposal (Abatement) of Asbestos-Containing Materials (ACM): The following asbestos-containing materials are approximate quantities. The asbestos abatement contractor is responsible for verifying location and quantities of asbestos containing materials listed below prior to submitting their bid:

LUTTRELL ELEMENTARY SCHOOL-GYMNASIUM

BASE BID:

- 1. Remove estimated 4,720 square feet of double layer of floor tile and associated mastic in the gymnasium.

ALTERNATE BID:

1. Disassemble, Remove and dispose of bleachers and all associated framework and rollers in gymnasium to gain access to floor tile underneath bleachers.

1.03 REGULATORY REQUIREMENTS

- A. Comply with NFPA 241, "Safeguarding Construction, Alteration and Demolition Operations," and applicable industry standards.

1.04 BUILDING OCCUPANCY

- A. The facility consists of a one-story gymnasium. The work will be conducted during the school's fall break and is confined to the only the Gymnasium.
- B. Smoking will not be allowed in the building.
- C. Construction personnel shall wear appropriate clothing (shoes, shirts, and trousers) when not wearing protective clothing required by the Work.

1.05 BUILDING SECURITY

- A. Contractor and Contractor's personnel shall be knowledgeable of and obey all building security and safety regulations.

1.06 TEMPORARY FACILITIES

- A. The utilities (power and water) at the facility may be used by the Contractor to complete work specified within the contract documents.

1.07 FIRST AID

- A. First Aid Supplies: Comply with governing regulations and recognized recommendations within the construction industry.

1.08 WORK SEQUENCE

- A. Coordinate with Owner or Owner's representative for entry into building and selected areas for work and establish schedule.

1.09 USE OF COMPLETED PORTIONS

- A. The owner shall have the right to take possession of and use any completed or partially completed portions of the work, but such taking possession and use shall not be deemed as acceptance of any work not completed in accordance with the Contract Documents. Contractor, Owner, and Owner's Representative shall make an

inspection of that portion of work determined its status of completion. A certificate of substantial completion shall be issued on the inspected and occupied area only, indicating partial acceptance of the work.

1.09 FIRE PREVENTION

- A. The contractor shall make provisions for exits where necessary due to construction activity at existing entrances and exits.
- B. The entrance and exit doors throughout the buildings must be made available for emergency exit and marked accordingly. Do not place barriers such as plywood or lock doors, etc. during abatement.
- C. FIRE EXTINGUISHERS:
 - 1. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
 - 2. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

1.10 COMMUNICATION

- A. Contractor's supervisor shall provide Owner or Owner's representative a cellular phone number for immediate contact, which shall remain operational during throughout the project. Supervisor shall keep the mobile cellular phone on his person for continuous accessibility by Owner and Owner's Representative any time Contractor is on site.

1.11 BASIS OF PAYMENT

- A. Lump sum price for work summarized in section 1.02 Summary of Work

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 NESHAP NOTIFICATION.

- A. Contractor shall be responsible for preparation and submittal of written notice of impending commencement of asbestos removal work not fewer than 10 working days

before work commences on Project to the Tennessee Department of Environment and conservation, Division of Air Pollution Control as required by 40 CFR 61, Subpart M. If the time from signing of the contract to the scheduled start of work is less than the applicable notice period, contractor shall seek a waiver of the notice to proceed. Without written approval from above agency, Contactor shall not shorten the applicable notice period.

END OF SECTION

SECTION 02 82 13.02 SUBMITTALS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Submit two complete sets to Owner's Representative for his review of Pre-Job Submittals at the pre-abatement meeting. The Work may not proceed until the complete Pre-Job Submittal package has been reviewed and approved.
- B. Submit complete sets to Owner's Representative for his review, in the required number of copies, of Post-Job Submittals following substantial completion of the Work. Requests for final payment will not be approved until the Post-Job Submittal package has been reviewed and approved.

1.02 WORK INCLUDED

- A. Make submittals required by the Contract Documents in a timely manner and at appropriate times in the execution of the work to allow for sufficient and prompt review by Owner's Representative. Revise and resubmit as necessary to establish compliance with the specified requirements.

1.03 QUALITY ASSURANCE

- A. Coordination of Submittals;
 - 1. Carefully review all aspects of each item being submitted.
 - 2. Verify that each submittal conforms in all respects with the specified requirements.

1.04 SUMMARY OF REQUIRED SUBMITTALS

- A. Contractor shall be responsible for all procedures or practices to be utilized on the Project. It is Contractor's responsibility to make the following items available to Owner's Representative.
 - 1. Names of supervisory personnel and their qualifications, EPA certifications for training and state licenses.
 - 2. Written description or sketch of the plans for construction of a worker and barrel/equipment decontamination enclosure system and for isolation of the regulated areas.

3. Contractor is responsible for a written hazard communication program. . This written program must be available upon request.

THIS PROGRAM MUST BE WRITTEN IN ACCORDANCE WITH OSHA'S HAZARD COMMUNICATION STANDARD – 29 CFR 1910.1200 AND 29 CFR 1926.59.

The Contractor shall ensure that the written hazard communication program meets paragraph (e) of 29 CFR 1910.1200 and 1926.59, if applicable (i.e. Multi-employer workplaces).

4. Written description and/or sketch of the security procedures plan to be utilized.
5. Description of all special equipment, techniques, etc. to be used on the Project.
6. Manufacturer's information that the HEPA vacuum system utilized meets the requirements of the Contract Documents.

