Asbestos Abatement Project
Technical Specifications

Former Central High School
88 Jaguar Drive
Beaumont, Texas 77702

Prepared for:

Beaumont ISD
PO Box 672
Beaumont, Texas 77704

HES Project No. 23B-2156-13985

February 2024

Honesty Environmental Services, Inc.

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February 19, 2024

PROJECT: Removal of Asbestos-Containing Materials
Former Central High School – Abatement Project
88 Jaguar Drive
Beaumont, Texas 77702
Asbestos Abatement Technical Specifications

OWNER: Beaumont Independent School District
PO Box 672
Beaumont, Texas 77704
Attn.: Mr. Mark McClelland
Email: mmcclel@bmtisd.com

CONSULTANT: Honesty Environmental Services, Inc.
2300 Highway 365, Suite 450
Nederland, Texas 77627
DSHS Asbestos Consultant Agency License No. 10-0182
Tel. (409) 632-2601 Fax: (713) 856-8281



Daniel Ward, DSHS License No. 10-5479, Exp: 11/11/2024

HES Project No.: 23B-2156-13985

SUMMARY OF WORK:

This project will include the proper removal, transportation, and disposal of asbestos-containing materials from the former Central High School located at 88 Jaguar Drive in Beaumont, Texas as listed below:

Material and Quantities

Building Material	Material Location	Approximate Quantity
Pipe Insulation	Throughout Floors 1-3, Crawlspace, & Boiler Room	20,150 Linear Feet
Black Pipe Wrap	Underground from Main Building Crawlspace to Outside Mechanical Room/Boiler Room	50 Linear Feet
Floor Tile/Mastic	Rooms 106, 107, 108 Closet, 138, Woodshop Storage Room 149	1,850 Square Feet
Vibration Dampener	Floor 3 Auditorium Balcony Mechanical Room	6 Square Feet
Contaminated Soil from old TSI	Entire School Crawlspace – 2” Deep	59,910 Square Feet

Materials shall be kept wet at all times and work areas shall be demarcated. Workers involved with the removal of the asbestos materials shall be DSHS certified/licensed and EPA NESHAP trained. All workers shall wear appropriate PPE at all times. Any abatement activities will follow all applicable rules and regulations, including DSHS TAHPR, EPA NESHAP and OSHA regulations. Contractor shall submit the EPA required 10-day notification prior to beginning work.

Glovebag Variance: The consultant hereby authorizes a variance in the abatement method: Proper glovebag techniques may be utilized during the removal process of the pipe insulation. One layer of duct tape will be placed around the pipe insulation at points where the glovebag is attached and the glovebag will be used in accordance with manufacturer's instructions. The asbestos containing pipe insulation shall be wet within the glovebag and two asbestos workers will be used per glovebag. The asbestos containing pipe insulation shall be cut and removed within the glovebag and the exposed piping scrubbed. The exposed piping shall be sealed with encapsulant. A HEPA vacuum shall be used to collapse the glovebag. The glovebag shall be removed from the pipe and placed inside an appropriately labeled 6-mil bag. These controls are established to reduce the likelihood of fiber release outside the work area during the removal process.

Removal of Intact Component Asbestos Containing Materials: Intact component removal may be used for the following ACM: (A) removal of an asbestos cement sheet or wall panel by unbolting or unscrewing and removing the whole sheet or panel intact; (B) removal of a lab-type asbestos cement desktop by either unbolting or unscrewing and removing the whole desktop intact; (C) removal of a nonfriable countertop or backsplash by completely removing the whole unit intact; (D) removal of a window unit with window glazing, if the window glazing is secured with tape or a similar material before removal, and the whole window unit with window glazing is removed intact; (E) picking up one or more loose floor tiles that have become completely disassociated from the floor and are either whole or slightly broken, but which are still intact and not RACM; (F) picking up a loose miscellaneous nonfriable item, such as a roll of linoleum, a loose gasket, or a loose shingle; (G) removal of a fire door with asbestos-containing insulation from its hinges by removing the whole door, including its hardware, intact; (H) removal of any other nonfriable building component by removing it as a whole component and keeping it intact; and (I) removal of any packings, gaskets and mastics by removing them whole and intact. ACM must not be RACM, must be in good condition and removed as a whole component, keeping the component intact with no breakage or generation of dust during the removal or collection. A regulated area must be established where asbestos abatement will be conducted, the material must be kept wet and, at minimum, asbestos caution tape must be used to demarcate the regulated area.

On-site ambient air monitoring and final air clearance will be conducted by Honesty Environmental Services, Inc. Final clearance air samples will be collected and analyzed by Phase Contrast Microscopy (PCM).

The Contractor shall inform himself of the conditions for the project and is responsible for verifying the quantities and location of all work to be performed as outlined in this section. Contractor shall be responsible for removing all materials listed. Failure to do so shall not relieve the Contractor of his obligation to furnish all materials and labor necessary to carry out the provisions of the Contract.

Before asbestos-containing materials are disturbed, engineering controls shall be implemented in accordance with Environmental Protection Agency (EPA), OSHA and DSHS regulations to prevent contamination of non-work areas. Air monitoring shall be conducted during and after the removal activities to verify that the building is not contaminated as a result of the asbestos abatement project.

The area of removal shall be isolated from adjacent non-work areas with the use of temporary walls consisting of two layers of 6 mil plastic sheeting. The work area shall be accessed through a decontamination unit, which will be attached to the enclosed work area. Negative air machines are to be attached to the plasticized (containment) work area. The negative air equipment, equipped with high efficiency particulate air (HEPA) filters, shall draw air out of the containment and filter the airborne dust before venting outside the building. This machine will create diminished air pressure in the containment to prevent the release of air and dust from the work area.

The workers shall use wet methods to control dust in the area. The abated material will be placed in two plastic disposal bags (double-bagged) in containment and sealed. The bags shall then be wet wiped and placed into clean bags in the decontamination unit, sealed and transported to a licensed landfill for proper disposal. Waste shipment manifests shall be completed at this time.

Workers shall wear, at a minimum, half face respirators equipped with HEPA filters, protective suits, and gloves for protection.

The work affecting the Asbestos-Containing Building Materials (ACBM) in and on the building shall be accomplished utilizing the rules and regulations found in the Texas Department of State Health Services Asbestos Rules and the EPA National Emission Standard for Hazardous Air Pollutants. All aspects of the OSHA Asbestos standard shall also apply.

The Contractor shall inform himself of the conditions for the project and is responsible for verifying the quantities and location of all work to be performed as outlined in this section. Failure to do so shall not relieve the Contractor of his obligation to furnish all materials and labor necessary to carry out the provisions of the Contract.

In the event of a hurricane or other similar weather during the abatement process, contractor at his own expense shall take the necessary steps to ensure that all loose asbestos materials are contained and removed from the jobsite in a timely manner as to prevent asbestos contamination before, during, and after the storm.

REMOVAL OF ASBESTOS-CONTAINING MATERIALS

SECTION 1 - GENERAL

1.1 GENERAL REQUIREMENTS:

The Contractor shall become familiarized with the conditions for the project and is responsible for quantifying the materials to be abated and verifying the locations of all work to be performed as outlined in this specification. Failure to do so shall not relieve the Contractor of his obligation to furnish all materials and labor necessary to carry out the provisions of the Contract. All quantities must be field verified prior to bidding.

1.1.0 Areas scheduled to have asbestos abatement performed will be pre-cleaned and all debris on the floor is to be considered disturbed asbestos containing material. This ACM will be properly disposed of, HEPA vacuumed and wet wiped by a properly licensed asbestos worker.

1.1.1 On-site ambient air monitoring and final clearance will be conducted by a third-party environmental consultant. Final clearance air samples in asbestos work areas will be collected and analyzed by Phase Contrast Microscopy (PCM).

1.1.2 Remove all asbestos-containing and contaminated materials including studs, leaving a clean substrate.

1.1.3 Remove and dispose of all asbestos-contaminated waste in accordance with applicable regulations and these specifications.

1.1.4 These materials have been identified as being impacted by the proposed demolition activities.

1.1.5 **START OF WORK:** The work start date shall be coordinated with the Owner. Any deviations to the start or completion of work date shall be coordinated with the Owner, DSHS, and the Consultant.

1.1.6 **PROJECT COMPLETION:** Project completion is yet to be determined.

1.1.7 **SUBMITTALS:** See section 1.7 - 1.11

1.1.8 **ABATEMENT CONTRACTOR'S DUTIES:**

1.1.8.1 Except as specifically noted, provide and pay for: labor, materials, equipment and other facilities and services necessary for proper execution and completion of work. The Contractor shall be solely responsible for the safety, efficiency, and adequacy of the ways, means, and methods and for any damage which might result from failure or improper construction, maintenance, or operation performed by the Contractor.

1.1.8.2 Pay legally required sales, consumer, use, payroll, privilege and other taxes.

1.1.8.3 Secure and pay for, as necessary, to provide proper execution and completion of work, and as applicable at the time of bids:

Permits
Government Fees
Licenses
Waste disposal permits and costs

1.1.8.4 Give required notices. Provide all necessary information to Owner in a timely manner so that the 10-day notification may be filed with DSHS, and work may start as scheduled.

1.1.8.5 Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities (including EPA regulations, AHERA, NESHAP, DSHS and OSHA) which bear on performance of work. Where conflicts occur between these specifications and/or the above-mentioned regulations, the more stringent shall govern.

1.1.8.6 If the Contractor observes that any of the Contract Documents are at variance therewith in any respect, he or she shall promptly notify Consultant in writing, and any necessary changes shall be accomplished by appropriate modification. It is not the Abatement contractor's responsibility to make certain that the Contract Documents are in accordance with applicable laws, statutes, building codes and regulations. If the Abatement contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to Consultant, he or she shall assume full responsibility therefore and shall bear all cost attributable thereto.

1.1.8.7 PLAN OF ACTION: Submit a detailed plan of action for the procedures proposed for use in complying with the requirements of this specification. Utilize shop drawings, 8 1/2 x 11 format and include the location and layout of work areas, secure areas for storage, hazardous materials storage, the sequencing of abatement work, the interface of trades involved in the performance of the work, methods to be used to assure the safety of the workers, the public, and visitors to the site, a disposal plan with the location of the approved disposal site, and a detailed description of the methods to be employed to control pollution. The plan must be delivered to the Owner prior to commencement of work.

