ASBESTOS ABATEMENT

CITY OF SAN ANGELO
CITY AUDITORIUM WINDOW ABATEMENT

72 WEST COLLEGE AVENUE
SAN ANGELO, TEXAS

March 2017

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1. GENERAL INFORMATION

1.1. Proposal Requirement

1.1.1. Site Investigation

1.1.1.1 By Submitting a Proposal, the contractor acknowledges that he has investigated and satisfied himself as to (A) the conditions affecting the work, including but not limited to physical conditions of the site which may bear upon site access, handling and storage of tools and material, access to water, electric and other utilities or otherwise affect performance of required activities:(B) The character and quantity of all surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including exploratory work done by the Building Owner or a designated consultant, as well as information presented in drawing and specifications included with this contract. Any failure by the Contractor to acquaint himself with available information will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Building Owner is not responsible for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Building Owner: (C) Has completely read these specifications and agrees to all parts of it. Agrees that upon entering either a written or verbal agreement and does start work on the project as outlined in these specifications that the contractor agrees to all terms and stipulations as outlined in these specifications.

1.1.1.2 No Proposals will be accepted from any Contractor who has not inspected the job site either in person or through a qualified designated representative. The walk through is mandatory.

1.1.1.3 Failure to meet any of the conditions of these specifications will result in the forfeit of the Proposal Security.

1.1.1.4 Hold harmless and indemnity agreement. By entering into either a verbal of written agreement the contractor agrees to hold harmless and to indemnity the Consultant and owner from any legal action resulting from any action caused by either the contractor or any employee or sub-contractor. This includes but is not limited to any legal action resulting from an OSHA violation, TDSHS rules violation, or any other violation or injury to any employee other than employees of the Consultant.

1.1.2. Discrepancies

1.1.2.1 Should a Person submitting a Proposal find discrepancies in the plans and/or specifications or should he be in doubt as to the meaning or intent of any part thereof, he must, prior to commencement of work, request clarification from the Consultant or Building Owner. Discrepancies with regard to conflicts between the Contract Documents and applicable Federal, State or Local regulations or requirements shall be included therein. Failure to request such clarification is a waiver to any claim by the Person submitting a Proposal for expense made necessary by reason of later interpretation of the Contract Documents by the Building Owner.

1.1.2.2 Copy of the plans will be at the back of these specifications, when available.

1.1.2.3 Oral explanations or instructions will not be binding, only written addenda are binding.

1.2. Licenses and Qualifications

1.2.1 Contractor must be licensed as required by the Texas Department of State Health Services for the purpose of removal, encapsulation, enclosure, demolition and maintenance of structures or components covered by or composed of asbestos-containing materials. In accordance with Texas Department of State Health Services regulations (295.31(e) each person on the job site must have the identification card issued by the TDSHS, proof of required training, current physical, and current respirator fit-test prior to work.

1.2.2 Contractor shall demonstrate prior experience on asbestos abatement projects of similar nature and scope through the submission of letters of reference from the Building Owner's including the name, address and telephone number of contact person (someone specifically familiar with the Contractor's work) for at least three (5) previous users of service. Include descriptions of projects, locations, and records of all air monitoring data that were generated during the project.

1.2.3 In addition, Contractor shall furnish a copy of work procedure (e.g. containment, decon-unit, respirator, emergency plan, etc.).
1.2.4 Contractor shall submit a notarized statement, signed by an officer of the company, containing the following information.
1.2.5 A record of any citations issued by Federal, State or Local regulatory agencies relating to asbestos abatement activity. Include projects, dates and resolutions.
1.2.6 A list of penalties incurred through non-compliance with asbestos abatement project specifications including liquidated damages, over-runs in scheduled time limitations and resolutions.
1.2.7 Situations in which an asbestos related contract has terminated including projects, dates and reasons for termination.
1.2.8 A listing of any asbestos-related legal proceedings/claims in which the Contractor (or employees scheduled to participate in this project) has participated or is currently involved. Include descriptions of role, issue and resolution to date.
1.2.9 A certified statement listing all owners of said company and their ownership in any other asbestos related companies or other professional entity.
1.2.10 All personnel working on this project shall be able to meet all requirements of the Federal Security. No person with a felony record conviction will be allowed to work on this project.
1.2.11 The primary contactor shall be the licensed asbestos abatement contractor and shall be one submitting the bid.

1.3. Definitions

1.3.1 Abatement - Procedures to control fiber release from asbestos-containing materials. Includes removal, encapsulation, enclosure, repair, demolition and renovation activities.
1.3.2 ACGIN - American Conference of Governmental Industrial Hygienists, 6500 Glenway Ave. Building D-5, Cincinnati, Ohio 45211.
1.3.3 Adequately wet – Sufficiently mixed or penetrated with liquid clean through with no dry material to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.
1.3.4 AHERA – Asbestos Hazard Emergency Response Act of 1986, Public Law 99-519. The act amends the Federal Toxic Substances Control Act, 15 United States Codes, §2641, et seq., by requiring an inspection of all school buildings (Grades K-12), all school administrations to develop plans for controlling asbestos in or removing asbestos from school buildings, and providing penalties for non-compliance.
1.3.5 AIHA - American Industrial Hygiene Association, 4676 Columbia Parkway (R-8) Cincinnati, Ohio 45226.
1.3.6 Airlock - A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways separated by distance of at least 3 feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.
1.3.7 Air monitoring - The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure normally utilized for asbestos follows the NIOSH Standard Analytical Method for Asbestos in Air, Method 7400. For clearance air monitoring, electron microscopy methods may be utilized for lower detectability and specific fiber identification.
1.3.8 Air Sampling Professional - The professional contracted or employed by the Building Owner to supervise and/or conduct air monitoring. This individual may also function as the Asbestos Project Manager, if qualified. Supervision of air sampling and evaluation of results should be performed by an individual who has completed an EPA approved NIOSH 582 course and has specialized experience in air sampling for asbestos. Other acceptable Air Sampling Professionals include Environmental Engineers, Architects, Chemists, and Environmental Scientists or others with equivalent experience in asbestos air monitoring and asbestos abatement. This individual shall not be affiliated in any way other than through this contract with the Contractor performing the abatement work.

1.3.9 Amended Water - Water to which a surfactant has been added.
1.3.10 ANSI - American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.
1.3.11 Asbestos - the asbestiform varieties of serpentine (chrysotile) rie beckite (crocidolite), cummingtonite-grunerite (amosite), anthrophyllite, and actinolite, and tremolite.
1.3.12 Asbestos abatement – The removal, the encapsulation or the enclosure of asbestos for the purpose of, that has the effect of, reducing or eliminating airborne concentrations of asbestos fibers or amounts of ACM
1.3.13 Asbestos abatement contractor – A person who undertakes to perform asbestos removal, enclosure, or encapsulation for others under contract or other agreement, or who proposals to undertake asbestos activities.
1.3.14 Asbestos abatement supervisor – An individual who is in the direct and responsible charge of the personnel, practices, and procedures of an asbestos abatement operation or project.
1.3.15 Asbestos consulting activities – consulting activities in public buildings include: the designing of asbestos abatement projects; the inspection for asbestos-containing materials (ACM); the evaluation and selection of appropriate asbestos abatement methods and project layout; the preparation of plans, specifications and contract documents; the review of environmental controls, abatement procedures for personal protection employed during the project; the design of area and clearance air monitoring of the project; any inspection, management planning, air monitoring, or project management performed by of for the consultant or consulting agency; consultation regarding compliance with various regulations and standards; recommending abatement options; and representing the consultant agency or consultant in obtaining consulting work.
1.3.16 Asbestos-containing building material (ACBM) – Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a public or commercial building.
1.3.17 Asbestos-containing Material (ACM) – Materials or products that contain more than 1.0% of any kind or combination of asbestos, as determined by the Environmental Protection Agency (EPA) recommended methods as listed in EPA/600/R-93/116, July 1993 “Method for the Determination of Asbestos in Bulk Building Materials”. This means any one material component of a structure or any layer of a material sample. Composite sample analysis is not allowed.
1.3.18 Asbestos-containing Waste Material - Includes mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR Part 61, Subpart M. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with asbestos. As applied to demolition and renovation operations, this term also includes regulated asbestos-containing materials, and materials contaminated with asbestos including disposable equipment and clothing.
1.3.19 Asbestos exposure – Airborne asbestos fiber concentrations resulting from disturbance or deterioration of asbestos or asbestos containing material (ACM).
1.3.20 Asbestos project design – Asbestos abatement project design includes the inspection of public buildings for asbestos containing material (ACM), the evaluation and selection of appropriate asbestos abatement methods, project layout, the preparation of plans, specifications and contract documents, and the review of environmental controls, abatement procedures and personal protection equipment employed during the project.
1.3.21 Asbestos Project Manager - That person designated by the Consultant to manage all asbestos work.
1.3.22 Asbestos-related activity – The disturbance (whether intention or unintentional), removal, encapsulation, or enclosure of asbestos, including preparations or final clearance, the performance of asbestos surveys, the development of management plans and response actions, asbestos project design, the collection or analysis of asbestos samples, monitoring for airborne asbestos, proposing for a contract for any of these activities, or any other activity required to be licensed under the Texas Asbestos Health Protection Act.
1.3.23 Asbestos removal – Any action that dislodges, strips, or otherwise takes away asbestos containing material (ACM).
1.3.24 Asbestos reporting unit (ARU) – An asbestos reporting unit is 160 square feet or 260 linear feet or 35 cubic feet of ACBM in public buildings or RACM in facilities, as defined under NESHAP.