B. Pre-Job Submittals: Submit complete information relative to the following:

1. Evidence of written notice of impending commencement of asbestos removal work submitted by registered mail or courier not fewer than ten days before work commences on Project to:

TN Department of Environment & Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Office: 615-532-6828
Fax: 615-532-0614
Email: Randall.Harrison@tn.gov

Comply with the applicable notice period set forth in 40 CFR 61, Subpart M, Revised November 20, 1990. If the time from signing of the contract to the scheduled start of work is less than the applicable notice period, Contractor shall seek a waiver of the notice to proceed. Without written approval from above agency, Contractor shall not shorten the applicable notice period.

2. All required permits, site locations, and arrangements for transportation and disposal of asbestos-containing materials. Information concerning approved landfills in Tennessee may be obtained from:

TN Department of Environment & Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower

312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Office: 615-532-6828
Fax: 615-532-0614
Email: Randall.Harrison@tn.gov

Include copies of notification, permits, etc. with submittal package.

3. All building/demolition permits as required by the state governing authority.
4. Names of supervisory and worker personnel and their qualifications, EPA training certifications and license. Documentation shall name the supervisor(s) who will act as the Competent Person (s) required by 29 CFR 1926.1101. Refer to Section 0282 13.05 for additional details.
5. Alphabetized list of workers and their training and license. Refer to Section 0282 13.05 for additional details.
6. Submit proper certification, signed by an officer of the abatement contracting firm, that exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.1101.
7. Individually signed Worker's Acknowledgment forms for each and every worker to be utilized on the project by the Contractor or subcontractor.
8. Submit level of respiratory protection intended for each operation required by the project.
9. Submit documentation indicating successful fit testing (within last 12 months of project) of respirators for the individuals working on this project in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134.
10. Individually signed forms for each and every worker to be utilized on the Project by the Contractor or subcontractor documenting that each is actively involved in a company employee medical surveillance program.
11. Identify all hazardous materials management, recycling, transportation, and disposal subcontractors to be utilized on the project.
12. Supply all corporate documentation and insurance information for subcontractors as required by contract documents including those listed in the RFP#24 by the Union County Government.
13. Provide documentation of OSHA 29 CFR 1910.1200 (HAZCOM), DOT, and other training certifications and permits necessary for operations conducted by the various subcontractors.

14. Provide documentation of license for the Asbestos Abatement firm as required by the state of Tennessee Department of Environment and Conservation, Chapter Rule 1200-01.
15. Union County Board of Education requires at least (3) clients of completed projects that Union County may contact as references and who can independently evaluate your company's expertise in the areas. Owner request the Contractor to describe the work performed and include the name, job title, address and telephone numbers of a contact person for each reference.

C. Progress Reports

1. Daily Reports - Progress Reports shall be kept on a daily basis to cover each area of the work. These reports shall be kept on file at the field office and shall be made available for review upon request of the Owner's Representative or its representative.

D. Post-Job Submittals: Submit complete information relative to the following:

1. Notarized Certificate of Worker's Acknowledgement for all new employees hired for the project.
2. Receipts from landfill operator which acknowledge Contractor's deliveries of hazardous material. Receipts shall include date, quantity of material delivered, and signature of authorized representative of landfill. Asbestos Waste Shipment Record will be required for asbestos-containing materials.
3. Evidence of final payment of suppliers and subcontractors and release of any liens if applicable.
4. Copies of daily logs showing the following: date, entering and leaving time, company or agency represented, and reason for entry for all persons entering regulated area.

1.05 DOCUMENTS REQUIRED PRIOR TO FINAL PAYMENT

- A. Prior to final payment Contractor shall comply with the requirements and the provisions of the Union County Board of Education. Contractor will also submit the following to the Owner:
1. Copy of Post-Job Submittals:
Two copies of the Post-Job submittals required by the contract documents.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

**SECTION 02 82 13.03
TESTING LABORATORY SERVICES**

PART 1 GENERAL

1.01 DESCRIPTION

- A. Owner will provide a qualified Testing Laboratory to perform routine and special testing of the Work performed under the Contract Documents to determine general compliance therewith.
- B. Testing Laboratory representative will, in addition to performing routine and special testing necessary to determine general compliance with the Contract Documents, observe and document on a routine basis the execution and progress of the Work. Such observation and documentation of the execution and progress of the Work shall be for the sole benefit of the Owner and shall not be construed in any way as to include responsibility for the Contractor's means, methods, techniques, sequences or procedures involved with the execution of the Work. Nor shall such observation and documentation by Testing Laboratory be construed as to include responsibility for any safety programs or procedures either utilized or not utilized by the Contractor during the Work.
- C. The providing of the Testing Laboratory by the Owner to perform testing for the Owner shall not relieve the Contractor from providing his own testing for compliance with all applicable codes, regulations, and requirements as specified in this Section and elsewhere in the Contract Documents.
- D. Work Included
 - 1. Cooperate with Owner's selected Testing Laboratory in all aspects of the testing in order to expedite testing and results.
 - 2. Provide Testing Laboratory representatives' access to the Work at all times and in all locations requested as necessary to perform testing.
- E. Work Not Included:
 - 1. Selection of firm to perform final air clearance testing.
 - 2. Payment for initial testing: Refer to Section 0282 13.04, Article 3.04.3.c.
 - 3. OSHA compliance air monitoring will be provided by the Contractor.