1.1.8.8 INSPECTION: Prior to the commencement of the work, inspect the areas where work will be performed. Document and submit to the Consultant any discrepancies in the scope prior to starting the work. The Abatement contractor is responsible for any and all site inspections, estimations of quantity of work, or recognition of unusual or special conditions which may affect a timely and scheduled completion of this work. The Abatement contractor shall satisfy himself that the work can be completed as set forth by the specifications before starting work.

1.1.8.9 POTENTIAL ASBESTOS HAZARD: The disturbance or dislocation of asbestos-containing materials may cause asbestos dust to be released into the atmosphere and deposited on surfaces, creating a potential health hazard. Apprise all workers, supervisory personnel, subcontractors, and consultants who will be at the job site of the seriousness of the hazard and of proper work procedures which must be followed.

1.1.8.10 CONTRACTOR USE OF PREMISES: Eating or drinking will not be permitted in or around the work area, showers or clean room at any time. Smoking is not permitted on the property. Confine the work activities within the designated area of construction. Do not block drives or access to other portions of the site.

1.1.8.11 Enforce strict discipline and good order among employees. Do not employ on the project unfit persons or persons not skilled in assigned task.

1.1.8.12 Comply with all applicable federal, state, and local laws regarding job discrimination and payment of prevailing wage rates.

1.1.8.13 The use of the best available technology, procedures, and methods for preparation, execution, cleanup, disposal, and safety are absolutely required. This compliance is the sole responsibility of the abatement contractor.

1.1.8.14 Coordinate all work schedules with the Owner and Consultant and assist in submitting DSHS 10-day notice prior to the start of the work.

1.1.8.15 Provide personnel monitoring of workers on a daily basis as required by OSHA. OSHA compliance air monitoring records conducted daily during the work are to be submitted with closeout documents.

1.1.8.16 Assume full responsibility for the proper and safe execution of the work.

1.1.9 **COORDINATION:** The General Contractor shall be responsible for the coordination and scheduling of the total project. The General Contractor shall be responsible for the performance of his Subcontractors and shall cooperate with the Consultant so as to facilitate the general progress of the work.

1.2 STOP WORK:

1.2.1 If the Owner, or his designated representative, presents a written or verbal stop work order, immediately stop all work or at that portion of the work designated. A verbal stop work order shall be confirmed by a written stop work order within 24 hours. Do not commence referenced work until authorized in writing by the Owner or his designated representative.

1.3 ABATEMENT CONTRACTOR USE OF PREMISES:

1.3.1 **GENERAL:** During the abatement period the Abatement contractor shall have the exclusive use of the premises included in the current work phase for abatement operations.

1.3.2 **USE OF SITE:** Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project abatement.

1.3.2.1 Keep existing driveways and entrances serving the premises clear and available to the Owner and his employees at all times. Do not use these areas for parking or storage of materials.

1.3.2.2 Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to areas acceptable to Owner. If additional storage is necessary, obtain and pay for such storage off-site.

1.3.2.3 Do not load structure with weight that will endanger structure.

1.3.2.4 Assume full responsibility for protection and safekeeping of products stored on premises.

1.3.2.5 Take all cautions necessary to ensure there is no asbestos contamination to those areas not included in work schedule. Should areas outside the work area become contaminated with asbestos-containing materials due to poor work practices, the

Abatement contractor shall immediately clean them utilizing the wet cleaning and HEPA vacuum methods specified herein.

1.3.3 **ABATEMENT CONTRACTOR'S USE OF PREMISES:** Maintain the existing building in a safe and weather tight condition throughout the abatement period. Repair damage caused by abatement operations to original conditions. Take all precautions necessary to protect the building and its occupants during the abatement period.

1.3.3.1 Keep public areas such as hallways, stairs, elevator lobbies, and toilet rooms free from accumulation of waste material, rubbish or abatement debris.

1.3.3.2 Smoking or open fires will not be permitted within the building enclosure or on the premises.

1.4 DEFINITIONS:

1.4.1 **GENERAL EXPLANATION:** A substantial amount of specification language constitutes definitions for terms found in other contract documents including the drawings. Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated thereon. Certain terms used in contract documents are defined in this article. Definitions and explanations of this section are not necessarily either complete or exclusive but are general for the work to extent they are not stated more explicitly in another element of contract documents.

1.4.2 **GENERAL REQUIREMENTS:** The provisions or requirements of Division-1 sections apply to entire work of Contract, and where so indicated, to other elements which are included in the project.

1.4.3 **INDICATED:** The term "indicated" is a cross-reference to graphic representations, notes, or schedules on drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in contract documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping the reader locate cross-reference, and no limitation of location is intended except as specifically noted.

1.4.4 **DIRECTED, REQUESTED, ETC:** Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by the Consultant", "requested by the Consultant", and similar phrases. However, no such implied meaning will be interpreted to extend the Consultant's responsibility into Contractor's responsibility for construction supervision.

1.4.5 **APPROVE:** Where used in conjunction with the Consultant's response to submittals, requests, applications, inquiries, reports, and claims by Abatement contractor, the meaning of the term "approved" will be held to limitations of the Consultant's responsibilities and duties as specified in General and Supplementary Conditions. In no case will "approval" by the Consultant be interpreted as a release of Abatement contractor from responsibilities to fulfill requirements of contract documents.

1.4.6 **FURNISH:** Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

1.4.7 **INSTALL:** Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations, as applicable in each instance.

1.4.8 **PROVIDE:** Except as otherwise defined in greater detail, term "provide" means furnish and install,

complete and ready for intended use, as applicable in each instance.

1.4.9 **INSTALLER:** The term "installer" is defined as the entity (person or firm) engaged by Abatement contractor, or its subcontractor or sub-subcontractor for performance of a particular unit of work at project site, including installation, erection, application, and similar required operations. It is a general requirement that such entities (installers) be expert in operations they are engaged to perform.

1.4.10 **PROJECT ADMINISTRATOR:** The entity described as the "Project Representative" in AIA Document A201 "General Conditions of the Contract for Construction". The Project Administrator is a representative of the Owner at the job site with authority to stop the work upon verbal order if requirements of the contract documents are not met or if in the sole judgment of the Project Administrator, the Consultant, Owner, the interests of the Owner, safety of any person or the owner's property are jeopardized by the work.

1.5 INDUSTRY STANDARDS:

1.5.1 **GENERAL APPLICABILITY OF STANDARDS:** Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, applicable standards are written directly into the contract documents, applicable standards of the construction industry have the same force and effect and are made a part of contract documents by reference as if copied directly into contract documents, or as if published copies were bound herewith.

1.5.2 **REFERENCED STANDARDS:** Referenced directly in contract documents or by governing regulations have precedence over non-referenced standards which are recognized in industry for applicability to work.

1.5.3 **NON-REFERENCED STANDARDS:** Hereby defined to have no particular applicability to the work, except as general requirements of whether the work complies with standards recognized in the construction industry.

1.5.4 **PUBLICATION DATES:** Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.

1.5.5 **COPIES OF STANDARDS:** The contract documents require that each entity performing work be experienced in that part of the work being performed. Each entity is also required to be familiar with recognized industry standards applicable to that part of the work. Copies of applicable standards are not bound with the contract documents.

1.5.6 **ABBREVIATIONS AND NAMES:** The following acronyms, or abbreviations as referenced in contract documents, are defined to mean the associated names. Both names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of contract documents.

AIA	American Institute of Architects 1735 New York Ave. NW Washington, DC 20006	(202) 626-7474
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018	(212) 354-3300
ASHRAE	American Society for Heating, Refrigerating & Air Conditioning 1791 Tullie Circle NE Atlanta, GA 30329	(404) 636-8400
ASTM	American Society for Testing & Materials 1916 Race Street	

	Philadelphia, PA 19103	(215) 299-5400
CFR	Code of Federal Regulations Available from Government Printing Office Washington, DC 20402 (usually first published in Federal Register)	
EPA	Environmental Protection Agency 401 M Street SW Washington, DC 20460	(202) 382-3949
NEC	National Electrical Code (by NFPA)	
NESHAP	National Emission Standards for Hazardous Air Pollutants	
NFPA	National Fire Protection Association Batterymarch Park Quincy, MA 02269	(617) 770-3000
OSHA	Occupational Safety & Health Administration (U.S. Dept. of Labor) Government Printing Office Washington, DC 20402	
UL	Underwriters Laboratories 333 Pfingsten Road Northbrook, IL 60062	(312) 272-8800

1.6 CODES AND REGULATIONS:

1.6.1 **GENERAL APPLICABILITY OF CODES, REGULATIONS, AND STANDARDS:** 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 (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

1.6.2 **FEDERAL REGULATIONS:** Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials including but not limited to the following:

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:

General Industry
Title 29, Part 1910, Section 1001 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 1926.1101, and 1926.62 of the Code of Federal Regulations

Access to Employee Exposure & Medical Records
Title 29, Part 1910, Section 20 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. Environmental Protection Agency (EPA) including but not limited to:

Worker Protection Rule
40 CFR Part 763, Subpart G
CPTS 62044, FKR 2843-9
Federal Register, Vol. 50, No. 134, 7/12/85
P28530-28540
Regulation for Asbestos
Title 40, Part 61, Subpart A of the
Code of Federal Regulations

National Emission Standard for Asbestos
Title 40, Part 61, Subpart M of the Code of
Federal Regulations including Asbestos NESHAP
Revision; Final Rule, Federal Register;
Tuesday, November 20, 1990

Asbestos Hazard Emergency Response Act (AHERA)
Regulations 40 CFR 763 Subpart E

U.S. Department of Transportation (DOT) including but not limited to:

Hazardous Substances: Final Rule
Regulation 49 CFR, Parts 171 and 172

1.6.3 **STATE AND LOCAL REGULATIONS:** Abide by all state and local regulations which govern asbestos abatement work or hauling and disposal of waste materials, including but not limited to Texas Asbestos Health Protection Rules.