1.3.25 Asbestos survey – An inspection of a building or facility to determine the location, quantity, and condition of asbestos-containing material (ACM) therein by taking samples for analysis or by visual inspection.
1.3.26 ASTM - American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.
1.3.27 Authorized Visitor - The Building Owner (and any designated representatives) and any representative of a regulatory or other agency having jurisdiction over the project.
1.3.28 Building Owner - The Owner or his authorized representative.
1.3.29 Certified Industrial Hygienist - (CIH) An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene. (See Section 1.3.1.2 for address).
1.3.30 Clean Room - An uncontaminated area or room which is a part of the worker decontamination enclosure system with provisions for storage of worker's street clothes and clean protective equipment.
1.3.31 Commercial asbestos – Any material containing asbestos that is extracted from ore and has value because of its asbestos content (NESHAP definition, 1990).
1.3.32 Commercial Building – The interior of any industrial or federal government owned building. Interior space includes exterior hallways connecting buildings, porticos, and mechanical systems used to condition interior space.
1.3.33 Competent person – The individual designated as the competent person as required by the United States Occupational and Health Administration regulations in 29 CFR, §1926.58.
1.3.34 Containment – A portion of the regulated area that has been sealed and placed under negative air pressure with high efficiency particulate air-filter (HEPA) filtered negative air machines.
1.3.35 Contractor – A person under contract to perform a service with wage or income reporting and tax responsibilities.
1.3.36 Curtained Doorway - A device to allow ingress and egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Other effective designs are permissible if approved in advance by the Consultant.
1.3.37 Decontamination Enclosure System - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers and equipment. The system shall be in accordance with TAHPR 295.60 (e).
1.3.38 Demolition - The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.
1.3.39 Designated person – The individual designated under Asbestos Hazard Emergency Response Act (AHERA) to oversee all asbestos activities to include compliance with all laws, regulations, and rules.
1.3.40 Employee – A person who is paid a salary, wage, or remuneration by an entity for services performed and has a relationship with the entity that would result in the entity being liable for that person’s acts or judgements.
1.3.41 Encapsulant - A liquid material which can be applied to asbestos-containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (Bridging encapsulant) or by penetrating into the material and binding it's components together (Penetrating encapsulant).
1.3.42 Encapsulation - The application of an encapsulant to asbestos-containing materials to control the release of asbestos fibers into the air.
1.3.43 Enclosure - The construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.
1.3.44 EPA - U.S. Environmental Protection Agency, 401 M. Street S.W., Washington, D. C. 20460.
1.3.45 Equipment Decontamination Enclosure System - That portion of a decontamination enclosure system designed for controlled transfer of material and equipment into or out of the work area, typically consisting of a washroom and holding area.
1.3.46 Equipment Room - A contaminated area or room which is part of the worker decontamination enclosure system with provisions for storage of contaminated clothing and equipment.

1.3.47 Facility - Any institutional, commercial or industrial structure, installation or building. Facility component - Any pipe, duct, boiler, tank, reactor turbine or furnace at or in a facility or any structural member of a facility.

1.3.48 Facility owner – The owner of record of any facility or public building or any person who exercises control over a facility or public building to the extent that said person contracts for or permits renovation to or demolition of said facility or public building.

1.3.49 Federal government owned building – Any building, which is not a school building as defined in 40 CFR 763.83, owned by the United States Federal Government or any other type of US military building.

1.3.50 Fixed object - A piece of equipment or furniture in the work area which cannot be removed from the work area.

1.3.51 Friable Material - Materials that when dry can be crumbled, pulverized, or reduced to powder by hand pressure, and includes previously nonfriable material after such previously nonfriable material becomes damaged to the extent that, when dry, it may be crumbled, pulverized, or reduced to powder by hand pressure.

1.3.52 Glovebag Technique - A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short piping run, valves, joints, elbows, and other non-planar surfaces in a non-contained (plasticized) work area. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of 6 mil transparent polyethylene or polyvinylchoride plastic) two inward projecting long sleeves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. OSHA's definition of a glove bag is that it may be no larger than 60"x60", may be used only one time, may not be slid along the pipe and may not be joined to form a continuos line of glove bags. All workers who are permitted to use the glovebag technique must be highly trained, experienced and skilled in this method. This definition will be strictly applied to on all projects.

1.3.53 HVAC - Heating, ventilation and air conditioning system.

1.3.54 HEPA Filter - A high efficiency particulate air filter capable of removing particles 0.3 microns in diameter with 99.97% efficiency.

1.3.55 HEPA Vacuum - A vacuum system equipped with HEPA filtration. Holding Area - A chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area. The holding area comprises an airlock. Independent third-party air monitor – A person retained to collect area air samples to be analyzed by and for the owner of the building or facility being abated. The person must not be employed by the abatement contractor to analyze any area samples collected during the abatement projects being monitored or the clearance samples.

1.3.56 Industrial building – Any building where industrial or manufacturing operations or processes are conducted to which access is limited principally to employees and contractors of the facility operator or to invited guests under controlled conditions.

1.3.57 Inspection – Any activity undertaken in a school building, public building, or commercial building to determine the presence or location, or to access the condition of, friable or non-friable asbestos-containing building material (ACBM) or suspected ACBM, whether by visual or physical examination, or by collecting samples of such material. This term includes reinspections of friable and non-friable known or assumed ACBM which has been previously identified. The term does not include the following:

A. periodic surveillance of the type described in 40 CFR §763.92(b) solely for the purpose of
B. recording or reporting a change in the condition of known or assumed ACBM;
C. inspections performed by employees or agents of the federal, state, or local government solely for the purpose of determining compliance with applicable statutes or regulations; or
D. Visual inspections of the type described in 40 CFR §763.90(I) solely for the purpose of determining completion of response actions.

1.3.58 Layer – Any constituent of an asbestos bulk sample that exhibits different physical properties such as color or composition and can be readily separated from the rest of the sample with an instrument such as a modeler’s knife.

1.3.59 License – Any license or regulation issued under this chapter.

1.3.60 Licensee – A person who meets all qualifications and has been issued a license or registration by the Texas Department of State Health Services in accordance with these sections.
1.3.61 Major Fiber Release Episode – Any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of more than 3 square or linear feet of friable ACBM.
1.3.62 Management plan – A written plan describing appropriate actions for surveillance and management of asbestos containing material (ACM).
1.3.63 Minor Fiber Release Episode – Any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of 3 square or linear feet or less of friable ACBM.
1.3.64 Movable Object - A piece of equipment or furniture in the work area which can be removed from the work area.
1.3.65 Negative Pressure Ventilation System - A portable exhaust system equipped with HEPA filtration and capable of maintaining a constant low velocity air flow into contaminated areas from adjacent uncontaminated areas.
1.3.66 NESHAPS - The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).
1.3.67 NIOSH - The National Institute for Occupational Safety and Health CDC-NIOSH, Building J N.E., Room 3007, Atlanta, Ga. 30333.
1.3.68 Nonfriable material – Material which, when dry, may not be crumbled, pulverized, or reduce to powder by hand pressure.
1.3.69 NVLAP – The National Voluntary Laboratory Accreditation Program.
1.3.70 Operations and maintenance (O&M) – Operations and maintenance activities are repairs, maintenance, renovation, installation, replacement, or cleanup of building materials or equipment.
1.3.71 Operations and maintenance (O&M) manual – A record or O&M activities in a public building. The public building owner shall record each individual O&M activity in the manual, including the date of activity, the persons performing the activity, complete description of the activity, including methods used to prevent the emission of asbestos fibers, and the amount of asbestos removed. An updated total of the amount of asbestos abated shall be kept as a comparison to the amount estimated in the annual O&M notification. The manual will be made available to the department upon request.
1.3.72 OSHA - The Occupational Safety and Health Administration, 200 Constitution Ave. Washington, D.C. 20210.7
1.3.73 Outside Air - The air outside buildings and structures.
1.3.74 PAT – Proficiency Analytical Testing.
1.3.75 PCM – Phase-contract microscopy, a method of analysis for overall airborne fiber counts using an optical microscope.
1.3.76 PEL – Permissible Exposure Limit as defined by OSHA regulations (29 CFR §1926.1101).
1.3.77 PLM – Polarized-light microscopy, a method of analysis for detection of the presence and type of asbestos.
1.3.78 Plasticize - To cover floors and walls with plastic sheeting as herein specified.
1.3.79 Prior Experience - Experience required of the contractor on asbestos projects of similar nature and scope to insure capability of performing the asbestos abatement in a satisfactory manner. Similarities shall be in areas related to material composition, project size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.
1.3.80 Public building – The interior space of a building used or to be used for the purposes that provide for public access or occupancy, including prisons and similar buildings. Interior space includes exterior hallways connecting buildings, porticos, and mechanical systems used to condition interior space. The term includes any building during a period of vacancy, including the period during preparations prior to actual demolition. The term does not include:
   A. an industrial facility to which access is limited principally to employees of the facility because of processes or functions that are hazardous to human safety or health;
   B. a federal building or installation (civilian or military);
   C. a private residence;
   D. an apartment building with no more than four dwelling units; or

E. a manufacturing facility or building that is limited to workers and invited guests under controlled conditions
F. a building, facility, or any portion of which has been determined to be structurally unsound and in danger of imminent collapse by a professional engineer, registered architect, or a city, county, or state government official.

1.3.81 Regulated area – The demarcated area in which asbestos abatement activity takes place, and in which the possibility of exceeding the permissible exposure limits (PEL) for the concentrations of airborne asbestos exists.

1.3.82 Renovation – Additions to or alterations of the building for purposed of restoration by removal, repairing, and rebuilding.

1.3.83 Removal - The stripping of any asbestos-containing materials from surfaces or components of a facility.

1.3.84 Renovation – Additions to or alterations of the building for purposed of restoration by removal, repairing, and rebuilding.

1.3.85 Response action – A method, including removal, encapsulation, enclosure, repair, and operation and maintenance that protects human health and the environment from friable ACBM.

1.3.86 Responsible person – The individual that is designated by the licensed Asbestos Abatement Contractor, Asbestos Operations and Maintenance Contractor, Asbestos laboratory, Asbestos Consultant Agency, or Asbestos Management Planner Agency, as responsible for their operations and compliance with these rules.

1.3.87 Shower room - A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination.

1.3.88 Small-scale, short-duration activities (SSSD) – are tasks such as, but not limited to removal of asbestos-containing insulation on pipes; removal of small quantities of asbestos-containing insulation on beams or above ceilings; replacement of an asbestos-containing gasket on a valve; installation or removal of a small section of drywall; installation of electrical conduits through or proximate to asbestos-containing materials. These tasks, when performed in a commercial building, do not require accreditation. SSSD can be further defined by the following considerations.

A. Removal of small quantities of ACM only if required in the performance of another maintenance activity not intended as asbestos abatement
B. Removal of asbestos-containing thermal system insulation not to exceed amounts greater than those which can be contained in a single glove bag.
C. Minor repairs to damaged thermal system insulation which do not require removal
D. Repairs to a piece of asbestos-containing wallboard.
E. Repairs, involving encapsulation, enclosure, or removal, to small amounts of friable ACBM only if required in the performance of emergency or routine maintenance activity and not intended solely as asbestos abatement. Such work may not exceed amounts greater than those which can be contained in a single prefabricated mini-enclosure. Such an enclosure shall conform spatially and geometrically to the localized work areas, in order to perform its intended containment function.

1.3.89 Staging area - Either the holding area or some area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

1.3.90 Start date – The dates defined as:

A. asbestos abatement start date – the date on which the disturbance of asbestos begins;
B. demolition/renovation start date – the date on which the demolition or renovation process begins

1.3.91 Stop date – the dates defined as:

A. Asbestos abatement stop date (completion date) – The date upon which air monitoring clearance of asbestos abatement has been achieved. Where air clearance is not required, such as roofing removal, the date upon which the removal of asbestos-containing material is complete.
B. Demolition/renovation stop date – the date on which the demolition or renovation is complete.