1.02 QUALITY ASSURANCE

- A. Air samples will be collected and analyzed in general accordance with the procedures outlined in the National Institute for Occupational Safety and Health (NIOSH) Methods and the U.S. EPA Asbestos Hazard Emergency Response Act (AHERA) rules and regulation.
- B. Final air sampling will be conducted in general accordance with U.S. EPA Asbestos Hazard Emergency Response Act (AHERA) of 1986 (40 CFR Part 763) and in accordance with the Tennessee Department of Environment and Conservation rules and regulations (Chapter Number 1200-01-20).

1.03 PAYMENT FOR TESTING

- A. Initial Services: Owner will pay for air testing services conducted by Owner's Representative.
- B. Retesting: When clearance tests indicate noncompliance with Contract Documents, subsequent retesting necessitated by the noncompliance shall be performed and costs thereof may be deducted by Owner from the Contract Sum.

1.04 RESULTS

- A. Asbestos test results will be available to Contractor and Owner as follows:
 - 1. Results of Final Air Clearance Testing for re-occupancy using Transmission Electron Microscopy (TEM) in general accordance with NIOSH 7402 Method - within twenty-four hours after the sample has been collected, or sooner depending on Owner's referred schedule.

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. Owner's Representative shall provide all equipment and supplies.

PART 3 EXECUTION

3.01 GENERAL SEQUENCE

- A. Contractor shall notify Owner's Representative areas are ready for visual observations of cleaning to determine completeness.
- B. Owner's Representative will test for the acceptable final clearance level of 70 structures per millimeter square, 70s/mm² utilizing Transmission Electron

Microscopy in general accordance with NIOSH 7402 Method and the AHERA requirements.

- C. Refer to Article 3.04 of Specification Section 0282 33.04 for details on the sequence of events for clean up and clearance testing.

END OF SECTION

SECTION 02 82 33.01
REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Perform all planning, administrative, execution and cleaning requirements necessary to safely remove and disposal of asbestos-containing/contaminated materials (ACM) listed in the Summary of Work and or the Alternate Bid.
- B. Contractor shall verify and require that all materials and methods used are consistent with materials and methods for established and safe asbestos removal and disposal procedures, and consistent with the Contract Documents. Require that all skilled phases of the Work be executed by craftsmen experienced in their respective trades.
- C. Contractor shall furnish and pay for all labor, services, appliances, materials, equipment, insurance, permits, patents and decontamination facilities necessary to carry out the complete removal and disposal of the asbestos containing materials and potential alternate bid work from Luttrell Elementary School-Gymnasium listed in the Summary of Work and Alternate Bid.

1.02 SUMMARY OF WORK

- A. The work of this Section (Asbestos Abatement) includes the proper removal of asbestos-contaminated materials from the Gymnasium of Luttrell Elementary School Building in Luttrell, Tennessee. The designated asbestos abatement locations are identified in the Summary of Work and Alternate Bid.
- B. Asbestos Abatement includes the removal and disposal of the two layers of floor tile and associated adhesives throughout the Gymnasium including floor tile and associated mastics under the existing bleachers.
- C. Work Included:
 - 1. Pre-clean using HEPA vacuum and/or wet cleaning methods as appropriate. Pre-cleaning includes loose asbestos debris and non-asbestos building debris associated with the removal and disposal of the existing gymnasium bleacher's if Alternate bid is approved by Owner.
 - 2. Seal opening to stage with a minimum of one layer of 6-mil plastic.
 - 3. Properly decontaminate using wet-cleaning or HEPA vacuuming as appropriate.

4. Remove asbestos-containing/contaminated materials as specified.
5. All asbestos removed during a work period shall be bagged and sealed prior to the stop work time for that work period.
6. Properly clean using wet-cleaning methods or HEPA vacuum methods as appropriate, all regulated areas following asbestos removal.
7. Properly dispose, at Contractor's expense, all ACM and asbestos-contaminated materials and waste in an EPA-approved landfill.
8. Mop concrete floors previously abated with a degreaser or other approved cleaners to remove the residual materials left over from the solvents used to remove the adhesives from the concrete floor.
8. Leave all regulated areas decontaminated and visibly clean following Work of this Section.

1.03 DEFINITIONS

A. Definitions:

1. Abatement - Procedures to decrease or eliminate fiber release from asbestos-containing building materials. Includes encapsulation, enclosure, and removal.
2. Airlock - System for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least 4 feet apart.
3. Amended Water - Water to which a surfactant is added.
4. Air Monitoring - The process of measuring the fiber content of a specific volume of air in a stated period of time.
5. Clean Room - An uncontaminated area or room, which is part of the worker decontamination enclosure system, with provisions for storage of worker's street clothes and protective equipment.
6. Code(s) of Federal Regulations - Shall be referred to by the following example: Title 40, Code of Federal Regulations, Part 763 is "40 CFR 763."