1.6.4 **STANDARDS:** Those which govern abatement work or hauling and disposal of asbestos waste material include but are not limited to the following, or the latest update:

American National Standards Institute (ANSI)

Fundamentals Governing the Design and operation of Local Exhaust Systems Publication Z9.2-79

Practices for Respiratory Protection Publication Z88.2-92

1.6.5 **EPA GUIDANCE DOCUMENTS:** Those which discuss asbestos abatement work or hauling and disposal of asbestos waste materials are listed below only for the Contractor's information. These documents do not describe the work and are not a part of the work of this contract.

Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) EPA560/5-85-024.
Asbestos Waste Management Guidance EPA 530-SW-85-007.

1.6.6 **NOTICES:**

1.6.6.1 **U.S. ENVIRONMENTAL PROTECTION AGENCY:** Assist Owner with compilation of necessary information for submission of written notification as required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M as amended) to the regional Asbestos NESHAP Contact or the delegated state or local agency at least 10 working days prior to beginning any work on asbestos-containing materials. Should abatement work begin on

a date other than that contained in the original notice, assist Owner with the re-notification as per regulations.

1.6.7 PERMITS: Obtain all building and special permits required for all the asbestos abatement work.

1.6.8 LICENSES: Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal, or other regulated activity relative to the work of this contract.

1.6.9 POSTING AND FILING OF REGULATIONS: Maintain two (2) copies of applicable federal, state, and local regulations above. Post one copy of each at the job site. Keep on file in the Project Data Binder, covered earlier.

1.6.10 SIGN REQUIREMENTS: Project identification signs or abatement contractor or supplier informational signs in excess of that required by law shall be subject to approval by the Owner.

1.6.10.1 As required by OSHA regulations 29 CFR 1926.1101, warning signs shall bear the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

1.6.10.2 Provide signs in English and Spanish in compliance with Texas Asbestos Health Protection Rules. Remove all signs upon completion of construction.

1.6.11 LABEL REQUIREMENTS: Provide labels affixed to all asbestos waste containers.

1.6.11.1 Warning labels as required by OSHA regulation 29 CFR 1926.1101 as follows:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

1.6.11.2 Informational labels as required by NESHAP regulation 40 CFR 61, Subpart M with the name of the waste generator and the location at which the waste was generated. If handwritten, use, at a minimum, indelible ink to legibly record the required information.

1.6.12 TRANSPORT SIGN REQUIREMENTS: Provide signs during waste transport and disposal as follows:

1.6.12.1 As required by the U.S. Department of Transportation, 49 CFR 171 and 172, warning signs shall display the following:

RQ HAZARDOUS
CLASS 9
SOLID, NOS,
ORM-E, NA 2212, III
(ASBESTOS)

1.6.12.2 As required by NESHAP, 40 CFR 61, Subpart M, mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible as follows:

DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD

Authorized Personnel Only

1.7 SUBMITTALS: All submittals shall be delivered to the consultant at:

Honesty Environmental Services, Inc.
2300 Highway 365, Suite 450
Nederland, Texas 77627
Mr. Daniel Ward (409) 632-2601
Dan@honestyenvironmental.com

1.7.1 QUANTITY OF SUBMITTALS:

1.7.1.1 PRECONTRACT SUBMITTALS – three sets.

1.7.1.2 PREWORK SUBMITTALS – three sets.

1.7.1.3 PRODUCT SUBMITTALS – three sets.

1.7.1.4 CLOSEOUT SUBMITTALS – three sets.

1.7.2 APPROVAL:

1.7.2.1 No portion of the work requiring submittals shall be commenced until the submittals are approved by the Owner or his designated representative.

1.7.2.2 Delays to the work caused by late or disapproved submittals shall be the sole responsibility of the Contractor.

1.7.3 SUBSTITUTIONS:

1.7.3.2 Contractor's request for changes in the products, materials, equipment, and methods of construction required by the contract Documents are considered requests for substitutions.

1.7.4 ORGANIZATION OF SUBMITTALS:

1.7.4.1 All submittals shall be submitted to the Consultant in an organized fashion suitable for review.

1.7.4.2 All submittals shall be on an 8.5 x 11 format, in 3-ring binders, separated by tabs (marked to correspond with the section of the Specifications with which they apply). Personnel submittals shall be in the same sequence as outlined in the Specifications and in alphabetical order.

1.8 PRECONTRACT SUBMITTALS:

1.8.1 Within three (3) days after the date bids are opened the selected Contractors must submit (prior to consideration for execution of the agreement) the following data:

1.8.1.1 A list of at least three projects of similar scope and value to the project described in this bid document, successfully completed by the contractor within the past two years.

1.8.1.2 An Emergency Phone List of full-time supervisory personnel to be engaged in the contract, their training and job experience. The list shall be sufficient in scope to allow the Owner to contact a designated person in the Abatement Contractors Company on a 24-hour basis.

1.8.1.3 An outline of the workers' training courses, and medical surveillance program conducted by the company

1.8.1.4 The name of and evidence that the Project Superintendent has completed an EPA-approved contractor/supervisor certification course, or equivalent, and has a minimum of one year on the job experience.

1.8.1.5 A basic procedures manual endorsed or authorized by the company describing working procedures, equipment, and type of decontamination facilities, respirator program, and special removal techniques, etc.

1.8.2 **CITATIONS AND VIOLATIONS**: Provide a list of all citations and violations.

1.9 PREWORK SUBMITTALS:

Within seven days prior to the Preconstruction Conference the Abatement contractor shall submit to the Consultant the following documents. Maintain one (1) approved copy at the job site.

1.9.1 **PROGRESS SCHEDULE:** Provide proposed schedule using the bar graph method.

1.9.1.1 Show the complete sequence of construction by activity and the sequencing of work within each phase of work.

1.9.1.2 Show the dates for the beginning and completion of each major element (setup, removal, testing, etc.) of work, including substantial completion dates for each phase.

1.9.1.3 Show projected percentage of completion for each item, as of the first day of each week.

1.9.1.4 Show final inspection dates.

1.9.1.5 The schedule shall be formulated on a day/week basis, updated weekly, and revised as required.

1.9.2 **INSURANCE COVERAGE:** Submit copies of insurance coverage, including asbestos, automotive liability, worker's compensation, comprehensive general liability, special endorsement, and other coverage as required. Insurance policies must name the Owner and Consultant, and their agents, officers and employees, as additional insured parties on the original policy and all renewals or replacements during the term of this contract.

Abatement contractor agrees to procure and maintain all insurance provided below on an occurrence basis, using carriers reasonably acceptable to Owner and HES and carrying a Best rating of not less than A including insurance covering the obligations assumed by Abatement contractor. Such insurance shall be primary with respect to any other similar insurance available to Owner and HES and affiliated companies, notwithstanding the provisions of such insurance. Before any part of the work on jobsite is commenced, Abatement contractor shall, at Abatement contractor's sole cost cause to be issued and maintained during the entire progress of the Work not less than the insurance coverages set forth below. The contractor shall provide proof of insurance for the Abatement Contractor, Asbestos Transporter, and Disposal Site. There shall be no right of subrogation against Owner and HES and this waiver of subrogation shall be endorsed upon all policies of insurance.

1.9.2.1 Automobile Liability insurance covering use of all owned, non-owned and hired vehicles used by or on behalf of the Abatement contractor, in connection with the work, with a combined bodily injury and property damage liability limits of not less than $1,000,000

per occurrence to include transportation of hazardous materials with specific environmental impairment provisions, in addition to the MCS 90 Endorsement.

1.9.2.2 Occurrence based Asbestos Specific Liability insurance including coverage for obligations assumed in the agreement for an amount not less than $1,000,000.00. Policy may not have asbestos exclusions. Worker's Compensation on a statutory basis and Employers Liability, including Occupational Disease, at limits of $500,000.

1.9.2.3 The Abatement contractor and/or Subcontractor responsible for transporting the asbestos-containing and/or asbestos-contaminated material to an approved U.S. Environmental Protection Agency (EPA) or Texas Natural Resource Conservation Commission (TNRCC) disposal site, will be properly licensed by the Texas Department of State Health Services (DSHS). The transporter shall meet the following minimum insurance requirements through insurers acceptable to Owner and HES on an occurrence basis.

1.9.2.4 Commercial General Liability including asbestos and other pollution environmental coverage at limits of $1,000,000 combined single limit.

1.9.2.5 Commercial Automobile Liability at limits of $1,000,000 combined single limit including the MCS 90 Pollution Endorsement and the ISO Pollution Endorsement for Hazardous Materials.

1.9.2.6 Worker's Compensation on a statutory basis and Employers Liability, including Occupational Disease, at limits of $500,000.

1.9.2.7 The disposal site shall meet the following minimum insurance requirements through insurers acceptable to Owner and HES on an occurrence basis.

1.9.2.8 Commercial General Liability at limits of $1,000,000 combined single limit.

1.9.2.9 Environmental Impairment Liability at limits of $1,000,000.

1.9.2.10 Commercial Automobile Liability at limits of $1,000,000, if applicable, to include hazardous materials.

1.9.2.11 Worker's Compensation on a statutory basis and Employers Liability, including Occupational Disease, at limits of $500,000.

1.9.3 **NOTICES:** Assist Owner with timely submission of notices required by federal, state, and local regulations.

1.9.4 **PERMITS:** Submit copies of current valid permits required by state and local regulations, including arrangements for storage, transportation, and disposal of contaminated material. Dump site must conform to EPA regulation 40 CFR 61.

1.9.5 **LICENSES:** Submit copies of all state and local licenses and permits necessary to carry out the work, including DSHS Asbestos Abatement Contractor license.

1.9.6 **CONTAINMENT AREA:** Show on Contract Drawings or an 8-1/2" x 11" plan the containment areas, including the locations and quantity of negative air pressure equipment, the location of all decontamination chambers, entrances, and emergency exists from the work areas.

1.9.7 **STORAGE AND SECURITY:** Show on a plan the location and construction of storage facilities and field office and security provisions in and around the premises.

1.9.8 **EQUIPMENT:** Submit manufacturer's certification that vacuums, negative pressure equipment, respirators, and air supply equipment meet all requirements of OSHA and EPA. Include descriptions of any equipment to be employed not previously discussed.

1.9.9 **SAMPLES:** Submit samples of warning signs and warning labels.