1.3.92 Strip - To take off friable asbestos materials from any part of facility.

1.3.93 Structural Member - Any load-supporting member of a facility, such as beams and load-supporting walls or any non-load-supporting walls or any non-load-supporting member, such as ceilings and non-load-supporting walls.
1.3.94 Surfactant - A chemical wetting agent added to water to improve penetration.
1.3.95 Survey – An activity undertaken in a school building, or a public and commercial building to determine the presence or location, or to access the condition of, friable or non-friable asbestos-containing building material (ACBM) or suspected ACBM, whether by visual or physical examination, or by collecting samples of such material. This term includes reinspections of friable and non-friable known or assumed ACBM which has been previously identified. The term does not include the following:
A. periodic surveillance of the type described in 40 CFR §763.92(b) solely for the purpose of recording or reporting a change in the condition of known or assumed ACBM;
B. inspections performed by employees or agents of federal, state, or local government solely for the purpose of determining compliance with applicable statutes or regulations; or
C. Visual inspections of the type described in 40 CFR §763.90(I) solely for the purpose of determining completion of response action.
1.3.96 TEM – Transmission Electron Microscopy.
1.3.97 Transportation of asbestos containing material (ACM) – Moving asbestos material from one site to another.
1.3.98 Visible Emissions - Any emissions containing particulate material that are visually detectable without the aid of instruments. This does not include condensed un-combined water vapor.
1.3.99 Waste Transfer Airlock - A decontamination system utilized for transferring containerized waste from inside to outside of the work area.
1.3.100 Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops or other cleaning utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.
1.3.101 Work Area - Designated rooms, spaces or areas of the project in which asbestos abatement actions are to be under taken or which may become contaminated as a result of such abatement actions. A contained work area is a work area which has been sealed, plasticized, and equipped with a decontamination enclosure system. A non-contained work area is an isolated or controlled-access work area which has not been plasticized nor equipped with a decontamination enclosure system.
1.3.102 Worker Decontamination Enclosure - A decontamination system consisting of a clean room, a shower room and an equipment room separated from each other and from the work area airlocks and contained doorways. This system is used for all workers entering and exiting the work area and for equipment.
1.3.103 Working days – Monday through Friday including holidays which fall on those days.

1.4. Scope of Work

1.4.1. This specification covers the abatement of asbestos hazards from building structures and components listed in 1.4.2. It is the intent of the Contract Documents to show all of the work necessary to complete the project.

1.4.1.1. Project schedule is as follows:

Project Walk-through:	TBA by others
Proposal Opening:	TBA by others
Pre Construction Meeting:	First Day of Project
Notification Date:	**Notification shall be submitted 10 working days prior to start date.**
Bond and Insurance Submitted:	To Consultant before start of project.
Project Start Date:	Asbestos Abatement: TBA
Project Completion Date:	Asbestos Abatement: TBA

1.4.2 Asbestos Abatement is to be performed for the City of San Angelo at the City Auditorium located at 72 West College Avenue in San Angelo, Texas.
1.4.3 A floor plan of the facility is located at the back of these specifications in Appendix A.
1.4.4 All submittal forms are located at the back of these specifications in Appendix B.

1.4.5 The work will consist of the removal of the following asbestos-containing materials:

Base Proposal – Part One, Asbestos Abatement

- Remove all caulking and window panes on approximately 28 windows. This removal will require scaffolding to be set-up for eight windows. Some work can be done from the balcony.
  - There are floor plans in the back of the specifications showing the windows to be removed under the Base Proposal
  - A lift shall be used to access each window. A containment shall be erected around the lift to allow for a containment at each window. The caulking shall be kept wet at all times during removal. All materials shall be bagged before moving to another window and no debris shall be left within the containment on the lift. Upwind and downwind samples, as well as samples within the containment, and OSHA samples shall be collected during removal. A remote decon area shall be established for work on the windows. Samples shall be analyzed from the first window before work begins on the second window to ensure all work practices are successful.
  - After the removal of each pane, a temporary panel is to be installed. This panel can be 1/4 "Masonite.
  - Care must be taken to protect the remaining glass panes. Any glass panes broken shall be the responsibility of the Abatement Contractor.
  - Care must be taken in protecting all adjacent surfaces while this work is taking place. Special care shall be taken to protect the interior historic finishes surrounding these windows and all surfaces below the windows.
  - Work will begin on the east side of the auditorium to allow access to at least one exterior door at all times.
  - A unit price shall be provided per window to be removed beyond the windows addressed in the specifications.

Base Proposal – Part Two, Lead Paint Stabilization

- The windows are currently coated with lead-based paint. Both the interior and exterior of all windows are to be stabilized and sanded where the paint is deteriorating to prepare them for re-painting. The remaining painted surfaces shall be stabilized and made paint ready.
- The contractor will be required to submit pre and post blood samples for all workers involved in lead paint stabilization.
- The lift used during the abatement shall be used for lead paint stabilization.
- TCLP sampling shall be performed by King Consultants of the waste from the paint scraping, prior to disposal.

Please see the Lead-Based Paint removal Specifications section of the specification book.

All painting work will be done under separate contract by Owner

Alternate Number One

- This alternate shall be the price to remove an additional 20 window panes while performing base bid work, as marked on the floor plans.

Note: <u>No work may begin until notice to proceed is given by the building owner or his representative</u>. <u>No abatement procedures may begin unless the consultant's project manager is on site and is notified that work is about to begin.</u>

FIRE RETARDANT POLY SHALL BE USED.

All work must be done following all Federal, State and Local Regulations. Where a conflict exists between these specifications and/or regulations, the more stringent shall apply. The contractor and all workers are to be licensed by the State of Texas.

All quantities are approximate and must be verified by the contractor during the walk through.

The abatement contractor is responsible for all sampling as required by OSHA, and shall be made available to the project manager daily. The abatement contractor must give the project manager a letter stating exactly how this OSHA sampling is to be accomplished prior to the start of work. Negative exposure data will not be acceptable in lieu of personal OSHA sampling.

1.4.5.1 Pre-abatement air sampling of the designated work area and the adjoining area is to be accomplished by the project manager/air monitor technician. The project manager/air monitoring technician has the express permission to conduct the final visual inspection and to take the final clearance air samples.

1.4.5.1.1 The air monitoring scheme for this project shall be a minimum of the following:

- Base Line Samples – There shall be a minimum of 5 samples taken of each work area prior to the disturbance of ACM. There is to be a minimum 1250 liters taken at not over ten (10) liters per sample, these samples are to be archived for 60 days. When there are multiple work areas the base lines are to be taken just prior to starting in that work area.
- Prep Work Samples – There is to be a minimum of one (1) sample for each adjacent area and three (3) samples in the work area taken each day. These are to be taken at 4 to 5 liters collecting approximately 1250 liters per sample each. When feasible there should be a set of samples taken during the morning shift and the evening shift.
- Ambient Samples – The following areas are the minimum requirements for ambient air samples, or work samples. Adjacent area, one (1) per area, negative pressure machines, at least one (1) in the negative air exhaust (if there is more than one machine, rotate the samples each time a new cassette or sample is started at each machine), a minimum number of samples to assure that all areas of the containment are being sampled during a work shift, care must be taken to assure that there are no dead spaces that are not sampled, one (1) at the bag-out area, one (1) at the decon exit. These samples are to be analyzed at the end of each shift. It is the PM/AMT's discretion to use a more appropriate sampling strategy.
- Aggressive Clearance Samples – If the samples are to be analyzed by PCM there is to be a minimum of five (5) samples taken inside containment; one (1) field blank and one (1) box blank taken at approximately 1250 liters per sample. If the samples are to be analyzed by TEM there are to be 5 samples taken inside, 5 samples taken outside, 1 box blank and 2 field blanks.
- The Project manager/Air monitor technician must remain on site while the final clearance samples are running unless access to the regulated area can be controlled.
- The project manager assigned to this project has the express permission to conduct visual clearance and to take the above specified clearance sampling.

All daily samples are to be taken using 25 mm cassettes with 0.8 HCE filter. These samples are to be analyzed according to the NIOSH 7400 protocol, counting rules using a Phase Contract Microscope.
Each day there are to be a minimum of two (2) field blanks or 10% of the total samples taken analyzed.
Samples are to be analyzed at the end of each shift and results posted. Should the results of any outside samples be above the clearance level of 0.010 f/cc, work is to be suspended, and the consultant notified. All corrective action is to be documented. Should it be discovered that there has been a breech, the area where the breech occurred is to be completely cleaned using a HEPA vacuum and/or wet wipe.
These are the minimum air monitoring requirements. Should, during the course of the project, the PM/AMT see the need for additional sampling they are to proceed and notify the Consultant for approval.

1.4.5.1.2 The contractor is responsible for all scaffolding used on the project and for the training required by OSHA of all employees including the PM/AMT on the project. This includes all rolling towers, platform scaffolding and all other ladders or scaffolding used on this project. The consultant accepts no responsibility, nor liability for the erection of any scaffolding, for the load limits of any scaffolding or for other safety issues involving any

scaffolding or ladders used except those responsibilities to the Consultant's employees. All scaffolding is to be designed by a registered engineer and he is to stamp and sign this design and a copy of this is to be given to the Consultant. The Consultant is to be held harmless and is to indemnify from any legal action arising from any accident in connection from any scaffolding, rolling towers or ladders used on this project.

1.4.5.2 No pre-abatement work is to start until the project manager or consultant has approved all submittals required in these specifications. All submittals must be provided to the consultant or the PM/AMT no later than the pre-start meeting.

1.4.6 Pre-Abatement:

1.4.6.1 Representative for the **City of San Angelo** mus**t** be notified as to the work schedule and warning signs as required in 3.1.1.1 of these specifications are to be posted.

1.4.6.2 Contractor is responsible for the securing of the work area as specified in 1.8. The perimeter of the regulated work area must have barricades installed.

1.4.6.3 Pre-clean the work area using HEPA vacuum and/or wet wipes.

1.4.6.4 Remove any furniture, fixtures and equipment from the work area and store as directed by the Owner. After all work is complete all removed items are to be replaced in their original locations.

1.4.6.5 Install critical barriers and seal all electrical outlets, vents, lights, other openings and objects which cannot be disconnected or removed from the work area.

1.4.6.6 Set up containment as required in 3.1.1.

1.4.6.7 Set up worker decontamination enclosure system as required in 3.1.2.

1.4.6.8 Establish and mark emergency exits as required in 3.1.3.5.

1.4.6.9 Install pressure differential ventilation equipment to provide an air change in the work area every 15 minutes. This ventilation system is to remain in operation until final air clearance is received.

1.4.6.10 A strip recorder will be used to measure the negative air pressure within containment and a complete copy of this is to be provided to the Consultant each day. A negative pressure of 0.02 inches H_20 or greater is to be maintained at all times.