7. Curtained Doorway - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms. Typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway and securing each edge along the top of the doorway, with the vertical edge along one vertical side of one along one vertical side of the doorway, and the vertical edge of the other along the opposite vertical side. Two curtained doorways spaced a minimum of 4 feet apart form an airlock.
8. Decontamination Enclosure System - A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers, materials, or equipment. A decontamination enclosure system always contains an airlock.
9. Encapsulation - The sealing of asbestos surfaces by applying a material (encapsulant) that will envelop or coat the fiber matrix and eliminate fallout and protect against contact damage.
10. Enclosure - Procedures necessary to completely enclose material containing asbestos; airtight, impermeable barriers.
11. EPA - Environmental Protection Agency.
12. Equipment Decontamination Enclosure System - A decontamination enclosure system for materials and equipment, typically consisting of a designated area of the regulated area, a washroom, and an uncontaminated area.
13. Equipment Room - A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.
14. Fixed Object - A unit of equipment or furniture in the regulated area which cannot be removed from the regulated area.
15. Glove Bag Technique - A method for removing asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other nonplanar surfaces in a non-contaminated regulated area. The glove bag assembly is a manufactured or fabricated device consisting of a glove bag (typically constructed of 6 mil transparent regulite plastic), two inward projecting long sleeve rubber gloves, one inward projecting waterwand sleeve, an internal tool pouch, and an attached labeled receptacle for asbestos waste. The glove bag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process. The

area(s) in which glovebags are used must be prepared to the satisfaction of OSHA.

16. HEPA Filter - A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97 percent of particles greater than 0.3 microns in length.
17. HEPA Vacuum Equipment - HEPA-filtered vacuuming equipment.
18. Holding Area - A chamber between the washroom and uncontaminated area in the equipment decontamination enclosure system. The holding area comprises an airlock.
19. Movable Object - A unit of equipment or furniture in the regulated area, which can be removed from the regulated area.
20. NIOSH - National Institute for Occupational Safety and Health.
21. OSHA - Occupational Safety and Health Administration.
22. Owner's Representative - Person designated by Owner (usually but not necessarily the "Owner's Representative") to perform checks on Contractor and job site for the purpose of determining general compliance with the Specifications. Owner's Representative may also be responsible for Quality Assurance observation of Contractor's Work and of the job site.
23. PCM - Phase Contrast Microscope. Also called "light microscope," this is the instrument used for fiber counting under NIOSH Method 7400.
24. Plastic Sheeting - A plastic sheet material used for protection of walls, floors, etc., and used to seal openings into regulated areas.
25. Plasticize - To cover floor, walls, and fixed objects with plastic sheeting.
26. PLM - Polarized Light Microscope. Used in conjunction with dispersion oils of known refractive indices, this instrument is capable of identifying asbestiform minerals. It is the EPA-recommended method of asbestos identification.
27. Regulated Area - Area or areas that receive abatement or are contaminated.
28. Removal - The process of eliminating asbestos-containing or contaminated materials from a structure and depositing in a suitable disposal site.

29. Shower Room - A room constituting an airlock, between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water suitably arranged for complete showering during decontamination.
30. Surfactant - A chemical wetting agent added to water to improve its penetrating ability and thus reducing the quantity of water required to saturate asbestos-containing materials.
31. TEM - Transmission Electron Microscopy.
32. Unit Wrap Technique - A method with limited applications for removing asbestos-containing material and the object to which it is attached as a singular unit. The method consists of first applying encapsulant to the asbestos-containing material and then carefully sealing entire object and asbestos material in a minimum of two layers of 6 mil plastic sheeting. Sealed object is then removed and disposed of as contaminated waste.
33. Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water, and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.
34. Washroom - A room between the regulated area and the holding area in the equipment decontamination enclosure system. The washroom comprises an air lock.
35. Worker Decontamination Enclosure System - A decontamination enclosure system for workers typically consisting of a clean room, a shower room, and an equipment room.

1.04 QUALITY CRITERIA

A. Qualifications for Performance of Work:

1. Maintain on-site a superintendent having not less than 2 years of full-time experience in responsible charge of asbestos removal operations in similar scope and magnitude to this Project within the 2-year period preceding start of project. Superintendent shall remain on-site at all times while Work is in progress. Superintendent shall enter regulated areas daily to check progress and completeness of Work.
2. Use only AHERA accredited trained and experienced asbestos removal workers and superintendents to perform the Work.

3. The abatement contractor along with their perspective workers and superintendents must also be accredited and licensed through the state of Tennessee Department of Environment and Conservation as required by the state of Tennessee, Chapter Rule 1200-01-20.

B. Reference Standards:

1. Acknowledge, by executing the Contract, awareness and familiarity with the contents and requirements of the following regulations, codes, and standards; and assume responsibility for the performance of the Work in strict compliance therewith.
2. The current issue of each document shall govern. Where conflict among requirements or with these specifications exists, the more stringent requirements shall apply.
 - a. U.S. Environmental Protection Agency (EPA) Regulations for Asbestos (40 CFR 763).
 - b. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR 61, Subparts A and M), revised November 20, 1990.
 - c. U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Asbestos Regulations (29 CFR 1910.1001 and 1926.1101).
 - d. EPA Office of Pesticide and Toxic Substances Guidance Document, "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings," EPA 560/5-85-024, June 1985.
 - e. American National Standards Institute, Practices for Respiratory Protection, ANSI Z88.2-1980.
 - f. All State, County, and City codes and ordinances as applicable.
 - g. EPA document "Guide to Respiratory Protection for the Asbestos Abatement Industry," EPA-560-OPTS-86-001, September 1986.
 - h. U.S. Department of Transportation Hazardous Substance Regulations (40 CFR 171 and 173, Subpart J and Section 173.1090).

- i. U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Respiratory Protection Regulations (29 CFR 1910.134).
- j. The Tennessee Department of Environment and Conservation, Division of Solid Waste Management, Toxic Substance Program (Chapter 1200-01).