1.9.10 **WORKER TRAINING AND MEDICAL SURVEILLANCE**: Submit copies of training certificates, DSHS licenses, medical examinations and fit tests for each worker and project superintendent.

1.9.11 Provide historical air monitoring data to substantiate the choice of respiratory protection.

1.9.12 **LOGS**: Submit sample copies of daily progress log and visitor's log.

Visitors' Log: The Abatement contractor shall maintain a visitors' log at the work place and require all persons entering the asbestos work area to sign the log. The log should provide space for the following information:

1.9.12.1 Name, organization represented, date, time, and purpose of visit.

1.9.12.2 Certificate of release signed and filed with abatement contractor that those who enter the work environment have been informed of the hazards of asbestos.

Daily Log: The abatement contractor shall maintain a daily job log which shall be maintained by the Project Superintendent. The log shall have daily entries describing the progress and location of the work, any special conditions encountered, records of testing, amount removed, names of workers entering and exiting the containment areas, and any other pertinent data.

1.9.13 **NOTICES TO SUPPLIERS:** Copies of notices sent to suppliers of rental equipment and vehicles informing them of the nature of the use of their equipment.

1.9.14 **MATERIAL LIST:** Catalog cost of materials and items proposed to be furnished and used under this contract.

1.9.15 **SUBCONTRACTORS LIST:** Submit a list of all subcontractors to be used on the project. Any subcontractor must be acceptable to the Owner and the Consultant.

1.9.16 **SCHEDULE OF VALUES:** The Subcontractor shall submit a schedule of values. All applications for payment must include this form. The schedule of values must break down total amount of bid per removal area.

1.9.17 **SAFETY DATA SHEET:** Submit an SDS Sheet or equivalent for each material proposed for use on the work in accordance with the OSHA Hazard Communication Standard. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated and/or manufacturer's specification.

1.10 PRODUCT SUBMITTALS:

1.10.1 **GENERAL:** Submit product data and samples required by Contract Documents. The abatement contractor shall be fully responsible for ensuring that the samples, materials, and equipment comply with the Specifications and for ensuring their suitability for use in the complete performance of his contract. Any deviations from the Contract Documents shall be boldly marked on the submittals by the abatement contractor for review by the Consultant. The Consultant shall review the submittals for general contract compliance only and does not accept any responsibility for the suitability of the products for proper functional use on the project.

1.10.2 **PRODUCT DATA:** Includes standard printed information on manufactured products that has not been specially prepared for this project, including but not limited to the following items: manufacturer's product specifications, installation instructions, and catalog cuts.

Clearly mark each copy to identify pertinent products or models and show performance characteristics and capacities.

Product data submittals shall contain:

1.10.2.1 The date of submission and the dates of any previous submissions.

1.10.2.2 The project title and number.

1.10.2.3 The names of abatement contractor, superintendent, and manufacturer.

1.10.2.4 Identification of the product, with the specification section number.

1.10.2.5 Applicable standards, such as ASTM or Federal Specification numbers.

1.10.2.6 Identification of deviations from Contract Documents.

1.10.2.7 Identification of revisions or resubmittals.

1.10.2.8 Contractor's stamp, initialed or signed, certifying the review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.

1.11 CLOSEOUT SUBMITTALS:

1.11.1 **SUBSTANTIAL COMPLETION:** The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the Owner can occupy the project or specified area of the project for the use for which it was intended. Complete the following before requesting the Consultant inspection for certification of substantial completion for the work. List known exceptions in the request.

1.11.1.1 Submit a statement showing an accounting of changes to the Contract Sum.

1.11.1.2 Submit a description of any unresolved issues or items related to the Contract.

1.11.1.3 Submit a request for inspection. The request shall include a summary of items remaining to be completed based on the Contractor's inspection of the project.

1.11.2 **FINAL ACCEPTANCE:** Complete the following Record Documents before requesting the Consultant certification of final acceptance and final payment as required by the General Conditions. Submit all Record Documents in a loose-leaf binder with identifying tabs. List known exceptions, if any, in request.

1.11.2.1 Submit the final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

1.11.2.2 Submit an updated final statement, accounting for all change orders, liquidated damages, and other charges or credits against the contract.

1.11.2.3 Submit a final liquidated damages settlement statement, acceptable to the Owner.

1.11.2.4 Submit a copy of the Consultant's punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and has been endorsed and dated by the Consultant.

1.11.2.5 Submit consent of surety.

1.11.2.6 Submit Release of Liens and Certification that all Bills Have Been Paid: A sworn statement and affidavit from the Contractor to the Owner stating that all bills for this job have been paid and that the Owner is released from any and all claims and damages, shall be required before payment is made.

1.11.2.7 Guarantee of Work: Sworn statement that all work is guaranteed against defects in materials and workmanship for one year from date of Owner's acceptance, except where specified for longer periods.

A. Word the guaranty as follows: "We hereby guarantee all work performed by us on the above captioned project to be free from defective materials and workmanship for a period of one (1) year or such longer period of time as may be called for in the Contract Documents for such portions of the work." All guarantees and warranties shall be obtained in the Owner's name.

B. Within the guaranty period, if repairs or changes are requested in connection with guaranteed work which, in the opinion of the Owner, is rendered necessary as a result of the use of materials, equipment, or workmanship which are inferior, defective or not in accordance with the terms of the contract, the Contractor shall promptly, upon receipt of notice from and without expense to the Owner, place in satisfactory condition in every particular, all such guaranteed work, correct all defects therein and make good all damages to the buildings, site, equipment or contents thereof.

C. If, after notice, the Contractor fails to proceed promptly to comply with the terms of the guaranty, the Owner may have the defects corrected and the Contractor and his sureties shall be liable for all expense incurred.

D. All special guarantees applicable to define parts of the work stipulated in the project manual or other papers forming part of the contract shall be subject to the terms of this paragraph during the first year of the life of such special guaranty.

1.11.2.8 Submit all additional certificates, warranties, guarantees, bonds or documents as called for in the individual sections of the Project Manual. The Contractor is responsible for examining the Project Manual for these requirements.

1.11.2.9 Submit certification that rental vehicles and equipment have received clearance inspection by consultant prior to return to rental company.

1.11.2.10 Submit copy of the fully completed Waste Shipment Record (WSR) or documentation of compliance with NESHAP 61.150(d)(3) and (4). Submit all copies of dump receipts and waste manifests signed by the landfill within thirty-five days following completion of the project

1.11.2.11 Submit OSHA compliance air monitoring records conducted daily during the work.

1.11.2.12 Submit copies of the daily progress log.

1.11.2.13 Submit copies of Visitors' Log.

1.11.2.14 Submit copies of the plans, legibly marked to give particular attention to substitutions, selection of options and similar information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation. Note related record drawing information and product data, where applicable.

1.11.3 Submittal Review:

1.11.3.1 Partial submittals may be rejected for non-compliance with the Contract Documents.

1.11.3.2 Review by Consultant does not relieve Abatement Contractor from responsibility for errors, which may exist in the submitted date.

1.11.3.3 Make revisions when required by the Consultant and resubmit for review.

1.11.3.4 Subsequent Reviews: All cost associated with reviews required beyond the first review will be paid by Abatement Contractor.

1.11.4 DUTIES: Owner and Consultant

1.11.4.1 Review submittals with reasonable promptness and in accordance with schedule.

1.11.4.2 Indicate requirements for revisions and resubmittal, if any.

1.11.4.3 Return submittals to abatement contractor for distribution, or for resubmission.

1.12 TEMPORARY FACILITIES:

1.12.1 Provide and maintain temporary facilities required for abatement work, remove on completion of work.

1.12.2 REQUIREMENTS OF REGULATORY AGENCIES: Comply with all applicable codes and regulations.

1.12.3 MATERIALS AND EQUIPMENT:

1.12.3.1 GENERAL: Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

1.12.4 SCAFFOLDS, LADDERS, ETC.:

1.12.4.1 Provide all scaffolding, ladders and/or staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type, or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions.

1.12.4.2 Equip rungs of all metal ladders, etc. with an abrasive nonslip surface.

1.12.4.3 Provide a nonskid surface on all scaffold surfaces subject to foot traffic.

1.12.5 GUARDRAILS, BARRICADES, AND COVERINGS:

1.12.5.1 Provide guardrails, handrails, and covers for floor, roof and wall openings and stairways.

1.12.5.2 Provide suitable temporary watertight coverings over openings as required to protect interior work from inclement weather.

1.12.5.3 Comply with requirements of all federal, state, and local authorities having jurisdiction for the protection of persons and property.

1.12.6 TEMPORARY SANITARY FACILITIES:

1.12.6.1 Existing toilet facilities at the site may not be used by the abatement contractor's personnel during performance of the work.

1.12.7 TEMPORARY FIRE PROTECTION:

1.12.7.1 Provide and maintain temporary fire protection during construction in accordance with requirements of the local protection code.

1.12.7.2 Provide Type "A" fire extinguisher for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations provide type "ABC" dry chemical extinguisher, or a combination of several extinguisher of NFPA recommended types for the exposures in each case.

1.12.8 TEMPORARY PROJECT SUPERINTENDENT'S FIELD OFFICE:

1.12.8.1 If desired, temporary offices may be provided by the abatement contractor. If temporary offices are provided, coordinate location of placement with the Owner and General Contractor.

1.12.8.2 Temporary offices provided by the abatement contractor shall be in a weather and watertight building or trailer, and shall be maintained in a neat, orderly appearance.

1.12.8.3 Arrange with utility companies to provide water and electricity for office as required. Pay all costs for meters, installation, maintenance, removal and service charges for utilities.

1.12.9 TEMPORARY STORAGE:

1.12.9.1 Provide required weatherproof storage sheds and maintain in good condition and neat appearance. Location of storage sheds and trailers shall be acceptable to the Owner.
1.12.9.2 Construct storage sheds on proper foundations, securely anchored in place.

1.12.10 EXECUTION:

1.12.10.1 Maintain and operate systems to assure continuous service.

1.12.10.2 Modify and extend systems as work progress requires.

1.12.11 SCAFFOLDING:

1.12.11.1 During the erection and/or moving of scaffolding, care must be exercised so that the polyethylene floor covering is not damaged.