1.4.7 Abatement Activities:

1.4.7.1 All HVAC and any other ventilation must be shut down and disconnected and locked-out and tagged-out when possible.

1.4.7.2 Removal of asbestos containing material must be pre-wet with amended water and removed a section at a time.

1.4.7.3 Contaminated material is to be bagged in small sections as it is removed. No build up of debris is to occur on the floor. Bags must be washed and placed in a second bag when bagging out. Bagged material must be removed through the decon unit or through a bag out chamber.

1.4.7.4 Work time shall be 7:00 A.M. to 5:00 P.M. Monday through Friday, unless prior arrangements are made with the Owner and the Consultant. The contractor shall work a minimum of an eight hour work shifts. A shift must not exceed 8 hours unless previous arrangement has been made and approved by the project manager. If the contractor works beyond an 8 hour shift he will be back charged for the PM/AMT time at a rate of time and a half for week days and double time for weekends.

1.4.7.5 Contractor is to furnish the Project Manager with a work schedule showing the start time and stop time each day and projected completion date.

1.4.7.6 The Contractor will be back-charged by the Owner for the Project Manager's time and expenses plus 10% when the Contractor fails to work within these scheduled work hours due to late arrivals or no-shows.

1.4.7.7 The Contractor will be back-charged by the Owner for the Project Manager's time and expenses plus 10% for failure to have on-site his competent person, as required by OSHA and TAHPR, or failure to have adequate personnel or equipment.

1.4.7.8 Charges for the Project Manager will be charged back to the Contractor by the Owner should the project not be completed on the date specified in the contract.
NOTE: It is not the intent of the Owner to penalize the Contractor for unavoidable acts of God, but to confirm the intentions of the Owner's contract with the Contractor. It is the intent to insure the Contractor will maintain an adequate work force, equipment and materials to complete this project in a timely and adequate manner as called for by the Contract and these

specifications. Failure to meet the dates may be cause for implementation of the Liquidated Damage Clause of the contract.
Final inspection according to specifications. See Section 3.9

1.4.7.9 Final air samples will be taken by the Project Manager. Samples shall be analyzed by **PCM.** Should this set fail the contractor is to re-clean and a second set of samples taken. Expenses incurred for the collection of this set will be paid for by the contractor.

1.4.7.10 Disposal and transportation as per 3.10 of specification.

1.4.7.11 Complete documentation as per EPA requirements.

1.4.7.12 The required minimum work force for this project is to be a sufficient number of certified asbestos workers to complete this project as scheduled, the number of workers must be approved by the project manager, and there must be sufficient certified supervisors. The supervisor must be present at all times and must go into the containment at least 25% of the time. All workers on this project must have a current state asbestos license when applicable in hand as well as current certification and physical. No pending application for workers or supervisors will be acceptable. All workers must have current certification as required by AHERA, and a current state license. If the project manager feels that there to many workers for the work area he has the authority to remove any number of workers he deems adequate. No work may be conducted unless the Consultants Project Manager is present at the job site.

1.5. Description of Work

1.5.1. The work specified herein shall be the removal and disposal of asbestos-containing materials by competent persons; trained, knowledgeable and qualified in the techniques of abatement, handling and disposal of asbestos containing and asbestos contaminated materials and the subsequent cleaning of contaminated areas, who comply with all applicable Federal, State, and Local regulations and are capable of and willing to perform the work of this Contract.

1.5.2. The Contractor shall supply all labor, materials, services, insurance, permits and equipment necessary to carry out the work in accordance with all applicable Federal, State and Local regulations, and these specifications. The Contractor shall NOT be responsible for the TDSHS notification fee. This fee shall be the responsibility of the Building Owner.

1.5.3. The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and shall save the Consultant and Owner harmless from loss on account hereof, except that the Owner shall be responsible for all such loss when a particular design process on the product of a particular manufacture or manufacturer is specified, but if the Contractor has reason to believe the design, process or product specified is an infringement of a patent the Contractor shall be responsible for such loss unless he promptly gives such information to the Owner.

1.5.4. The Contractor is responsible for the grounds surrounding the buildings as well as the building itself during the removal time. If there is any damage to the property, any of its furnishings, finishes or any other of the owners property. If there is any damage to any of the proceeding the contractor shall pay full replacement cost.

1.5.5. If the Owner permits the Contractor to use any of the Owner's equipment, tools or facilities, such use will be gratuitous and the Contractor shall release the Owner from any responsibility arising from claims for personal injuries, including death, arising out of the use of such equipment, tools, or facilities irrespective of the condition thereof or any negligence on the part of the Owner in permitting their use.

1.6. Applicable Standards and Guidelines

1.6.1.General Requirements

1.6.1.1. All work under this contract shall be done in strict accordance with all applicable Federal, State and Local regulations, standards and codes governing asbestos abatement and other trade work done in conjunction with the abatement.

1.6.1.2. The most current edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists the most stringent requirements shall be utilized.

1.6.1.3. Copies of all standards, regulations, codes. M.S.D. Sheets and other applicable documents, including this specification and those listed in Section 1.6.2 shall be available at the work site in the clean change area of the worker decontamination system.

1.6.2. Specific Requirements

1.6.2.1. Occupational Safety and Health Administration (OSHA)

1.6.2.1.1. Title 29 Code of Federal Regulations, Section 1910, 1001-General Industry Standard for Asbestos.

1.6.2.1.2. 1926.1101, titled, "Occupational Exposure to Asbestos, Tremolite, Anthophyllite, Actinolite", October 11, 1994.

1.6.2.1.3. Title 29 Code of Federal Regulation, Section 1910, 134 General Industry Standard for Respiratory Protection.

1.6.2.1.4. Title 29 Code of Federal Regulations, Section 1926 Construction Industry.

1.6.2.1.5. Title 29 Code of Federal Regulations, Section 1910.2 Access to Employee Exposure and Medical Records.

1.6.2.1.6. Title 29 Code of Federal Regulations, Section 1910.1200 Hazard Communication.

1.6.2.2. Environmental Protection Agency (EPA)

1.6.2.2.1. Title 40 Code of Federal Regulations, Part 61, Subparts A and M (Revised Subpart B)-National Emission Standard for Asbestos.

1.6.2.2.2. Title 40 CFR Part 61, Subpart G, 763.120-763.126 and Appendices A, C, D, and E titled Asbestos Abatement Projects: Worker Protection Rules" February 25, 1987.

1.6.2.2.3. Title 40 CFR Part 763 Subpart E, 763.80-763.99, and Appendices A and B titled, Asbestos Containing Materials in Schools" (AHERA rules), July 1, 1992. Plan" February 3, 1994.

1.6.2.2.4. Title 40 CFR Part 763 Subpart E, Appendix B, titled, Work Practices and Engineering Controls for Small Scale, Short Duration Operations Maintenance and Repair (O&M) Activities Involving ACM", July 1,1992.

1.6.2.2.5. Title 40 CFR Part 763, Subpart E, Appendix D, titled, "Transport and Disposal of Asbestos Waste" July 1, 1993.

1.6.2.2.6. Title 40 CFR Part 763, Subpart F, Appendix A, Section 1, Titled," Polarized Light Microscopy", July 1, 1992.

1.6.2.2.7. Title 40 CFR Part 763, Subpart E, Appendix A, titled, "Transmission Electron Microscopy Analytic Methods", July 1 1992.

1.6.2.2.8. Title 49 CFR Chapter 1, Part 172, Appendix A, Subchapter C, October 1, 1992, and Title 49 CFR Chapter 1, Part 172, Appendix A, Subpart H, October 1, 1992.

(The above regulations are required to be on the job site as required by the TDSHS (295.33).

1.7. Submittals and Notices

1.7.1.Contractor shall:

1.7.1.1. Prior to Commencement of Work:

1.7.1.1.1. All projects regardless of size must have a notification sent to the Texas Department of State Health Services (11) eleven working days prior to the start of the project. It is the responsibility of the abatement contractor to send this notification. The building owner is responsible for the permit fee that is required by the Texas Department of State Health Services unless there is a prior agreement with the owner. Provide Building Owner and Consultant with a copy of the notification.

1.7.1.1.2. Submit proof satisfactory to the Building Owner that required permits, license, site location and arrangements for transport and disposal of asbestos-containing waste materials have been made. Obtain and submit a copy of handling procedures and list of protective equipment utilized for asbestos disposal at the landfill, signed by the Landfill Owner (Required for all abatement projects).

1.7.1.1.3. Submit documentation satisfactory to the Building Owner that the Contractor's employees, including foreman, supervisors and any other company personnel or agents who may be exposed to airborne asbestos fibers or who may be responsible for any aspects of abatement activities, have received adequate training that includes, at a minimum, information in Part 4, Section 4.1 of this document.

1.7.1.1.4. Submit documentation from a physician that all employees or agents who may be exposed to airborne asbestos in excess of background level have been provided with an opportunity

to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that personnel have received medical monitoring as required in OSHA 29 CFR 1910.1001. The Contractor must be aware of and provide information to the examining physician about unusual conditions in the work place environment (e.g. high temperatures, humidity, and chemical contaminant) that may impact on the employee's ability to perform work activities.

1.7.1.1.5. Contractor should, after inspection of job site, submit in writing to the Owner any existing damage found.

1.7.1.1.6. Spray glue shall not be applied to any walls, doors, or any other finished surface within any building. Damage caused by any spray glue is the sole responsibility of the abatement contractor and must be cleaned prior to leaving the project. If the contractor does not do so the owner will have the spray glue removed and back charge the contractor. Where splash guards are attached to a finished surface it is recommended that the contractor use 3M no stick blue tape. The abatement contractor shall repair any damage to any finished surface caused by his work. Where painting is required it shall be the entire area damaged, i.e., if it is a wall it shall be painted corner to corner, floor to ceiling. If the paint cannot be matched at the owners request the entire room or units, i.e., doors etc. must be painted in a color selected by the owner. The abatement contractor shall also exercise caution and common sense when remove the any cove base and make sure that there is no damage to the walls. Any damage caused by removal of the cove base shall be repaired at the abatement contractor’s expenses.

1.7.1.1.7. Any damage other than as listed in 1.7.1.1.6 that is caused to the building or any building components or building furnishings shall be repaired at the abatement contractors expenses.

1.7.1.1.8. Submit manufacturer's certification that the HEPA vacuum, negative pressure ventilation units and other local exhaust ventilation equipment conform to ANSI 29, 2-79.

1.7.1.1.9. Document NIOSH approvals for all respiratory protective devices utilized on the site. Include manufacturer certification of HEPA filtration capabilities for all cartridges and filters.

1.7.1.1.10. Submit documentation of respirator fit testing for all Contractor employees and agents who must enter the work area. This fit testing shall be in accordance with qualitative procedures as detailed in the OSHA Standard 29 CFR 1910.1025 Appendix D Qualitative Fit Text Protocol or be quantitative in nature.