1.05 SUBMITTALS

- A. Reference Section 0282 13.02 for the submittals required by the Contract Documents.
- B. The abatement contractor must supply documentation of the new licenses for the asbestos abatement firm, supervisors and workers that will be participating on this project as required by the State of Tennessee, Department of Environment and Conservation, Division of Solid Waste Management Toxic Substance Program, Chapter Rule 1200-01. If the license has not been received by the abatement Contractor, then submit a copy of the completed form "Application for a Person to Conduct Asbestos Activities" along with receipt of payment.

1.06 PRODUCT HANDLING

- A. Deliver all materials for the Project in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.
- B. Store all materials for the Project under cover sufficient to prevent damage or contamination.
- C. Dispose of materials that become contaminated with asbestos in accordance with applicable regulatory standards.

1.07 WORK SITE CONDITIONS

Worker and Visitor Procedures: Contractor or subcontractor is hereby advised that asbestos has been determined by the U.S. Government to be a CANCER-CAUSING AGENT. Contractor or subcontractor shall provide workers and visitors with respirators, and protective clothing which shall meet the requirements of 29 CFR 1910.134 and 1926.1101.

1.08 PERSONNEL PROTECTION

- A. Prior to commencement of work, all workers shall be instructed by the Contractor and shall be knowledgeable, in the appropriate procedures of personnel protection and asbestos removal.

- B. Contractor acknowledges and agrees that he is solely responsible for enforcing worker protection requirements at least equal to those required by federal regulations.
- C. Initial Exposure Assessment (IEA):
 - 1. Provide an initial exposure assessment as described in 29 CFR 1926.1101 for each operation to justify the selection of the appropriate respiratory protection for each activity including work area preparation, removal of ACM, Work Area clean-up, and disposal at the landfill.
 - 2. Obtain PEL and excursion limit air sampling form either prior asbestos jobs within the last 12 months or initial exposure monitoring from this project to generate an initial exposure assessment.
 - 3. Air sample data from previous asbestos jobs must include documentation that the data was obtained during operations which closely resemble the processes, type of ACM, control methods, work practices, and environmental conditions used and prevailing on this project. Include documentation that the training and experience of the workers on the prior asbestos jobs was no more extensive than that of the workers on this project. Documentation shall be sufficient to determine that the conditions prevailing, and which will prevail on the current project, will, with a high degree of certainty, not result in employee exposures above the PEL or excursion limit.
 - 4. Revise and resubmit the respiratory protection schedule, with attached supporting documentation, if exposure assessments result in or require a change in respiratory protection for any of the work activities listed above.
- D. Contractor shall provide workers with personally issued and marked respiratory equipment approved by NIOSH and OSHA to be suitable for the asbestos exposure level in the regulated areas according to OSHA Standard 29 CFR 1926 or as more stringently specified elsewhere in the Contract Documents. Type of respiratory protection required:

RESPIRATORY PROTECTION FACTORS

Respirator Type	
Air Purifying :	
Negative-pressure respirator, high efficiency filter, half-facepiece	10
Air Purifying :	
Negative-pressure respirator, high efficiency filter, full-facepiece	50
Powered Air Purifying (PAPR) :	
Positive-pressure respirator, high efficiency filter, full-facepiece	1,000

Type C supplied air :	
Positive-pressure respirator, pressure-demand, full-facepiece	1,000
Type C supplied air :	
Positive-pressure respirator, pressure-demand, full-facepiece, equipped with an auxiliary positive-pressure self contained breathing apparatus (SCBA)	Over 1000

- E. Where respirators with disposable filters are used, provide sufficient filters for equipment, as necessary by the workers, or as required by applicable regulations.
- F. Provide emergency backup air supply for each worker in the regulated area at all times when "Type C" (supplied air) respirators are required. Provide emergency backup equipment with air supply of sufficient duration for all workers to safely exit regulated area. Locate emergency equipment so that it is readily accessible to each regulated area following interruption of normal air supply.
- G. All supplied air (Type C) respiratory equipment shall supply as a minimum, Grade D air. Contractor shall maintain on-site documentation and submit certified test results that air supplied to work area is Grad D or better. Documentation will include, as a minimum, equipment serial numbers, or panel numbers, and shall have been certified within the six months prior to project startup date.
- H. Ambient air pumps shall not be used for Type C supplied air systems.
- I. Permit no visitors, except for governmental inspectors having jurisdiction, or as authorized by Owner, in the regulated areas after commencement of asbestos disturbance or removal. Provide authorized visitors with suitable respirators.
- J. Provide workers with sufficient sets of protective disposable clothing, consisting of full-body coveralls, head covers, gloves, and foot covers, of sizes to properly fit individual workers.
- I. Provide eye protection, steel toe shoes, and hard hats as required for job conditions or by applicable safety regulations. Leave reusable footwear, hard hats, and eye protection devices in the contaminated equipment room until the end of the asbestos abatement work, at which time such items shall be disposed of as asbestos waste or decontaminated for reuse.
- K. Provide authorized visitors with a set of suitable protective disposable clothing, headgear, eye protection, and footwear of sizes to properly fit visitors whenever they are required to enter the regulated area, to a maximum of three sets per day.

- L. Provide, in addition to protective clothing for authorized visitors, protective clothing for use by Owner's Representative. Furnish protective clothing in as many sets as required protective clothing in as many sets as required for monitoring by Owner's Representative.
- M. Post in Equipment Room the asbestos removal decontamination and work procedures to be followed by workers.