1.12.11.2 Maintain scaffolding free of accumulated debris during the work.

1.12.12 INSTALLATION, GENERAL:

1.12.12.1 Use qualified tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the work.

1.12.13 REMOVAL:

1.12.13.1 Completely remove temporary materials and equipment when their use is no longer required.

1.12.13.2 Clean and repair damage caused by temporary installations or use temporary facilities.

1.12.13.3 Restore existing facilities used for temporary services to specified or original condition.

1.13 CUTTING AND PATCHING:

1.13.1 SCOPE: To set forth broad, general conditions covering cutting and patching that applies to all aspects of the job.

1.13.2 Execute cutting, including fitting or patching or work required to:

1.13.2.1 Make several parts fit properly.

1.13.2.2 Uncover work to provide for installation of ill-timed work.

1.13.2.3 Gain access to hidden work.

1.13.2.4 Remove and replace work which is defective or does not conform to contract requirements.

1.13.2.5 Make level and true all surfaces accidentally destroyed or damaged.

1.13.2.6 Finish all surfaces exposed by the project to complete the installation of reapplied surfaces not covered under other sections of the Contract Documents.

1.13.3 In addition to contract requirements, upon the Consultant's written instructions:

1.13.3.1 Uncover work for observation of covered work.
1.13.3.2 Remove samples of installed materials for testing.

1.13.3.3 Remove work to provide alteration of existing work.

1.13.4 Do not cut or alter work of another contractor without his written consent.

1.13.5 Payment for Costs: Costs caused by ill-timed or defective work or work not conforming to contract documents will be borne by the party responsible for ill-timed, rejected, or nonconforming work.

1.13.6 VENTILATION

1.13.6.1 Provide local exhaust ventilation systems that comply with ANSI Z9.2-1979.

1.13.7 MATERIALS

1.13.7.1 Materials for replacement or work removed: Comply with specifications for type of work to be done.

1.13.8 INSPECTION: Inspect existing conditions to define limits of work, including elements subject to movement or damage during cutting and patching.

1.13.9 PREPARATION PRIOR TO CUTTING: Provide shoring, bracing, and support as required to maintain structural integrity of materials and systems. Provide protection for other portions of project and protection from the elements.

1.13.10 PERFORMANCE:

1.13.10.1 Execute cutting and demolition by methods which prevent damage to other work and will provide surfaces to receive installation of repairs and new work. Protect existing electrical and electronic systems, cabling, and other components during all phases of abatement.

1.13.10.2 Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.

1.13.10.3 Refinish entire surfaces as necessary to provide an even finish. Refinish continuous surfaces to the nearest intersection and assemblies entirely.

1.13.10.4 Perform cutting, drilling, abrading, or penetration of any asbestos-containing material in a manner to minimize the dispersal of asbestos fibers into the air.

1.13.10.5 Use specialized equipment such as drills or saws having integral ventilation hoods which are connected to a HEPA vacuum with a flexible hose. Handle and dispose of HEPA filters as contaminated material.

1.13.10.6 Thoroughly saturate absorbent surfaces of asbestos-containing material to be penetrated with a penetrating type encapsulant. Allow encapsulant to penetrate to substrate before working on materials.

1.13.10.7 Seal edges of asbestos-containing materials exposed by cutting, drilling, or abrading, etc. with two (2) coats of an approved penetrating encapsulant applied in accordance with manufacturers printed instruction.

SECTION 2 - EXECUTION

PART 1 - GENERAL

2.1 **SCOPE:** This section covers the removal of asbestos-containing materials. This work shall be done in strict accordance with the specifications. Compliance with all applicable Federal, State, and local regulations and the use of the best available technology, procedures, and methods for preparation, execution, cleanup, disposal, and safety are absolutely required. This compliance is the sole responsibility of the abatement contractor.

2.2 **DESCRIPTION:** Furnish all labor, materials, services, insurance, and equipment in accordance with the most stringent requirements of DSHS, EPA and OSHA and all other applicable regulatory agencies, to complete the removal of asbestos-containing materials.

2.3 **TERMINOLOGY** (Definitions):

2.3.1 **ABATEMENT:** Procedure to control fiber release from asbestos-containing building materials.

2.3.1.1 Removal - All herein specified procedures necessary to remove asbestos-containing materials from an area and dispose of the materials at an acceptable site in an acceptable manner.

2.3.1.2 Post-Removal Encapsulation - Procedures necessary to coat surfaces from which asbestos-containing materials have been removed to control any residual fiber release.

2.3.1.3 Abatement Activities - Any activity requiring respiratory protection as per this project manual which disturbs or has the potential to disturb any asbestos-containing building material. This includes, but is not limited to, the following activities: precleaning, installing polyethylene, ACBM removal, encapsulation, and enclosure.

2.3.2 **ACBM OR ACM:** Asbestos-containing building materials or asbestos-containing materials.

2.3.3 **AIR LOCK:** A system for permitting ingress or egress without permitting air movement from contaminated areas into an uncontaminated area, typically consisting of two curtained doorways at least 3 feet apart.

2.3.4 **AIR MONITORING:** The process of measuring the fiber content of a specific volume of air in a stated period of time. For PCM method, NIOSH Analytical Method 7400 shall be used. When aggressive air sampling is specified, blowers/fans are used to disperse settled fibers into the air during sampling. For TEM method, as described in 40 CFR 763, Subpart E (AHERA Protocol).

2.3.5 **AMENDED WATER:** Water to which a surfactant has been added to reduce water surface tension and thereby provide a more rapid penetration.

2.3.6 **AUTHORIZED VISITOR:** The Owner, the Consultant, or a representative of any regulatory or other agency having jurisdiction over the project.

2.3.7 **BARRIER:** Any surface which inhibits air and fiber movement from the work area to non-work areas. Can be comprised of one or a combination of several materials, including but not limited to plywood, polyethylene sheeting and/or duct tape. A critical barrier is one which seals any opening (such as doorways, vents, windows, penetrations) between the work area and non-work area.

2.3.8 **CURTAINED DOORWAY:** Device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing three overlapping sheets of opaque 6-mil polyethylene over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of the first and last sheets along one vertical side of the doorway and securing the middle sheet along the opposite vertical

side of the doorway.

2.3.9 **DECONTAMINATION ENCLOSURE SYSTEM:** A series of connected rooms, with air locks between any two adjacent rooms, for the decontamination of workers and/or materials and equipment, constructed or moved onto site.

2.3.10 **EQUIPMENT DECONTAMINATION UNIT:** Decontamination enclosure system for materials and equipment, typically consisting of a designated area or the work area, a washroom and a holding room.

2.3.11 **GROSS ABATEMENT AREA:** An asbestos removal area which is sealed and fully contained in polyethylene. Workers enter the abatement area through a decontamination enclosure system.

2.3.12 **PERSONNEL DECONTAMINATION UNIT:** A decontamination enclosure system for workers, typically consisting of a designated area of the work area for a gross contaminant removal, an equipment room, an air lock, a shower, an air lock, and a clean room.

2.3.12.1 Equipment Room: A contaminated area or room in the personnel decontamination enclosure system with provisions for storage of contaminated clothing and equipment.

2.3.12.2 Air Lock: An area between rooms, with minimum width of 3 feet.

2.3.12.3 Shower Room: A room between the two air locks in the personnel decontamination enclosure system with hot and cold running water suitably arranged for complete showering during contamination.

2.3.12.4 Clean Room: An uncontaminated area or room which is part of the worker decontamination unit with provisions for storage of worker' street clothes and protective equipment.

2.3.13 **FIXED OBJECT:** A unit of equipment or furniture in the work area which cannot be removed from the work area without dismantling.

2.3.14 **HEPA FILTER:** A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.

2.3.15 **HEPA VACUUM EQUIPMENT:** High efficiency particulate air filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers greater than 0.3 microns in length.

2.3.16 **NEGATIVE AIR PRESSURE EQUIPMENT:** A local exhaust system, capable of maintaining a constant, low velocity air flow through the Decontamination Unit and into the Work Area from adjacent uncontaminated areas and exhausting that air outside the building through HEPA filters.

2.3.17 **NIOSH:** National Institute for Occupational Safety and Health.

2.3.18 **PLASTICIZING:** Procedures necessary using polyethylene sheeting, adhesives, and/or taping to seal an area airtight. All polyethylene sheeting shall be certified by the Underwriters Laboratory as being fire retardant.

2.3.19 **POST REMOVAL ENCAPSULATION:** Application of liquid material to surfaces from which asbestos-containing materials have been removed to control the possible release of residual asbestos fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components (penetrating encapsulant).

2.3.20 **SURFACTANT:** A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

2.3.21 **WASTE GENERATOR:** Any owner or operator of a source covered by NESHAP regulations whose act or process produces asbestos-containing waste.

2.3.22 **WASTE SHIPMENT RECORD (WSR):** The shipping document, required by 40 CFR 61, Subpart M, to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste.

2.3.23 **WET CLEANING/WIPING:** The process of eliminating contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.

2.4 EXISTING CONDITIONS:

2.4.1 Owner and abatement contractor shall agree in writing on building and fixture condition prior to commencement of work. It shall be the Contractor's responsibility to replace or repair to the Owner's satisfaction, prior to closeout of the project, all damaged items caused by the Contractor and not proven otherwise. All items damaged prior to abatement shall be noted during preconstruction walk-through.

PART 2 - EQUIPMENT AND MATERIALS

2.5 PERSONNEL PROTECTION REQUIREMENTS:

2.5.1 Prior to commencement of work, the workers shall be instructed and shall be knowledgeable on the hazards of asbestos exposure, use and fitting of respirators, protective clothing, decontamination procedures, and all aspects of asbestos work procedures; workers shall have medical examinations and fit tests.

2.5.2 The abatement contractor acknowledges that he or she alone is responsible for enforcing personnel protection requirements and that these specifications provide only a minimum acceptable standard for each phase of operation. The Certificate of Workers Release Form included in the attachments shall be signed by each worker.