1.7.1.1.11. Submit copy's of all M.S.D. sheets for all products that are to be used on the project. Copies of these sheets must be kept in a notebook at the job site.

1.7.1.1.12. Submit documentation of your company’s Hazard Communication Program.

1.7.1.2. During Abatement Activities:

1.7.1.2.1. Submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos waste materials removed from the work area during the abatement process to the building owner or his representative.

1.7.1.2.2. Submit daily copies of work site entry logbooks with information on worker and visitor access.

1.7.1.2.3. Submit logs documenting filter changes on respirators, HEPA vacuums, negative pressure ventilation units, and other engineering controls.

1.7.1.2.4. Submit results of materials testing conducted during abatement activities (e.g. testing of encapsulant for depth of penetration, testing of substitute materials for adherence to encapsulated surfaces).

1.7.1.2.5. Post in the clean room area of the worker decontamination enclosure a list containing the names, addresses, and telephone numbers of the Contractor, the Building Owner, the Asbestos Project Officer, The General Superintendent, the Air Sampling Professionals, the Testing laboratory and any other personnel who may be required to assist during abatement activities (e.g. Safety Officer, Building Maintenance Supervisor, Energy Conservation Officer).

1.7.1.2.6. The contractor shall certify in writing that no materials used in the work contain lead or asbestos materials in them in excess of amounts allowed by Local/State standards, laws, codes, rules and regulations; the Federal Environmental Protection Agency (EPA) standards

and/or the Federal Occupational Safety and Health Administration (OSHA) standards, whichever is most restrictive. The Contractor shall provide this written certification as part of his submittals under Section 1.7 of the specifications.

1.7.2. Owner Shall:

1.7.2.1. Prior to Commencement of Work:

1.7.2.1.1. Notify occupants of work areas that may be disrupted by the abatement of project dates and requirements for relocation. Arrangements must be made prior to start, for relocation of desks, files, equipment and personal possessions to avoid unauthorized access into the work area.

1.7.2.1.2. Document that Owner's employees who will be required to enter the work area during abatement have received training equal to that detailed in Part 4, Section 4.1. (This training may be provided by the Contractor's or the Owner's training consultant at the Owner's discretion).

1.7.2.2. During Abatement

1.7.2.2.1. Submit to the Contractor, results of bulk material analysis and air sampling data collected during the course of the abatement.

1.7.2.2.2. The Contractor will be responsible for personal air monitoring as required by OSHA for his employees.

1.7.2.2.3. The Owner will be responsible for furnishing an Asbestos Consultant. The Consultant may assign some on-site duties to a Project Manager/Air Monitoring Professional. This Project Manager/Air monitor technician will be in charge of all air monitoring as required by the Owner. The Project Manager will have the authority to stop work at any time he feels it necessary, because of failure of the Contractor to follow these specifications or regulations. Any unsafe conditions that result in any accident or injury shall be the responsibility of the contractor and said contractor shall hold the owner and the consultant harmless from any legal proceeding or claims. The Project Manager/Air monitor technician shall be responsible for the final visual inspection and for the taking of the final clearance air sample and said responsibilities have been granted to the Project Manager/Air Monitor Technician by the consultant.

1.7.2.2.4. The Project Manager/Air monitor technician shall be responsible for the final visual inspection and for the taking of the final clearance air samples.

1.7.3. Construction Contractor Shall:

1.7.3.1. Prior to Commencement of Work:

1.7.3.1.1. The construction contractor shall certify in writing that no materials used in the work contain lead or asbestos materials in them in excess of amounts allowed by Local/State standards, laws, codes, rules and regulations; the Federal Environmental Protection Agency (EPA) standards and/or the Federal Occupational Safety and Health Administration (OSHA) standards, whichever is most restrictive. The Contractor shall provide this written certification as part of his submittals under Section 1.7 of the specifications.

1.8. Site Security

1.8.1. The work area is to be restricted to authorized, trained, and protected personnel only. These may include the Contractor's employees, employees of Subcontractors, Owner employees and representatives, State and Local inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start and posted in the clean-room of the worker decontamination facility.

1.8.2. Entry into the work area by unauthorized individuals shall be reported immediately to the Building Owner and the project manager by the Contractor.

1.8.3. In addition to the above logbook, each worker or each licensee on the project must keep a daily record of his or her activities (TDSHS Regulations 295.58 (d)).

1.8.4. A Logbook shall be maintained in the clean-room area of the worker decontamination system. Anyone who enters the work area must record name, affiliation, time in and time out for each entry.

1.8.5. Access to the work area shall be through a single worker decontamination system located at (designated location at the work site). All other means of access (Doors, windows, hallways, etc.) shall be blocked or locked so as to prevent entry to or exit from the work area. The only

exceptions for this rule are the waste pass-out airlock which shall be sealed except during the removal of containerized asbestos waste from the work area, and emergency exits in the case of fire or accident. Emergency exits shall NOT be locked from the inside, however, they shall be sealed with polyethylene sheeting and tape until needed. Emergency exits shall have a sign and be clearly marked.

1.8.6. Contractor should have control of site security during abatement operations, in order to protect work efforts and equipment.

1.8.7. Contractor will have Owner's assistance in notifying building occupants of impending activity and enforcement of restricted access by Owner's employees.

1.9. Emergency Planning

1.9.1. Emergency planning shall be developed prior to abatement initiation and agreed to by Contractor and Owner.

1.9.2. Emergency procedures shall be in written form and prominently posted in the clean change area and equipment room of the worker decontamination area. Everyone, prior to entering the work area, must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

1.9.3. Emergency planning shall include written notification for police, fire and emergency medical personnel of planned abatement activities, work schedule and layout of work area, particularly that which may affect response capabilities.

1.9.4. Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, scaffolding, eye protection, confined spaces and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided. Daily safety meetings in accordance with OSHA are the responsibility of the contractor.

1.9.5. Employees shall be trained in evacuation procedures in the event of workplace emergencies.

1.9.6. For non life-threatening situations, employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the work place to obtain proper medical treatment.

1.9.7. For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove him from the work place and secure proper medical treatment.

1.9.8. Telephone numbers of all emergency response personnel shall be prominently posted in the clean change area and equipment room, along with the location of the nearest telephone.

1.9.9. There must be a telephone available for emergency use at all times. If the owner does not have one on site the contractor must provide one at his expense.

1.10. Pre-Start Meeting

1.10.1. The successful Proposer shall attend a pre-start job meeting. Attending this meeting will be representatives of the Owner and the Owner's agents along with testing/monitoring personnel (e.g. Asbestos Project Manager, Air sampling Professional) who will actually participate in the Owner's testing/monitoring program.

1.10.2. The Contractor and supervisory personnel who will provide on-site direction of the abatement activities must attend.

1.10.3. At this meeting the Contractor shall provide all submittals as required in Section 1.7. Failure to do this will result in the Contract being awarded to the next qualified Proposer. In addition he shall be prepared to provide detailed information concerning:

1.10.4. Preparation of work area.

1.10.5. Personnel protective equipment including respiratory protection and protective clothing.

1.10.6. Employees who will participate in the project, including delineation of experience, training, and assigned responsibilities during the project.

1.10.7. Decontamination procedures for personnel, work area and equipment.

1.10.8. Abatement methods and procedures to be utilized.

1.10.9. OSHA required air monitoring procedures.

1.10.10. Procedures for handling and disposing of waste materials.

1.10.11. Procedures for final decontamination and cleanup.

1.10.12. A sequence of work and performance schedule.
1.10.13. Procedures for dealing with heat stress.
1.10.14. Emergency procedures.
1.10.15. Items that MUST be presented at the pre-start meeting are; Performance and Payment Bond, if required, Insurance Certifications as required, asbestos workers certifications, physicals and required State license for those workers to work on this project only, logs documenting filter changes in respirators, HEPA vacuum and negative pressure ventilation units as required in 1.7, and work schedule. Failure to have this material ready at the pre-start meeting could result in the project being awarded to the next person who submitted a Proposal.
1.10.16. The contractor shall submit the name of the project supervisor, **(THIS SUPERVISOR CANNOT BE REPLACED WITHOUT PRIOR NOTIFICATION AND APPROVAL OF THE PROJECT MANAGER)**. The project supervisor is to be present at all times and spend 25% of his time in containment. He is to see that there is someone to maintain the containment at all times. It is his responsibility to assure that all TDSHS, EPA, OSHA and the project specifications are followed at all times. He is to report any failure to do so to the Consultants Project Manager immediately.

2. MATERIAL AND EQUIPMENT

2.1. Materials

2.1.1. General (All abatement projects)
2.1.1.1. Deliver all materials in the original packages, containers or bundles bearing the name of the manufacturer and the brand name.
2.1.1.2. Store all materials subject to damage off the ground away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Replacement materials shall be stored outside of the work area until abatement is completed.
2.1.1.3. Damaged, deteriorating or previously used materials shall not be used and shall be removed from the work site and disposed of properly.
2.1.1.4. Polyethylene sheeting for walls and stationary objects shall be a minimum of 4-mil thick. For floors and all other uses sheeting of at least 6-mil thickness shall be used in widths selected to minimize the frequency of joints. **All poly is to be fire retardant.**
2.1.1.5. Method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and Building Owner and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of duct tape or other waterproof tape, furring strips, spray glue, staples, nails, screws or other effective procedures capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions (including the use of amended water).
2.1.1.6. Polyethylene sheeting utilized for worker decontamination enclosure shall be opaque white or black in color.
2.1.1.7. Sufficient protection should be placed under scaffold legs ladders or other equipment to prevent damage to any building components, equipment or furnishings.
2.1.1.8. Disposal bags shall be of 6-mil polyethylene, pre- printed with labels as required by EPA regulation 40 CFR 61. 152 (b) (i) (iv) or OSHA requirement 29 CFR 1910.1001 (g) (2) (ii).
2.1.1.9. Disposal drums shall be metal or fiberboard with locking ring tops.
2.1.1.10. Stick-on labels as per EPA or OSHA requirements (see 2.1.1.8) for disposal drums, bags or wrapped ACM.
2.1.1.11. Warning signs and generator identification labels as required by TAHPR and OSHA.
2.1.2. Removal
2.1.2.1. Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethlyene ether and polyoxyethylene ester, or equivalent, mixed in a proportion of 1 fluid ounce to 5 gallons of water or as specified by manufacturer. (An equivalent surfactant shall be understood to mean a material with a surface tension of 29 dynes/cm as tested in its properly mixed concentration using ASTM method D1331-56- "Surface and Interfacial Tension of Solutions of Surface Active Agents").

2.1.2.2. After removal a lock down spray must be used to contain any fiber remaining imbedded in the substrate. Care must be taken to cover the entire work area completely.
2.1.2.3. Additional materials as necessary for removal, as specified in 2.1.2.