1.09 SIGN-IN/OUT LOG

- A. Maintain a sign-in/out log in the immediate vicinity of the change room. Maintain from the time the first activity is performed involving the disturbance of asbestos-containing material until acceptance of the final air test results by Owner's Representative. Require all persons entering the regulated area, including Contractor or Contractor's workers, Owner or agents of Owner, and government officials to sign in and out each time upon entering and leaving the regulated area. Indicate name, time, company or agency represented, and reason for entering the regulated area.

1.10 TRAINING PROGRAM

- A. Workers shall have received training on proper respirator use, hazards of asbestos exposure, and OSHA asbestos regulations. No worker shall be utilized on any portion of the work until documentation of training has been provided.

PART 2 PRODUCTS

2.01 MATERIALS, TOOLS AND EQUIPMENT

- A. Air Purifying Equipment (for internal recirculation in the work area) - Shall be HEPA Filtration System or Electronic Precipitators. Ensure that no air movement system or purification equipment exhausts contaminated air from the regulated areas outside the regulated area.
- B. Communication Equipment - Shall be suitable for inter-room communications, such as "walkie-talkies."
- C. Glove Bag - Shall consist of heavy, 6-mil, clear plastic with preprinted asbestos hazard warning.
- D. Impermeable Containers - Shall be suitable to receive and retain any asbestos-containing or contaminated materials from within occupied spaces until disposal at an approved site and shall be labeled in accordance with OSHA Regulation 29 CFR 1926. Containers must be both airtight and watertight. Use a

minimum of two types of impermeable containers: 1) 6-mil plastic bags sized to fit within the drum; and 2) metal or fiber drums with tightly fitting lids. For removal of asbestos waste from unoccupied spaces use double 6-mil plastic bags.

- E. Lowered Air Pressure Equipment - Comply with ANSI Z9.2-79.
- F. Other Materials - Provide all other materials such as lumber, nails, and hardware, which may be required to construct the decontamination area and the barriers that isolate the regulated areas.
- G. Plastic sheeting - shall be of thickness specified, in sizes to minimize the frequency of joints. Utilize reinforced plastic sheeting in specified thickness on floors.
- H. Scaffolding - Shall be as required to accomplish the specified work and will meet all applicable safety regulations.
- I. Sealant (Encapsulant) - shall be manufactured by reputable, established manufacturer of encapsulation/sealant materials and be approved specifically for use in asbestos-contaminated environments. Shall be compatible with the temperature and condition of the surfaces to which sealant is to be applied. It is the responsibility of the Contractor to determine compatibility of the sealant with materials and conditions. A white pigmented paint should be added to sealant before applying to wall and ceiling surfaces.
- J. Surfactant (Wetting Agent) - Shall consist of resin materials in water base which have been tested to indicate material is non-toxic and non-irritating to skin and eyes, and is non-carcinogenic.
- K. Tape - Shall be glass fiber or other type capable of sealing joints of adjacent sheets of plastic and to maintain attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions.
- L. Transportation - as required for loading, temporary storage, transit, and unloading of contaminated materials.
- M. Warning Labels and Signs - shall be as required by OSHA Regulation 29 CFR 1926.1101 (and U.S. DOT 49 CFR 171 and 172 for impermeable containers).
- N. Floor tile adhesive backing removal agent- shall consist of a relatively high flash point (140° or greater), non-toxic, noncarcinogenic solvent. Approved materials and manufactures.

PART 3 EXECUTION

3.01 PREPARATION

- A. Coordinate sequence of regulated area preparation in the building with Owner's Representative in order to properly segregate regulated areas from areas where other special considerations are required.
- B. The removal of asbestos containing materials will require containment preparations. The category and the suggested style of containment along with the asbestos containing materials that may be removed inside each containment are as follows:
 - 1. Partial Containment
 - A. Vinyl Floor Tile Associated Mastic Adhesive.
- C. Work Site Preparation for Removal of Asbestos-Containing Materials.
 - 1. Demarcate work area with barrier tape and warning signs.
 - 2. Isolate the work area. Erect critical barriers at stage opening, exterior entrances, entrances to occupied areas, and major air duct openings. Brace wall barriers at sufficient intervals and heights. Seal penetrations such as windows, cracks, and openings through which pipes and ducts pass, with two layers of 6-mil plastic sheeting sealed with tape. Demarcate work area with barrier tape and signs.
 - 3. Maintain emergency and fire exits from the work area, or establish alternative exits satisfactory to fire officials of local jurisdiction.
 - 4. Pre-clean all surfaces within the work area using HEPA vacuum equipment or wet cleaning methods as appropriate. Do not use methods that raise dust such as dry sweeping or vacuuming with equipment not equipped with HEPA filtration.
 - 5. Completely seal in plastic all immovable objects in the work area.
 - 6. When applicable construct worker and barrel/equipment decontamination units in compliance with EPA guidelines concerning number, size, and placement or airlocks, etc. Shower in worker decontamination unit shall open into airlocks on both contaminated and uncontaminated sides.

Construct decontamination units of appropriate materials including plastic sheeting (to provide airtight barriers) and plywood or other suitable rigid materials to allow continuous diminished pressure to be maintained in work area. Supply sufficient number of lockers in worker decontamination unit change or "clean" room for worker's clothing. Post OSHA decontamination procedures in change room for duration of Project. In decontamination system shower trap use a filter having a pore size of not large than 1 micron, and drain shower wastewater into a sanitary sewer. Replace contaminated filters when they become clogged but not less than every third day. Dispose of filters as contaminated waste. Contractor may trap and collect shower wastewater in impermeable containers and dispose of as contaminated material, at his option, rather than filtering and draining into sanitary sewer.