2.5.3 Provide workers with personally issued and marked respiratory equipment approved by NIOSH and accepted by OSHA.

2.5.4 Provide extra respiratory equipment for authorized visitors.

2.5.5 Respirator selection shall be based on the following table:

RESPIRATOR SELECTION	MAXIMUM USE CONCENTRATION
Half-Face Air-Purifying with HEPA Filters	0.1 f/cc
Full-Face Air-Purifying with HEPA Filters	0.5 f/cc
Powered Air-Purifying (PAPR) Full-Face with HEPA Filter	0.5 f/cc
Full-Face Supplied Air, Pressure Demand + HEPA escape	10 f/cc

Note: The Maximum Use Concentration represents the maximum fiber concentration outside the respirator to maintain exposure inside the respirator below 0.01 f/cc.

2.5.6 Supplied air shall be grade D in compliance with 29 CFR 1910.134, Compressed air system shall incorporate a continuous carbon-monoxide monitoring device, in-line purifying absorbent beds and

filters to deliver air free of water, oil, odors, vapors, and particulates, a compressor failure alarm, high-temperature alarm, high-pressure automatic air storage within an ASME certified air bank to provide sufficient air supply for decontamination in the event of a system failure. Abatement contractor shall comply with all applicable codes and regulations that apply to the operation of such system.

2.5.7 WHERE NOT IN VIOLATION OF NIOSH AND OSHA REQUIREMENTS, THE CONTRACTOR SHALL PROVIDE, AS A MINIMUM, THE FOLLOWING RESPIRATORY PROTECTION FOR EACH PHASE OF OPERATION:

2.5.7.1 Pre-cleaning/Wet Wiping of Area: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.

2.5.7.2 Polyethylene Installation: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.

2.5.7.3 Asbestos Gross Removal and Cleanup: NIOSH full-face or PAPR respirators equipped with HEPA cartridges, or full-face supplied air, pressure demand respirators.

2.5.7.4 Asbestos Removal Glovebag: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.

2.5.7.5 Non-Friable ACBM Removal: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.

2.5.7.6 Polyethylene Removal (after Final Clearance): NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.

2.5.7.7 Loading Waste Material on Truck (outside work area): NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.

2.5.7.8 Unloading Bags at Landfill: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.

2.5.8 The above schedule is minimum respiratory protection acceptable. Should any condition, for any reason, be encountered where the exposure level, after application of the appropriate protection factor of the respiratory equipment in use, exceeds 0.01 f/cc, substitute respiratory equipment with protection factors which reduce worker exposure levels below 0.01 f/cc. Should any such condition come to the Consultant's attention, the right is reserved to require the use of respiratory equipment with higher protection factors for any or all phases of the work.

2.5.9 No visitors shall be allowed in work areas, except as authorized by the Consultant. Provide authorized visitors with suitable respirators whenever they are required to enter the work area.

2.5.10 When supplied air respirators are being used, one (1) open airline shall be maintained at all times for the Consultant's use.

2.5.11 Provide workers with sufficient sets of disposable protective full-body clothing. Such clothing shall consist of full-body coveralls, footwear, and head gear, one-piece coveralls or equal. Provide eye protection and hard hats as required by applicable safety regulations.

Reusable type protective clothing and footwear intended for reuse shall be left 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. Disposable clothing shall not be allowed to accumulate and shall be disposed of as contaminated waste.

2.5.12 Provide authorized visitors with suitable protective clothing, headgear, footwear, and gloves as described above whenever they are required to enter the work area.

2.6 MATERIALS:

2.6.1 Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.

2.6.1.1 Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.

2.6.1.2 Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be disposed of in accordance with applicable regulations.

2.6.2 **POLYETHYLENE SHEETING:** A minimum 6-mil for floor and 4-mil for walls, in sizes to minimize the frequency of joints. All polyethylene sheeting shall be certified by the Underwriters Laboratory as being fire retardant.

2.6.3 **TAPE:** Capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water. Duct tape, poly prep tapes or approved equal.

2.6.4 **ADHESIVES:** Capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

2.6.5 **SURFACTANT:** Shall consist of 50% polyoxyethylene ether and 50% of polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one ounce of surfactant to 5 gallons of water. Prior to bidding, the Contractor shall be responsible for verifying that this surfactant is compatible with the materials to be removed and their substrates. If found to be incompatible, the Contractor shall supply suitable wetting agents at no extra cost to the Owner.

2.6.6 **IMPERMEABLE CONTAINERS:** Suitable to receive and retain any asbestos-containing or contaminated materials until disposal at an approved site. The containers shall be labeled in accordance with regulations. Containers must be both air and water tight and must be resistant to damage and rupture. An impermeable container shall be: 2 (two) 6-mil polyethylene bags or 1 (one) 6-mil polyethylene bag inside a drum with tightly fitting lid. Bags may be true 6-mil thickness, or have a tear resistance of M.D. 300 grams, T.D. 2,068 grams, and dart impact of 216 grams.

2.6.7 **WARNING LABELS AND SIGNS:** As required by regulations.

2.6.8 **GLOVEBAGS:** Manufactured device consisting of a bag constructed of 6-mil or thicker transparent polyethylene, two inward projecting long sleeve gloves, one inward projecting water wand sleeve, an internal tool pouch, and an attached, labeled receptacle for collection of removed asbestos waste. The glovebag 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.

2.6.9 **ENCAPSULANTS:** A liquid material which, when applied, controls the possible release of asbestos fibers either by creating a membrane over the surface or by penetrating the material and binding its components together. The encapsulant shall be a commercial product which is color-tinted.

2.6.10 **OTHER MATERIALS:** Provide all other materials, such as, but not limited to lumber, plywood, nails, and hardware, which may be required to properly prepare and complete this project.

2.7 TOOLS AND EQUIPMENT:

2.7.1 Provide suitable tools for asbestos removal.

2.7.1.1 Water Sprayer: Airless or a low-pressure sprayer for amended water application as applicable.

2.7.1.2 Air-Purifying Equipment: High Efficiency Particulate Air Filtration Systems (HEPA) shall comply with ANSI Z9.2-79. No air movement system or air equipment should discharge unfiltered air outside the work area. Thus, the negative air unit shall be equipped with a three-filter bank with the last being the HEPA filter capable of removing 99.97% of fibers >0.3 microns.

2.7.1.3 Paint/Encapsulant Sprayer: Airless or a low-pressure sprayer.

2.7.1.4 Scaffolding: As required to accomplish the specified work and meet all applicable safety regulations.

2.7.1.5 Vacuums: Use HEPA filtered type.

2.7.1.6 Other tools and equipment as necessary.

2.8 POSTING OF THE PROJECT:

Post warning signs in and around the work area to comply with OSHA regulation 29 CFR 1926.1101 and in compliance with all other Federal, State, and local requirements.

2.9 WORK AREA PREPARATION - OWNER:

2.9.1 The Contractor, in coordination with the Owner, shall shut down electric power to work areas. Electrical shutdown shall be coordinated with the Owner no less than seven Calendar days prior to the scheduled shutdown. The Contractor may use existing electrical service to the building for temporary electrical power during abatement work.

2.9.2 The Contractor, in coordination with the Owner, shall shut down or isolate heating, cooling and ventilating air systems to the work areas.

2.9.3 Before the work is begun, and unless otherwise specified, the Owner shall remove from work areas all removable items and equipment not located on the asbestos material as specified. Owner shall later replace furniture and movable objects.

2.10 WORK AREAS PREPARATION - CONTRACTOR: Prior to commencing abatement work the Abatement Contractor shall prepare the work area as required by this specification and applicable regulations.

2.10.1 Pre-clean fixed objects within the work area, first using HEPA vacuum equipment and then wet cleaning methods as appropriate, and completely enclose with minimum 6-mil thick plastic sheeting sealed with tape.

2.10.2 Prior to commencing abatement work, shut down and isolate heating, cooling, and ventilating air systems to prevent contamination and fiber dispersal to other areas of the building. Seal vents within the work area with tape and 6-mil plastic sheeting.

2.10.3 Clean the work area first using HEPA vacuum equipment and then wet cleaning methods as

appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not use HEPA vacuum equipment on wet surfaces unless units are specially constructed for wet/dry use. Do not use amended water on gypsum board or other material which would be damaged by the wetting agent. HEPA vacuuming or damp sponge with regular water would be appropriate.

2.10.4 Seal off all openings, including but not limited to windows, corridors, doorways, skylights, ducts, diffusers, and any other penetrations of the work areas, with 6-mil polyethylene sheeting sealed with tape. Open doorways and corridors with direct access to occupied areas shall be sealed with plywood in addition to the polyethylene barriers as described in this section.

2.10.5 Cover floor first and then wall surfaces with plastic sheeting completely sealed with tape at all edges with adhesive and tape at all joints. Use a minimum of two layers of 6-mil plastic on floors and all fixed horizontal surfaces. Cover floors first so that plastic extends at least 12 inches up on the walls, then cover walls with a minimum of two layers of 4-mil plastic sheeting which shall extend beyond wall/floor joints at least 12 inches. No seams shall be located at wall-to-floor joints. All polyethylene sheeting shall be certified by the Underwriters Laboratory as being fire retardant.

2.10.6 Install additional protection as necessary for floor finishes such as carpet and wood. The abatement contractor shall assume responsibility for all damage to floor finishes which occurs during the construction period.

2.10.7 Provide viewing windows as required by DSHS Regulations.

2.10.8 Build decontamination enclosure systems at the entrances to the work area.

2.10.9 All power supplied to the work area shall be GFCI protected.

2.10.10 Install negative air equipment.

2.10.11 Maintain and mark emergency exits from the work areas or establish alternate exits satisfactory to the local fire marshal.

2.11 DECONTAMINATION ENCLOSURE SYSTEMS:

2.11.1 **GENERAL:** The abatement contractor shall use portable decontamination units acceptable to EPA and OSHA, connected to the work area with framed-in or accordion tunnels, if necessary, and line the tunnels with plastic, sealed with tape at all joints in the plastic, or shall construct decontamination units on-site.

2.11.2 **ACCESS:** In all cases, access between any two rooms within the decontamination enclosure systems shall be through an air lock.