2.2. Equipment

2.2.1.General

2.2.1.1. A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration and operated in accordance with ANSI 29.2.79 (local exhaust ventilation requirements) and EPA guidance document EPA 560/5-83-002 Guidance for controlling Friable Asbestos-Containing Materials in Building Appendix F: Recommended Specifications and Operating Procedures for the Use of Negative Pressure Systems for Asbestos Abatement shall be utilized so as to provide a minimum of one work place AIR CHANGE EVERY 15 MINUTES. A pressure differential of 0.02 in. H_2O as measured with a recording manometer.
To calculate total air flow requirement:
Total $ft.^3$ /min=Vol. of work area (in $ft.^3$)
To calculate the number of units needed for the abatement: Number of units needed= (total cu. ft. /min.) (Capacity of unit (use 80% of rated capacity) in cu. ft. /min.).
If air-supplied respirators are utilized, estimate the volume of supplied air and add to work place air volume when calculating ventilation requirements. For small enclosures and glove bags, a HEPA filtered vacuum system may be utilized to provide negative air pressure.

2.2.1.2 Type "C" air supplied respirators in positive pressure or pressure demand mode with full face piece and HEPA filtered disconnect protection are recommended by the U.S. EPA for all full shift abatement work until the successful completion of final clearance air monitoring. Powered air purifying respirators equipped with HEPA filters and full face pieces of respirators with a higher NIOSH assigned protection factor may be used for inspection or repair work for less that 1 hour duration per day. A sufficient supply of charged replacement batteries and filters and a flow test meter shall be available in the clean change area for use with powered air purifying respirators. Half Mask respirators with dual high-efficiency (HEPA) filters may be utilized during work area preparation activities if approved by the Consultant. (See Section 3.4.1.2.) Spectacle kits and eyeglasses must be provided for employees who wear glasses and who must wear full-face piece respirators. Respirators shall be provided that have been tested and approved by the National Institute of Occupational Safety and Health for use in asbestos contaminated atmospheres with air volumes and pressures to accommodate respirator manufacturer's specifications. The compressed air systems shall have a receiver of adequate capacity to allow escape of all respirator wearers from contaminated areas in the event of compressor failure. Manufacturer approved emergency egress filters must be in place on each face piece. Compressors must meet the requirements of 29 CFR 1910.134 (d). Compressors must have an in-line carbon monoxide monitor and audible alarm and periodic inspection of the carbon monoxide monitor must be evidenced. Documentation of adequacy of compressed air systems/respiratory protection system must be retained on site. This documentation will include a list of compatible components with the maximum number and type of respirators that may be used with the system. Periodic testing of compressed air shall insure that systems provide air of sufficient quality (Grade D breathing air as described in Compressed Gas Association Commodity Specifications G-7.1).

2.2.1.3 Full body disposable protective clothing, including head, body and foot covering (unless using footwear as described in 2.2.1.5) consisting of material impenetrable by asbestos fibers (Tyvek R or equivalent) shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.

2.2.1.4 Additional safety equipment (e.g. hard hats, meeting the requirements of ANSI Standard Z89.1-1981, eye protection, meeting the requirements of ANSI Standard Z87.2-1979, safety shoes, meeting the requirement of ANSI Standard Z41.1-1067, disposable PVC gloves), as necessary shall be provided to all workers and authorized visitors.

2.2.1.5 Non-Skid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

2.2.1.6 A sufficient supply of disposable mops, rags and sponges for work area decontamination shall be available.

2.2.2.Removal

2.2.2.1. A sufficient supply of scaffolds, ladders, lifts, and hand tools (e.g. scraper, wire cutters, brushes, utility knives, wire saws, etc.) shall be provided as needed. The use of all ladders and scaffolding must in strict adherence with OSHA regulations.
Scaffolding:
The contractor is responsible for all scaffolding used on the project and for the training required by OSHA of all employees and the PM/AMT on the project. This includes all rolling towers, platform scaffolding, man lifts and all other ladders or scaffolding used on this project. The consultant accepts no responsibility or liability for the erection of any scaffolding, for the load limits of any scaffolding or for other safety issues involving any scaffolding or ladders used on this project. All scaffolding must be erected by scaffolding company that has been in business for a minimum of three years. All scaffolding that is erected is to be designed by a licensed engineer and a signed, stamped copy of his approval must be given to the building owner or his representative. **No work on the scaffolding may begin until this has been done.** The consultant shall be held harmless and indemnity against any accident or legal action resulting for this scaffolding.

2.2.2.2. Sprayers with pumps capable of providing 500 pounds per square inch (psi) at the nozzle tip at a flow rate of 2 gallons per minute for spraying amended water.

2.2.2.3. Rubber dustpans and rubber squeegees shall be provided for cleanup.

2.2.2.4. Brushes utilized for removing loose asbestos-containing material shall have nylon or fiber bristles, not metal.

2.2.2.5. A sufficient supply of HEPA filtered vacuum systems shall be available during cleanup.

2.2.3.Enclosures

2.2.3.1. Hand tools equipped with HEPA filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports if there is any need to disturb asbestos-containing materials during this process.

2.3. Substitutions

2.3.1.Approval Required:

2.3.1.1. The Contract is based on the materials, equipment and methods described in the Contract Documents.

2.3.1.2. The Building Owner will consider Proposals for substitutions of materials, equipment and methods only when such Proposals are accompanied by full and complete technical data and all other information required by the Owner to evaluate the proposed substitution. Any substitution request is to be submitted through the Consultants Project Manager for approval.

2.3.1.3. Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this work by the Building Owner and Consultant.

2.3.1.4. "Or equal":

2.3.1.5. Where the phrase "or equal" or "or equal as approved by the Owner" occurs in the Contract Document, do not assume that materials, equipment or methods will be approved by the Owner unless the item has been specifically approved for the work by the Owner and Consultant

2.3.1.6. The decision of the Owner or his representative shall be final.

3. EXECUTION

3.1. Preparation

3.1.1.Work Area

3.1.1.1. Post signs meeting the specifications of TAHPR and OSHA in English and Spanish at any location and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure. Additional signs may need to be posted following construction of work place enclosure barriers.

3.1.1.2. Insure safe installation (including ground faulting) of temporary power sources and equipment by compliance with all applicable electrical code requirements and OSHA requirements for temporary electrical systems. Contractor shall connect to existing Owner system using only licensed tradesmen and in accordance with all State and local regulations and building codes. All cost for electricity shall be paid for by the Owner unless otherwise specified. If Owners electrical source is inadequate, the Contractor shall provide alternate electrical power at the Contractor's expense. Tying in of contractor's panel to existing electrical panel shall be done by a licensed electrical contractor and shall be paid for by the contractor.

3.1.1.3. Shut down and lock out and tag-out all heating, ventilation and air conditioning system (HVAC) components that are in, supply or pass through the work area. (Note: Interiors of existing ductwork may require decontamination. This may be done during the pre-cleaning phase of operations before the ductwork is sealed off or during the final cleaning phase prior to re-engagement of the system. Appropriate equipment and control measures shall be utilized to prevent contamination of building spaces during this operation. Adequate cleaning of ductwork may sometimes be accomplished by drawing high volumes of air through the system using the HEPA filtered negative pressure ventilation units) Investigate the work area and agree on pre-abatement condition with the Building Owner. Seal all intake and exhaust vents in the work area with tape and 6-mil polyethylene. Also seal any seams in system components that pass through the work area. Remove all HVAC filters and place in labeled 6-mil polyethylene bags for staging and eventual disposal as asbestos-contaminated waste.

3.1.1.4. The Contractor shall provide sanitary facilities for abatement personnel outside of the enclosed work area and maintain them in a clean and sanitary condition throughout the project. If facilities are not available for use from the Owner, the Contractor shall provide temporary facilities at the Contractors expense. These facilities must meet OSHA's minimum standard.

3.1.1.5. The Owner will provide water for construction purposes. Contractor shall connect to existing Owner system using only licensed tradesmen and in accordance with all State and local regulations and building codes.

3.1.1.6. Pre-clean all movable objects within the work area using a HEPA filtered vacuum and/or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the work area and carefully stored in an uncontaminated location. (Carpeting, drapes, clothing, upholstered furniture and other fabric items may be disposed of as asbestos contaminated waste or cleaned as asbestos contaminated items utilizing HEPA vacuum techniques and off-premises steam cleaning. Since adequate cleaning of severely contaminated fabric is difficult, the Building Owner or Consultant must carefully consider whether this option is appropriate. After abatement, all moved items are to be replaced in their original location.

3.1.1.7. Pre-clean all fixed objects in the work area using HEPA filtered vacuum and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery behind grills or gratings where access may be difficult. After pre-cleaning, enclose fixed objects in 4-mil polyethylene sheeting and seal securely in place with tape.

3.1.1.8. Pre-clean all surfaces in the work area using HEPA filtered vacuums and/or wet cleaning methods as appropriate. Do not use any methods that would raise dust such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not disturb asbestos-containing materials during the pre-cleaning phase.

3.1.1.9. Seal off all windows, doorways, elevator opening, corridor entrances, drains, ducts, grills, grates, diffusers skylights and any other openings between the work area and uncontaminated areas outside of the work area (including the outside of the building, tunnels and crawl spaces) with 6-mil polyethylene sheeting and tape (see Section 3.1.4-Isolation work area from occupied areas).

3.1.1.10. Cover floors in the work area with polyethylene.

3.1.1.11. Floor shall be covered with two layers of 6-mil (minimum) sheeting. Both layers shall extend up the wall a minimum of 12" under the wall poly. Additional layers of sheeting may be utilized as drop cloths to aid in cleanup of bulk materials. **All poly is to be fire retardant.**

3.1.1.12. Plastic shall be sized to minimize seams. If the floor area necessitates seams, those on successive layers of sheeting shall be staggered to reduce the potential for water to penetrate to the flooring material. Do NOT locate any seams at wall/floor joints.

3.1.1.13. Floor sheeting shall extend a minimum of 12" up the side walls of the work area.

3.1.1.14. Sheeting shall be installed in a fashion so as to prevent slippage between successive layers of material. (Vinyl sheeting may be used for improved traction on floors).

3.1.1.15. Walls shall be covered with a minimum of two layers of 4-mil polyethylene sheeting. **All poly is to be fire retardant.**

3.1.1.16. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least 6 feet.

3.1.1.17. Wall sheeting shall overlap floor sheeting by at least 12 inches beyond the wall/floor joint to provide a better seal against water damage and for negative pressure.

3.1.1.18. Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This will require additional support attachment when negative pressure ventilation systems are utilized. (**Note: See Section 2.1.1.5.**)

3.1.1.19. Lower utilities as necessary and re-install in a manner which permits proper utilization and does not disturb the integrity of the enclosure. Utility maintenance should not require the enclosure to be opened or disturbed. (If it does, an alternative abatement strategy is indicated.)