7. Maintain for the duration of the Project a Sign-In/Sign-Out Log in the immediate area of the change room. Log shall be utilized by every person each time upon entering and leaving the work area.
 8. Erect doorways with plastic or fixed-louvered doors between adjacent areas in work area to minimize fiber dispersal between adjacent areas.
 9. When utilizing a Full Containment-Place regulated area under diminished air pressure utilizing HEPA filtration systems, which comply with ANSI Z9.2-79. Allow no air movement system or air-filtering equipment to discharge unfiltered air outside the regulated area. To diminish air pressure inside regulated area, exhaust filtered air to outside the building away from air intake devices. The HEPA filtration system shall be of a capacity to affect a minimum of one air change every 15 minutes in the regulated area.
 10. Ensure that all barriers and plastic enclosures remain effectively sealed and taped for duration of asbestos removal and subsequent cleaning. Repair damaged barriers and remedy defects immediately upon discovery. Visually inspect enclosures at the beginning of each work period. Use smoke methods to test effectiveness of barriers at the request of the Owner's Representative.
 11. Notify Owner's Representative and Testing Laboratory of work area readiness for observation of the preparation of job site prior to any removal of asbestos-containing material.
- D. In Full Containment areas, the Contractor shall prepare the area in accordance with the following procedures, this are in addition to the above site work conditions:
1. Cover the floor of the Controlled Area with a minimum of two (2)

individual layers of clear polyethylene sheeting, each at least 6-mil in thickness, turned up walls at least 12 inches. Form a sharp right angle bends at junction of floor and wall so that there is no radius which could be stepped on causing the wall attachment to be pulled loose. Both spray-glue and duct tape all seams in floor covering. Locate seams in top layer six feet from, or at right angles to, seams in bottom layer. Install sheeting so that top layer can be removed independently of bottom layer.

2. Cover all walls in the Controlled Area, including "Critical Barrier" sheet plastic barriers, with a minimum of one (2) layers of polyethylene sheeting, at least 6-mil in thickness, mechanically supported and sealed with duct tape. Tape all joints including the joints joining with the floor covering with duct or fiber tape.
3. Portions of the removal area are located outside of the building. The Contractor will be responsible for securing the area by constructing temporary walls and barriers (wood studs, plywood, etc.).

E. In Partial Containment areas, the Contractor shall prepare the area in accordance with the following procedures, in addition to the above listed work site conditions:

1. Place a layer of 4-mil (minimum) polyethylene on all wall surfaces of the contained area, exposing only the asbestos-containing or contaminated materials. Wall polyethylene should extend to the floor level up the wall approximately two (2) feet and be completely taped down with water resistant duct or fiber tape. Spray adhesive is recommended to assist hanging of wall plastic.

F. In Limited Containment areas, the Contractor shall prepare the area in accordance with the following procedures, in addition to the above listed work site conditions:

1. The Contractor shall place a minimum of one (1) layer of 6-mil polyethylene sheeting (drop cloth) beneath the pipe insulation to be removed. The sheeting shall extend a minimum five (5) feet in all directions of the piping where possible.

3.02 ABATEMENT OF ASBESTOS-CONTAINING FLOOR TILE AND ASSOCIATED MASTICS.

- A. Remove and properly dispose of all asbestos-containing materials and debris in accordance with OSHA Asbestos Regulations 29 CFR 1926.1101 or as more stringently specified herein.

- B. Prepare the regulated area as previously specified in Article 3.01 of this section.
- C. Wet the asbestos-containing materials sufficiently with amended water to saturate the material without causing excessive dripping. Spray the material repeatedly during removal to maintain wet conditions.
- D. Remove the saturated material in small sections. Do not allow the material to dry out. As it is removed, place the material in sealable plastic bags of six-mil minimum thickness.

3.03 NOT USED

3.04 CLEAN UP AND CLEARANCE TESTING

- A. Clean Up:
 - 1. Remove all visible accumulations of asbestos material and debris.
 - 2. Clean all surfaces in the regulated area.
 - 3. Clean all sealed and impermeable containers and all equipment used in the regulated area and remove from regulated area (excluding that equipment needed for further cleaning) via the equipment decontamination enclosure system.
 - 4. Mop concrete floors previously abated with a degreaser or other approved cleaners to remove the residual materials left over from the solvents used to remove the adhesives from the concrete floor.
 - 5. Notify Owner's Representative for observation of cleaning to determine completeness.
- B. Clearance Testing:
 - 1. Standard of Cleaning Prior to Final Clearance/Reoccupancy Testing:
 - a. Regulated areas and all other decontaminated areas and cleaned areas shall be considered clean when visibly clean and free of debris.
 - 2. Final Clearance/Reoccupancy Testing:
 - a. Final Clearance: Regulated areas and all other decontaminated areas shall be considered clean and ready for Final Clearance

Testing when areas have been cleaned and are visibly free of dust and debris. Mop concrete floors previously abated with a degreaser or other approved cleaners to remove the residual materials left over from the solvents used to remove the adhesives from the concrete floor.