2.11.3 **WORKER DECONTAMINATION UNIT:** Construct or provide a worker decontamination unit contiguous to the work area consisting of three totally enclosed chambers as follows:

2.11.3.1 An equipment room with two curtained doorways, one to the work area and one to the shower room via an air lock.

2.11.3.2 A shower room with two curtained doorways, one to the equipment room and one to the clean room, via air locks. The shower room shall contain at least one shower per eight (8) workers with hot and cold or warm water with individual shut-off valves inside the showers. Careful attention shall be paid to the shower enclosure to insure against leakage of any kind. Drainage from showers shall be disposed of as contaminated water or filtered as specified below.

2.11.3.3 Waste water containing asbestos, including drainage from decontamination showers, shall be either disposed of as contaminated waste or filtered through 5-micron filters prior to introduction into the sanitary sewer system.

2.11.3.4 A clean room with one curtained doorway into the shower via an air lock and one entrance or exit to non-contaminated areas of the building. The clean room shall have sufficient space for storage of the workers' street clothes, towels, and other non-contaminated items.

2.11.4 EQUIPMENT DECONTAMINATION UNIT: Provide or construct an equipment decontamination enclosure system consisting of two totally enclosed chambers as follows:

2.11.4.1 A washroom constituting an air lock, with a curtained doorway to a designated area of the work area and a curtained doorway to the holding room.

2.11.4.2 A holding room, constituting an air lock, with a curtained doorway to the wash room and a curtained doorway to the uncontaminated area.

2.11.4.3 Contractor may elect to construct equipment decon unit on side of equipment room of worker decontamination unit.

2.12 SEPARATION OF WORK AREAS FROM NON-WORK AREAS:

2.12.1 Temporary barriers from corridors, doorways, and cased openings not to be used for passage during abatement shall be sealed with wood or metal studs, 16 inches o.c., faced with 3/8" plywood sheathing on the work area side only. Cover both sides of the partition with 6-mil polyethylene sheeting. Edges of the partition at floors, walls, and ceilings shall be taped air tight.

2.12.2 Separation of work areas adjacent to occupied areas shall require a barrier as described above.

2.12.3 Visual separation shall be accomplished at all "see-through" locations using opaque polyethylene. This separation shall not be incorporated within the other seals involved on this project. Provide viewing windows as specified by DSHS.

2.13 MAINTENANCE OF DECONTAMINATION ENCLOSURES:

2.13.1 At the beginning of each work shift and throughout removal, all seals and curtained doorways shall be inspected, and if not found in proper condition, repaired immediately.

2.13.2 Respiratory equipment shall be cleaned, repaired, and sanitized after each use.

2.13.3 Soap and shampoo shall be in the showers at all times.

2.13.4 Fresh towels shall be available at all times.

2.13.5 All areas shall be kept clean and in order.

2.13.6 Provide a disposal bag for contaminated filters in the shower room.

2.13.7 Provide storage for wet and dry towels.

2.13.8 Ensure that the drainage filtering systems are kept clean an operable at all times.

2.13.9 At the end of each decontamination period, the shower, air locks, and clean room shall be cleaned and dried.

2.13.10 At the end of each work shift: the two air locks and the shower shall be thoroughly disinfected; the filter bag (if applicable) shall be returned to the equipment room for disposal; the equipment room and first air lock shall be thoroughly HEPA vacuumed and wet cleaned.

2.14 WORKER PROTECTION:

2.14.1 All workers and authorized personnel, in order to enter the work area, shall:

2.14.1.1 Remove all clothing unless it is to remain in the equipment room for eventual disposal.

2.14.1.2 Don protective clothing (coveralls, gloves, boots, safety harness, etc.), as deemed necessary by the contractor's supervisor or safety officer.

2.14.1.3 Don the appropriate respiratory protection, following all training procedures and manufacturer's instructions. Hood shall be worn over respirator straps.

2.14.2 All workers and authorized personnel, in order to leave the work area, shall:

2.14.2.1 Remove gross (visible) contamination from themselves and their equipment.

2.14.2.2 Enter the equipment room and, keeping respirator in place, remove all protective clothing, including gloves and boots. Place contaminated clothing in the bag(s) provided. Store gloves and/or boots in their respective areas.

2.14.2.3 Still wearing the respirator, proceed naked to the first air lock. Once inside, ensure all curtained doorways behind are properly closed.

2.14.2.4 Respirator still in place, move into the shower room and rinse off thoroughly. If wearing dual cartridge respirators, make sure the cartridges are completely soaked before removing the respirator and disposing of cartridges in the container provided.

2.14.2.5 Complete showering, thoroughly soaping, and shampooing.

2.14.2.6 Proceed to the clean room, dry off, dress, and return respirator to the storage area.

2.14.2.7 No smoking, eating or drinking shall be allowed inside decontamination enclosures.

2.15 COMMUNICATIONS:

2.15.1 Provide an electronic communications system suitable for inside or outside, and inter-room communications, in order to monitor all activities within the work area and to readily transfer messages from one location to another.

2.16 FIRE EXITS:

2.16.1 Designate and maintain emergency and fire exits from the work area in accordance with local codes and regulations. All exits shall be clearly marked with fluorescent tape or red enamel and shall be clearly visible from any part of the work area.

2.17 SECURITY

2.17.1 Make all necessary provisions for 24-hour building security for areas designated for this project. The abatement contractor shall be responsible for maintaining security of the abatement areas throughout the contract period.

2.18 LOCATION AND ACTIVATION OF NEGATIVE AIR PRESSURE:

2.18.1 Maintain negative pressure system in the work areas during all asbestos abatement work for which abatement techniques are specified, or as required by the owner.

2.18.2 As a guideline, use the EPA document, Guidance for Controlling Friable Asbestos-Containing Materials in Buildings, June 1985.

2.18.3 Provide one spare negative air unit per site at all times. Spare exhaust units shall be of the same size and capacity as the largest operating units.

2.18.4 Suspend electrical cords off of the floor and out of workers' way to protect the cords from damage from traffic, sharp object, and pinching. Do not fasten cords with staples, and do not hang cords from nails or suspend with wire.

2.18.5 Provide sufficient number of negative air units in the work area to provide scrubbing of the air in the work area.

2.18.6 Locate units so that make-up air enters the work area primarily through the decontamination facility and traverses the work area as much as possible. Use section J.3 of the EPA Document, Guidance for Controlling Friable Asbestos-Containing Materials in buildings, Purple Book@, June 1985.

2.18.7 Provide additional make-up air openings as shall be necessary to effectively move air through the work area and to avoid creating too high a pressure differential that would damage or cause blowing of temporary barriers and plastic coverings. Provide inlets by making openings in the plastic sheeting near the ceiling and as far as possible from the exhaust units. Provide self-closing polyethylene flaps over the openings to prevent backflow of air from the contained area to the outside.

2.18.8 Provide minimum number of auxiliary make-up air openings to maintain negative pressure. A negative pressure in excess of 0.02 inches of water differential, as measured by manometric measurements, shall be maintained.

2.18.9 Vent all exhaust units to the outside of the building at locations acceptable to the owner. Provide flexible or rigid duct as necessary to provide exterior venting and proper location of exhaust units. Ducts shall be completely sealed, in good repair, and protected from possible damage within the work area.

2.18.10 After the work area has been prepared, the decontamination set up, and the exhaust units installed, start the units (one at a time if more than one is Provided). Visually check the direction of air movement through the openings in the barriers and verify movement of air in all locations of the work areas by use of ventilation smoke tubes. Adjust the location of exhaust units or provide additional exhaust units for the work area if the test indicates inadequate of improper air movement.

2.18.11 After removal has begun, maintain operation of exhaust units continuously to maintain a constant negative pressure until decontamination of the work area is complete. Do no turn units off at the end of the work shift or when removal operations temporarily stop.

2.18.12 Change filters in exhaust units in accordance with manufacturer=s recommendations and paragraph J.3.22.1 of the EPA document, Guidance for Controlling Friable Asbestos-Containing Materials in Buildings, Purple Book, June 1985 or when there is obvious loss of negative pressure.

2.18.13 When a final inspection and the results of the final air monitoring tests indicate an acceptable level of airborne fibers, remove and dispose of pre-filters and shut off the exhaust units. If the exhaust units are to be used in another work area leave the final filter in place and seal all intake openings

to the unit to prevent contamination due to asbestos fibers collected on the final filter. If the exhaust units are not to be used in other work areas, remove the final filter and dispose of as contaminated waste.

2.18.14 If dismantling operations result in visible dust on surfaces, replace filters, restart exhaust units, re-clean surfaces and perform additional area air monitoring (At abatement contractor=s expense) until the level of airborne fibers is acceptable as specified.

2.18.15 Dispose of all filters as asbestos-contaminated waste material as specified.

2.19 EQUIPMENT REMOVAL PROCEDURES:

2.19.1 Clean external and internal surfaces of all nonfixed equipment and/or objects by thoroughly wet wiping and/or rinsing, before moving such items into the Equipment Decontamination Unit for final cleaning and removal to uncontaminated areas.

2.19.2 Objects and equipment removed shall be stored in areas designated by the Owner.

2.20 PREWORK INSPECTIONS:

2.20.1 All abatement work areas must be prepared by installing polyethylene barriers, negative air pressure, etc. as outlined in this specification. Upon completion of all work area preparation and four hours before work is to begin, notify Consultant that the work area is ready for inspection.

2.20.2 The abatement contractor shall not begin abatement work until the Consultant has inspected the area and any deficiencies have been corrected. Abatement work in accordance with the requirements in the following sections may proceed after the Consultant has approved the work area preparation.

2.21 GROSS REMOVAL OPERATIONS:

2.21.1 Spray asbestos-containing material with amended water, using spray equipment capable of providing a "mist" application to reduce the release of fibers. Saturate the material sufficiently to wet it to the substrate without causing excessive dripping. Remove the saturated asbestos material in small sections from all areas. Material drop shall not exceed fifteen feet (15'). All asbestos-containing material shall be removed thoroughly and totally. No asbestos-containing material is to remain for any reason.

2.21.2 Insulation on pipes and other thermal system insulation to be abated within gross removal areas shall be removed using gross removal methods outlined in this section.

2.21.3 Provide shoring, bracing, and support as required to maintain structural integrity of materials and systems. Provide protection for other portions of project and protection from the elements. Protect existing electrical and electronic systems, cabling, and other components during all phases of abatement.