3.1.1.20. **For the removal of floor tile and or mastic only all critical barriers shall be installed there shall be a four foot splash guard of 6 mil poly placed on all walls in lieu of full containment. . Negative pressure and full decon is required**

3.1.2. Worker Decontamination Enclosure Systems

3.1.2.1. Worker decontamination enclosure systems shall be provided at all locations where workers will enter or exit the work area. One system at a single location for each contained work area is preferred. These systems may consist of existing rooms outside of the work area, if the layout is appropriate, that can be enclosed in plastic sheeting and are accessible from the work area. When this situation does not exist, enclosure systems may be constructed out of metal, wood or plastic support as appropriate.

3.1.2.2. Plans for construction, including materials and layout, shall be submitted as shop drawings and approved, in writing or verbally by the Building Owner or his representative prior to work initiation. Worker decontamination enclosure systems constructed at the work site shall utilize 6-mil opaque black or white polyethylene sheeting or other acceptable materials for privacy.

3.1.2.3. The worker decontamination enclosure system shall consist of at least a clean room, a shower room, and an equipment room, each separated from each other and from the work area by airlock.

3.1.2.4. Entry to and exit from all airlocks and decontamination enclosure system chambers shall be through curtained doorways consisting of two sheets of overlapping polyethylene sheeting. One sheet shall be secured at the top and left side, the other sheet at the top and right side. Both sheets shall have weights attached to the bottom to insure that they hang straight and maintain a seal over the doorway when not in use. Doorway design, providing equivalent protection and acceptable to the Building Owner may be utilized.

3.1.2.5. Access between any two rooms in the decontamination enclosure system shall be through an airlock with at least 3 feet separating each curtained doorway. Pathways into (from clean to contaminated) and out from (contaminated to clean) the work area shall be clearly designated.

3.1.2.6. Clean-room shall be sized to adequately accommodate the work crew. Benches shall be provided as well as hooks for hanging up street clothes. (Lockers may be provided for valuables, however, workers may be requested to secure valuables in their cars) Shelves for storing respirators shall also be provided in this area. Clean disposable clothing, replacement filters for respirators, towels and other necessary items shall be provided in adequate supply at the clean room. A location for posting shall also be provided in this area. Whenever possible, a lockable door shall be used to permit access into the clean room from outside the work area. Lighting, heat and electricity shall be provided as necessary for comfort. This space shall not be used for storage of tools, equipment or materials, (except as specifically designated) or as office space.

3.1.2.7. Shower room shall contain showers sufficient to meet OSHA minimum standards. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. An adequate supply of soap, shampoo and towels shall be supplied by the Contractor and available at all times. Shower water shall be drained, collected and filtered through a system with at least 5-micron particle size collection capability. (Note: A system containing a series of several filters with

progressively smaller pore sizes is recommended to avoid rapid clogging of filtration system by large particles.

3.1.2.8. The equipment room shall be used for storage of equipment and tools at the end of a shift after they have been decontaminated using a HEPA filtered vacuum and/or wet cleaning techniques as appropriate. Replacement filters (in sealed containers until used) for HEPA vacuums and negative pressure ventilation equipment, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement may also be stored here as needed. A drum lined with a labeled 6-mil polyethylene bag for collection of disposable clothing shall be located in this room. Contaminated footwear (e.g. rubber boots, other reusable footwear) shall be stored in this area for reuse the following workday.

3.1.3. Waste container pass-out airlock (usually required only on large jobs) and emergency exits

3.1.3.1. The waste container pass-out airlock shall be constructed at some location away from the worker decontamination enclosure system. Wherever possible, this shall be located where there is direct access from the work area to the outside of the building.

3.1.3.2. This airlock system shall consist of an airlock, a container staging area and another airlock with access to outside the work area.

3.1.3.3. The waste container pass-out airlock shall be constructed in similar fashion to the worker decontamination enclosure system using materials and airlock and curtain doorway design.

3.1.3.4. This airlock system SHALL NOT be used to enter or exit the work site.

3.1.3.5. Emergency exits shall be established and clearly marked with duct tape arrows or other effective designations to permit easy location from anywhere within the work area. They shall be secured to prevent access from uncontaminated areas and still permit emergency exiting. These exits shall be properly sealed with polyethylene sheeting which can be cut to permit egress if needed. These exits may be the worker decontamination enclosure, the waste pass-out airlock and/or other alternative exits satisfactory to fire officials.

3.1.4. Barriers and Isolation of the Work Area

3.1.4.1. The contaminated work area shall be separated from, uncontaminated occupied areas of the building by the construction of airtight barriers. (Building Owner must clearly identify all areas that will be occupied.)

3.1.4.2. Walls shall be constructed of wood or metal framing to support barriers in all openings larger than 4'x8'.

3.1.4.3. A sheeting material (plywood, drywall) of at least 3/8" thickness shall be applied to work side of barrier.

3.1.4.4. Cover both sides of partition with a double layer of 6-mil polyethylene sheeting with staggered joints and seal in place.

3.1.4.5. Caulk edges of partition at floor, ceiling, walls and fixtures to form an airtight seal.

3.1.5. Maintenance of work place barriers and worker decontamination enclosure systems

3.1.5.1. Following completion of the construction of all polyethylene barriers and decontamination system enclosures, allow overnight settling to insure that barriers will remain intact and secured to walls and fixtures before beginning actual abatement activities. No abatement work may begin until approval of the containment has been received from the project manager. No work may be preformed unless the project manager has been notified and is on sire.

3.1.5.2. All polyethylene barriers inside the work place, in the worker decontamination enclosure system, in the waste container pass-out airlock and at partitions constructed to isolate the work area from occupied area shall be inspected at least twice daily, prior to the start of each day's abatement activities and following the completion of the day's abatement activities. Document inspections and observations in the daily project log.

3.1.5.3. Damage and defects in the enclosure system are to be repaired immediately upon discovery.

3.1.5.4. Use smoke tubes to test the effectiveness of the barrier system when directed by Building Owner.

3.1.5.5. At any time during the abatement activities after barriers have been erected, if visible material is observed outside of the work area or if damage occurs to barriers, work shall immediately stop, repairs be made to barriers, and debris/residue cleaned up using appropriate HEPA vacuuming and wet mopping procedures.

3.1.5.6. If air samples collected outside of the work area during abatement activities indicate airborne fiber concentrations 0.01 f/cc or greater, or per-measured background levels (which is lower)

work shall immediately stop for inspection and repair of barriers. Cleanup of surfaces outside of the work area using HEPA vacuum or wet cleaning techniques may be necessary.

3.1.5.7. Install and initiate operation of air filtration equipment as needed to provide one air change in the work area ever 15 minutes. (See Section 2.2.1.1) Enough exhaust air must be vented through a HEPA filter to maintain a lower air pressure within the enclosure system than the outside air pressure. Openings made in the enclosure system to accommodate these units shall be made air tight with tape and/or caulking as needed. If more than one unit is vented to the outside, they should be turned on 1 at a time, checking the integrity of wall barriers for secure attachments and need for additional reinforcements. Insure that adequate power supply is available to satisfy the requirements of the air filtration equipment. Air filtration equipment shall be exhausted to the outside of the building wherever feasible. They shall not be exhausted into occupied areas of the building. Twelve-inch expansion duct shall be used to reach from the work area to the outside when required. Careful installation, air monitoring and daily inspections shall be done to insure that the duct does not release fibers into uncontaminated building areas.

3.1.6. Establishing Emergency Exits

3.1.6.1. Emergency exits shall be established and clearly marked with duct tape arrows or other effective designations to permit easy location from anywhere within the work area. They shall be secured to prevent access from uncontaminated areas and still permit emergency exiting. These exits shall be properly sealed with polyethylene sheeting which can be cut to permit egress if needed. These exits may be the worker decontamination enclosure, the waste pass-out airlock and/or other alternative exits satisfactory to fire officials.

3.1.7. Removing and Cleaning Fixtures

3.1.7.1. Remove, clean and enclose in polyethylene the ceiling mounted objects such as lights and other items that may interfere with the abatement process and were not previously cleaned and sealed off. Utilize localized spraying of amended water and/or HEPA vacuum to reduce fiber dispersal during the removal of these fixtures.

3.1.8. Removal of building structural components, not used

3.1.8.1. All building structural components that can be removed are to be cleaned and moved to a secure storage area prior to abatement. After abatement is complete all components are to be replaced in original location and condition.

3.1.9. Commencement of work shall not occur until:

3.1.9.1. No abatement work is to start until the Owners Project Manager has given his approval and all of section 3.1.10 has been completed. In addition no work shall be preformed with out first notifying the consultants project manager that work is about to commence. No work may be preformed unless the consultant’s project manager is on site.

3.1.10. Enclosure systems approval

3.1.10.1. Negative pressure ventilation systems are functioning adequately and negative pressure is a minimum .02 inch water column on the manometer.

3.1.10.2. All pre-abatement submissions, notification, posting and permits have been provided and are satisfactory to the Building Owner (see Section 1.7).

3.1.10.3. All equipment for abatement, clean-up and disposal are on hand.

3.1.10.4. All worker training (and certification) is completed.

3.1.10.5. Contractor receives written permission from Building Owner or his Representative to commence abatement.

3.1.11. Alternative Procedures

3.1.11.1. Procedures described in this specification are to be utilized at all time.

3.1.11.2. If specified procedures cannot be utilized, a request must be made in writing to the Building Owner providing details of the problem encountered and recommended alternatives.