- 1) Misting, spraying, and pump equipment, as recommended by the encapsulant material's manufacturer, shall be used.
 - 2) Encapsulant shall be a minimum of one coat, mixed and applied in accordance with the manufacturer's written instructions.
- b. Notify Owner's Representative for observation of encapsulant application for completeness.
 - c. After encapsulant dries, remove plastic sheeting from walls and floors. Do not remove plastic sheeting covering penetrations, immovable objects, or critical barriers.
 - d. Remove all visible accumulations of asbestos material and debris. Clean all surfaces in the regulated area. Clean all sealed and impermeable containers and all equipment used in the regulated area and remove from regulated area.
 - e. Notify Owner's Representative that the area(s) are ready for Reoccupancy Testing.
 - f. Upon notice from Contractor that the regulated areas and all other contaminated and cleaned areas are ready for Reoccupancy Testing, the Owner's Representative will test for the Reoccupancy Level of 70 s/mm² utilizing Transmission Electron Microscopy in general accordance with NIOSH 7402 Method and the AHERA requirements.
 - g. Areas which do not comply with the standard of cleaning for Clearance/Reoccupancy shall continue to be cleaned by and at Contractor's expense until the specified standard of cleaning is achieved as evidenced by results of air sampling tests by Owner's Representative as previously specified. The cost of all follow-up tests necessitated by the failure of the air tests to meet the cleaning criteria shall be borne by Contractor.

- h. When standard of cleaning of 70 s/mm² or less is achieved, and observation by Owner's Representative determines that the area has been visually decontaminated, the decontamination enclosure system shall be removed, the area thoroughly cleaned, and materials disposed of as contaminated waste. The remaining barriers between contaminated and clean areas and all openings into the regulated area and fixtures will be removed and disposed of as contaminated waste.

C. Final Observation:

1. A final observation of the cleaning work of this Section will be performed by Owner's Representative to determine if the areas are visibly clean.
2. Reclean at no additional cost to Owner all areas not found to be visibly clean.

D. Contractor's Duties:

1. Cooperate with Owner's Representative in all aspects of the testing in order to expedite air monitoring and results.
2. Provide Owner's Representative access to the Work and in all locations requested as necessary to perform air tests.
3. Contractor will notify Owner's Representative 24 hours in advance of asbestos abatement activities.

3.05 DISPOSAL OF CONTAMINATED WASTE

A. Remove sealed and labeled containers of contaminated material and dispose of accordingly in approved sanitary landfill as follows:

1. Pass sealed plastic bags of contaminated material from the regulated area into decontamination enclosure. All gross materials shall be removed from outside surfaces of bags in the regulated area prior to passing the bags into the decontamination enclosure.
2. Clean plastic bags (using HEPA vacuum and wet wipe methods) while in the decontamination enclosure.
3. Pass cleaned plastic bags into decontamination enclosure holding area.
4. Seal asbestos waste in leak-proof impermeable containers labeled in accordance with 29 CFR 1926.1101 or applicable local standards.

5. Label containers with name and location of waste generator.
6. Notify Owner's Representative not less than 48 hours prior to the proposed time of removing and first delivery of contaminated waste to the landfill. Owner's Representative may elect to observe this operation.
7. Use only enclosed or covered trucks to haul impermeable containers to prevent loss or damage to container enroute to sanitary landfill.
8. Allow only sealed plastic bags or impermeable containers to be deposited in landfill. Leave damaged, broken, or leaking plastic bags in the impermeable container and deposit entire container in landfill.
9. Ensure that there are no visible emissions to the outside air from site where materials and waste are deposited.
10. Submit to Owner after completion of Work receipts including date, quantity of material, and signature from authorized representative of landfill operator for all deliveries of waste material.

3.06 OBSERVATIONS

- A. Owner's Representative will observe the status and progress of the Work for completeness and general compliance with the requirements of the Contract Documents. Observations will be made following completion of removal, and as appropriate during the Work outlined elsewhere in the Contract Documents.
- B. Notify Owner's Representative at least 24 hours in advance for such observations. Should no advance notice be given, Owner's Representative will still make reasonable effort to comply with the time of requested observation. Contractor shall not proceed until such observation by Owner's Representative is made.
- C. Any delay in the completion of the Work caused by lack of advance notice by Contractor to Owner's Representative shall not be sufficient cause for any extension of the completion deadline. Also, compensation for the time spent by Owner's Representative on the Project resulting from prearranged meetings where the Work has not progressed to the designated point shall be the responsibility of Contractor and may be deducted by Owner from the Contract Price.

3.07 FINAL COMPLETION

- A. Owner's Representative will, within a reasonable time period, observe the Work to determine status of final completion when Contractor notifies in writing to Owner that: 1) the Work has been completed in compliance with the Contract Documents; 2) Contractor has inspected the Work for such compliance; and 3) the Work is ready for final inspection.
- B. Owner's Representative will promptly notify Contractor if it is determined that the Work is incomplete or defective, and will provide the reasons therefore.
- C. Contractor shall, upon receipt of notice from Owner's Representative that the Work is not complete, promptly remedy the Work deficiencies noted and notify Owner's Representative when the Work is ready for reinspection. Owner's Representative will within a reasonable time period reinspect the Work.
- D. Contractor shall submit two complete bound copies to Owner's Representative of the post-job submittals when Owner's Representative determines that the Work is acceptable and complete under the Contract Documents (Reference Section 0282 13.02 for more details). Also submit any outstanding pre-job submittals described in Section 0282 13.02.
- E. Consider the Work of this Contract completed following acceptance of the Work by Owner's Representative, and upon receipt and approval of the information described in Section 0282 13.02 of the Contract Documents and submission of proof of Advertisement of Completion.
- F. Contractor will then, if required and prior to processing final payment request, prepare final Change Order showing adjustments to the Contract Sum not made by previous Change Orders. If no Change Orders are required, final Certification and Application for Payment will be processed.

END OF SECTION