2.21.4 Install additional polyethylene barriers as needed during and after removal, in order to protect surfaces and maintain negative air pressure. After removal of ceilings, extend wall polyethylene sheeting to deck above. Monitor negative pressure as the work progresses to evaluate the need for additional barriers and/or negative air equipment.

2.21.5 Material shall not be allowed to dry before placing in 6-mil polyethylene bags. Any contaminated material capable of puncturing the polyethylene bags shall be packaged separately in 6-mil polyethylene sheeting sealed with tape and/or glue, or fiberboard drums.

2.21.6 Maintain work areas free of accumulated asbestos-containing materials at all times. Keep waste

materials wet until sealed in polyethylene bags.

2.21.7 Seal polyethylene bags air tight. Ensure that all contaminated materials, including insulation materials exposed by ceiling demolition, are bagged or wrapped to yield a minimum covering of two polyethylene layers, or sealed in fiberboard drums before removal from the work area. Bags may be true 6-mil thickness, or have a tear resistance of M.D. 300 grams, T.D. 2,068 grams, and dart impact of 216 grams.

2.21.8 Ensure that all disposal containers are properly labeled in accordance with regulations.

2.22 VINYL ASBESTOS TILE & MASTIC REMOVAL:

2.22.1 Removal of floor coverings utilizing the RFCI methods must comply with the requirements of published Resilient Floor Covering Institute methodologies, and also requires the approval of the Project Consultant. Otherwise, use the methods outlined in this section.

2.22.2 Pre-clean the work area by first using HEPA-vacuum equipment, then wet cleaning methods until the area is visibly free of dust and debris.

2.22.3 Post warning signs which comply with regulations.

2.22.4 Establish a negative pressure enclosure in the work area utilizing critical barriers at all openings, decontamination unit, polyethylene sheeting on walls and negative air pressure equipment. Install a minimum of one layer of 6-mil polyethylene sheeting to a height of four feet on walls in the work area. The entire wall shall be covered with polyethylene sheeting in areas of ceiling removal.

2.22.5 Soak tiles with amended water for a sufficient time to allow removal intact with breakage kept to a minimum. Take precautions to contain water within the work area and prevent damage to areas outside the work area. Mist the work area and keep tiles wet during removal.

2.22.6 Remove mastic using approved chemical mastic remover. Substrate must be clean with no residue. No rotary equipment or sanding is allowed.

2.22.7 Floor coverings must be assumed to be multiple layered until field investigation proves otherwise. All such layers must be considered ACM or asbestos-contaminated and must therefore be removed.

2.22.8 Dispose of floor tiles as asbestos-containing waste in 6-mil plastic bags.

2.22.9 Dispose of chemical mastic remover as per manufacturer's instructions, Federal, State and local regulations.

2.23 DISPOSAL OF ASBESTOS-CONTAINING WASTE (SOLID AND/OR LIQUID):

2.23.1 As the work progresses, to prevent exceeding available storage capacity on-site, workers from uncontaminated areas in full protective clothing and dual cartridge respirators shall enter the equipment decontamination unit and place the appropriate supply of specified containers within the holding room.
Workers in the holding room shall be passed sealed, double-bagged material. Bags may be true 6-mil thickness, or have a tear resistance of M.D. 300 grams, T.D. 2,068 grams, and dart impact of 216 grams. Dispose of waste materials or store at approved location. Ensure all curtained doorways are closed. Ensure that all containers are labeled and sealed properly before removing for transport and disposal. The color of the disposable clothing worn outside the work area shall be a different color than the disposable clothing worn inside the work area. At no time shall a removal worker pass the curtained doorway between the holding room and the wash room. Drums will not be required if abatement contractor uses sealed bins or enclosed trucks to store and transport bagged waste.

2.23.2 The exterior bag or fiberboard drum shall have warning and generator's labels applied as specified in 40 CFR 61.150(a)(1)(iv)-(v).

2.23.3 Prepare and sign the Waste Shipment Record (WSR) for each load of asbestos-containing waste transported off site. Ensure that the WSR is completed by the transporter(s) and waste disposal site operator.

2.23.4 Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of waste in compliance with 40 CFR 61, Subpart M and during the transport of asbestos-containing waste in compliance with 49 CFR 171 and 172.

2.23.5 Vehicles used for transporting asbestos-containing materials to disposal sites shall have a completely enclosed, lockable storage compartment if drum requirement is to be deleted. Storage compartments shall be plasticized and sealed with a minimum of one (1) layer of 6-mil polyethylene on the sides and top and two (2) layers of 6-mil polyethylene on the floor. The compartments shall be thoroughly wet cleaned and/or HEPA vacuumed following the disposal of each load of material at the dump site. At the conclusion of the project (or before transport vehicles are used for other purposes), the polyethylene shall be properly removed and disposed of as contaminated waste. After this is accomplished, compartments shall once again be wet cleaned and/or HEPA vacuumed in order to eliminate all debris prior to being returned to the rental company. All plastic sheeting, tape, cleaning material, including mops and sponges, clothing, filters, and all other contaminated disposable materials shall be packaged, labeled, and disposed of as asbestos-containing waste.

2.23.6 Dispose of materials at an authorized disposal site in accordance with the requirements of federal, state and local disposal authorities.

2.23.7 Workers unloading waste material at the disposal site shall be dressed in full-body protective clothing and dual cartridge respirators.

SECTION 3 - CLEANUP PROCEDURES AND CLEARANCE STANDARDS

3.1 GROSS CLEANUP:

3.1.1 Remove all visible accumulations of asbestos-containing materials and debris by HEPA vacuums, sponging, etc. Wet clean all surfaces within the work area.

3.1.2 The entire work area shall be totally, visibly clean. The abatement contractor shall notify the Consultant of the time the work area will be ready for visual inspection, at least twelve hours in advance of the inspection. This inspection shall be certified by the abatement contractor and will be verified by the Consultant using the "Certification of Visual Inspection".

3.2 ENCAPSULATION OF WORK AREAS:

3.2.1 The work area shall have passed visual inspection prior to post-removal encapsulation. Negative air must continue to run.

3.2.2 An approved encapsulant shall be applied, using airless spraying equipment, to all areas of the project where asbestos-containing materials have been removed, except where such application will inhibit adhesion of new finishes.

3.2.3 ENCAPSULANTS:

3.2.3.1 The encapsulant shall be compatible with the replacement material as per manufacturer advice.

3.2.3.2 If any encapsulant is incompatible with the substrate, the abatement contractor shall be fully responsible for providing an alternate encapsulant that is compatible, at no additional cost to the Owner.

3.3 FINAL CLEANUP:

3.3.1 After encapsulant has dried, carefully remove remaining wall and floor plastic, folding inward and sizing for proper disposal. Leave vent, window and door seals in place.

3.3.2 Using wet methods and HEPA vacuuming, clean the entire work area.

3.3.3 The entire work area shall be totally, visibly clean.

3.3.4 Contractor shall inform the Consultant that the area is ready for clearance testing.

3.4 FINAL CLEARANCE:

3.4.1 Clearance air monitoring samples shall be collected. If air sampling results for Final Clearance are less than or equal to 0.01 f/cc, the vent, door and other seals shall be removed and the areas behind them wet wiped and HEPA vacuumed.

3.4.2 Contractor shall remove decontamination unit, negative air equipment and any other materials associated with the abatement project.

3.4.3 After removal of all equipment and containment materials, the work area shall be inspected by the Contractor and the Owner's representative before being cleared for reoccupancy.

3.5 TESTING/AIR MONITORING:

3.5.1 Throughout the preparation, removal, cleaning and final clearance operations, air monitoring shall be conducted by the Consultant retained by the Owner to monitor Contractor's compliance with these specifications, and any applicable state and local regulations.

3.5.2 The abatement contractor shall provide, at his own expense, monitoring of his employees as required by 29 CFR 1926.1101(f).

3.5.3 **BASELINE MONITORING:** The Consultant will conduct area monitoring and establish the baseline ambient fiber concentrations prior to the precleaning operations for each removal site. Three 1250-liter samples minimum per site. PCM method will be utilized.

3.5.4 **MONITORING DURING ASBESTOS OPERATIONS:** The Consultant will conduct area monitoring inside the asbestos control area during the work shift. The consultant will conduct area monitoring outside the entrance to the asbestos control area and near the discharge of the local exhaust system. PCM method will be utilized in accordance with NIOSH 7400.

Areas to be Sampled	Number of Samples for each 8-hour shift - Typical	Sample Volume (in Liters) - Typical
Inside Work Area	2	480L
Outside work area but inside building (barriers, baselines)	1	1250L
Outside building near	1	1250L

local exhaust		
Reference exposure level	n/a	1250L
Quality Control	2	480L

3.5.5 **CLEARANCE MONITORING:** The Consultant will conduct a one phase aggressive air monitoring to establish the fiber concentration after completion of the visual inspection. Final air monitoring results shall be less than or equal to 0.01 f/cc by PCM analysis, and for quantities of 160 S.F. or 260 L.F. or more in schools, less than 70 Structures/square millimeters by TEM analysis.

3.5.6 **RE-TESTING:** If the clearance level is not achieved by the results of the first round of testing, the abatement contractor shall reimburse the Owner for retesting the area until clearance is achieved. The cost for testing and clearance samples will be assessed against the abatement contractor's payments due on a Time and Materials basis.

3.5.7 **MONITORING RESULTS:** PCM analysis will be completed, and results reviewed by the Owner or the Consultant within 24 hours, within 12 hours for final compliance monitoring. The Consultant shall notify the abatement contractor and the Owner immediately if any fiber concentrations exceed acceptable limits. Analytical results are considered the Owner's property and use of these results for any purposes other than the final clearance will require the Owner's written approval.

3.5.8 Air monitoring for each glove bag and repair operation will be by personal sample collected on the worker to check for exposure level with reference to the baseline levels.

3.5.9 **CERTIFICATION OF VISUAL INSPECTION:**
The following Certification of Visual Inspection is a sample of the Form that shall be completed by the abatement contractor following the completion of the removal, cleanup and his visual inspection of the work area. The Consultant will provide a written list or a verbal explanation of deficient items if the certificate is rejected.