3.1.11.3. Alternative procedures shall provide equivalent or greater protection than procedures that they replace.

3.1.11.4. Any alternative procedure must be approved in writing by the Building Owner prior to implementation.

3.2. Work Place Entry and Exit Procedures

3.2.1. Personnel entry and exit

3.2.1.1. All workers and authorized personnel shall enter the work area through the worker decontamination enclosure system.
3.2.1.2. All personnel who enter the work area must sign the entry log, located in the clean room, upon entry and exit.
3.2.1.3. All personnel before entering the work area, shall read and be familiar with all posted regulations, personal protection requirements (including work place entry and exit procedures) and emergency procedures. A sign-off sheet shall be used to acknowledge that these have been reviewed and understood by all personnel prior to entry.
3.2.1.4. All personnel shall proceed first to the clean room, remove all street clothes and appropriately don respiratory protection (as deemed adequate for the job condition). And washable and/or disposable coveralls, head covering and foot covering. Hard hats, eye protection and gloves shall also be utilized if required. Clean respirators and protective clothing shall be provided and utilized by each person for EACH SEPARATE ENTRY into the work area.
3.2.1.5. Personnel wearing designated personal protective equipment shall proceed from the clean room through the shower room and equipment room to the main work area.
3.2.1.6. Before leaving the work area all personnel shall remove gross contamination from the outside of respirators and protective clothing by brushing and/or wet wiping procedures. (Small HEPA vacuums with brush attachments may be utilized for this purpose, however, larger machines may tear the suits) Each person shall clean bottoms of protective footwear in the walk-off pan just prior to entering the equipment room.
3.2.1.7. Personnel shall proceed to equipment room where they remove all protective equipment except respirators. Deposit disposable (and washable) clothing into appropriately labeled containers for disposal (and laundering).
3.2.1.8. Reusable, contaminated footwear shall be stored in the equipment room when not in use in the work area. Upon completion of abatement it shall be disposed of as asbestos contaminated waste. (Rubber boots may be decontaminated at the completion of the abatement for reuse.)
3.2.1.9. Still wearing respirators, personnel shall proceed to the shower area, clean the outside of the respirators and the face area under running water prior to removal of respirator and shower and shampoo to remove residual asbestos contamination. Various types of respirators will require slight modification of these procedures. An airline respirator with HEPA filtered disconnect protection may be disconnected in the equipment room and worn into the shower. A powered air-purifying respirator face-piece will have to be disconnected from the filter/power pack assembly which is not waterproof, upon entering the shower. A dual cartridge respirator may be worn into the shower. Cartridges must be replaced for each new entry into the work area.
3.2.1.10. After showering and drying off, proceed to the clean room and don clean disposable (and/or washable) clothing if there will be later re-entry into the work area or street clothes if it is the end of the work shift.
3.2.1.11. These procedures shall be posted in the clean room and equipment room.
3.2.2. Waste container pass-out procedures
3.2.2.1. Asbestos contaminated waste that has been containerized shall be transported out of the work area through the waste container pass-out airlock (or through the worker decontamination enclosure if a separate airlock has not be constructed).
3.2.2.2. Waste pass-out procedures shall utilize two teams of workers, an "inside" team and an "outside" team.
3.2.2.3. The inside team wearing appropriate protective clothing and respirators for inside the work area shall clean the outside, including bottom, of properly labeled containers (bags, drums, or wrapped components) using HEPA vacuum and wet wiping techniques and transport them into the waste container pass-out airlock. No worker from the inside team shall further exit the work area through this airlock.
3.2.2.4. The outside team wearing protective clothing and appropriately assigned respirators, shall enter the airlock FROM OUTSIDE THE WORK AREA, enclose the drums in clean, labeled 6 mil polyethylene bags and remove them from the airlock to the outside. No worker from the outside team shall further enter the work area through this airlock.
3.2.2.5. The exit from this airlock shall be secured to prevent unauthorized entry.

3.3. Training

3.3.1. Prior to commencement of abatement activities all personnel who will be required to enter the work area or handle containerized asbestos containing materials must have received adequate training required by the Texas Department of State Health Services. All personnel on the job site that enter the containment must have Texas licenses in hand (See Part 4, Section 4.1, Training)

3.3.2. Special on-site training on equipment and procedures unique to this job site shall be performed as required.

3.3.3. Training in emergency response and evacuation procedures shall be provided.

3.4. Respiratory Protection

3.4.1. All respiratory protection shall be provided to workers in accordance with the submitted written respiratory protection program, which includes all items in OSHA 29 CRF 1910.134 (b) (1-11). This program shall be posted in the clean room of the worker decontamination enclosure system.

3.4.1.1. Workers shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.

3.4.1.2. Respirators shall be selected that meet the following level of protection requirements: All workers, foremen, superintendents, authorized visitors and inspectors must have personally issued and marked equipment approved by NIOSH or MSA. Minimum respiratory protection required for this project must meet the requirement levels for the fiber concentration as determined by the personal samples and/or area samples. Prep work must be conducted using ½ face respirators with duel filter HEPA cartridges where there is a possibility of exposure to asbestos fibers. It is the responsibility of the contractor to furnish all personal with respirators in accordance with the OSHA requirements as listed above. If there is any doubt as the protection needed the respirator used should be adequate to meet the maximum anticipated concentration. It is the contractor's responsibility to meet or exceed the required respiratory protection at all times.

3.4.1.3. Fit testing

3.4.1.4. Workers must perform positive and negative air pressure fit tests each time a respirator is put on, whenever the respirator design so permits. Powered air- purifying respirators shall be tested for adequate flow as specified by the manufacturer.

3.4.1.5. Workers shall be given a qualitative fit test in accordance with procedures detailed in the OSHA lead Standard (29 CFR 1910.1025, Appendix D Qualitative Fit Test Protocols) for all respirators to be used on this abatement project. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.

3.4.1.6. Documentation of adequate respirator fit must be provided to the Building Owner.

3.4.1.7. No one wearing a beard shall be permitted to don a respirator and enter the work area.

3.4.1.8. Additional respirators (minimum of 2 of each type) and training on their donning and use must be available at the work site for authorized visitors who may be required to enter the work area.

3.5. Protective Clothing

3.5.1. Disposable clothing including head, foot and full body protection shall be provided in sufficient quantities and adequate sizes for all workers and authorized visitors.

3.5.2. Hard hats, protective eye wear, gloves, rubber boots and/or other footwear shall be provided as required for workers and authorized visitors. Safety shoes may be required for some activities.

3.6. Removal Procedures

3.6.1. Clean and isolate the work area in accordance with Section 3.1

3.6.2. Wet all asbestos containing material with an amended water solution using equipment capable of providing a fine spray mist, in order to reduce airborne fiber concentrations when the material is disturbed. Saturate the material to the substrate, however, do not allow excessive water to accumulate in the work area. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal. If work area temperatures are below 32 F and amended water is subject to freezing, dry removal permits and procedures must be utilized (See 2.1.2.1) Maintain a high humidity in the work area by misting or spraying to assist in fiber settling and

reduce airborne concentrations. Wetting procedures are not equally effective on all types of asbestos containing materials but, shall none-the-less be used in all cases.

3.6.3. Special circumstances (e.g. live electrical equipment, high amosite content of material, materials previously coated with an encapsulant or paint) may prohibit the adequate use of wet methods to educe fiber concentrations. For these situations, a dry removal may be required. The Contractor will have to acquire special permits, different from those mentioned herein from the NESHAP enforcement agency.

3.6.4. Saturated asbestos containing material shall be removed in manageable sections. Removed material should be containerized before moving to a new location for continuance of work. Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.

3.6.5. Material removed from building structures or components shall not be dropped or thrown to the floor. Material should be removed as intact sections or components whenever possible and carefully lowered to the floor. If this cannot be done for materials greater than 50 feet above the floor, a dust-tight chute shall be constructed to transport the material to containers on the floor or the material may be containerized at elevated levels (e.g. on scaffolds) and carefully lowered to the ground by mechanical means. For materials between 15 and 50 feet above the ground they may be containerized at elevated levels or dropped onto inclined chutes or scaffolding for subsequent collection and containerization.

3.6.6. Containers (6 mil polyethylene bags or drums) shall be sealed when full (Wet material can be exceedingly heavy.) Bags shall not be over-filled. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cord. (Bags may be placed in drums for staging and transportation to the landfill. Bags shall be decontaminated on exterior surfaces by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops).

3.6.7. Large components removed intact may be wrapped in 2 layers of 6 mil polyethylene sheeting secured with tape for transport to the landfill. If wrapped in this manner they shall have the proper label.

3.6.8. Asbestos containing waste with sharp-edged components (e.g. nail, screws, metal lath, tin sheeting) will tear the polyethylene bags and sheeting and shall be placed in drums for disposal.

3.6.9. After completion of all stripping work, surfaces from which asbestos containing materials have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residue.

3.7. Clean-up Procedure

3.7.1. Remove and containerize all visible accumulations of asbestos containing material and asbestos contaminated debris utilizing rubber dustpans and rubber squeegees to move material around. DO NOT use metal shovels to pick up or move accumulated waste. Special care shall be taken to minimize damage to floor sheeting.

3.7.2. Wet clean all surfaces in the work area using rags, mops and sponges as appropriate.

3.7.3. Remove the cleaned outer layer of plastic sheeting from walls and floors, windows and doors. HVAC system vents and all other openings shall remain sealed. The negative pressure ventilation units shall remain in continuous operation. Decontamination enclosure systems shall remain in place and be utilized.

3.7.4. After cleaning the work area HEPA vacuum and wet clean all objects and surfaces in the work area again.

3.7.5. Remove all containerized waste from the work area and waste container pass-out airlock.

3.7.6. Decontaminate all tools and equipment and remove at the appropriate time in the cleaning sequence.

3.7.7. Inspect the work area for visible residue. If any accumulation of residue is observed, it will be assumed to be asbestos and the 24-hour settling period/cleaning cycle repeated.

3.7.8. The work area shall be cleaned until it is in compliance with State and Local requirements and any more stringent criteria agreed upon by the Contractor and Owner prior to initiation of abatement activities. Additional cleaning cycles shall be provided, as necessary, at no cost to the Building Owner until these criteria have been met.

3.7.9. Following the satisfactory completion of clearance air monitoring, remaining barriers may be removed and properly disposed of. A final visual inspection by the Owner's representative shall insure that no contamination remains in the work area. Unsatisfactory conditions may require additional cleaning and air monitoring. (See Section 3.10 Re-establishment of the Work Area)

3.8. Lock-Down

3.8.1. After final inspection in accordance with 3.9.

3.8.2. Repair damaged and missing areas of existing (sprayed) (troweled) materials with non-asbestos containing substitutes(specify) Material must adhere adequately to existing surfaces and provide an adequate base for application of encapsulating agents. Filler material shall be applied in accordance with manufacturer's recommended specifications.

3.8.3. Remove loose or hanging asbestos containing materials in accordance with the requirements of Section 3.6.

3.8.4. After the work area has been rendered free of visible residues by the Project Manager/Air monitor technician and final approval given, a thin coat of satisfactory lock-down agent shall be applied to all surfaces in the work area including structural members, building components and plastic sheeting on walls, floors, and covering non-removable items, to seal in non-visible residue.

3.8.5. **The flash point for the lock-down must be 140 degrees or higher.**

3.8.6. If a mastic remover is used it must be compatible and applicable to the space, occupancy and future occupancy and use and must not have a flash point of greater than 140 degrees.

3.9. Final Inspection and Clearance Air Monitoring

3.9.1. Final Inspection

3.9.1.1. Enter all spaces for the purpose of inspecting the work prior to lock down in all areas where asbestos abatement was performed in order to inspect the work at close range. Get close enough to touch the surface from which ACM was removed, or on which other abatement operations were performed. It is important that all areas of abatement be accessed and inspected. Should this inspection uncover that the work area is in fact not ready for lock down and final clearance samples, the inspection should be suspended until the area has been additionally cleaned.

3.9.1.2. The contractor supervisor must always accompany the inspection during this inspection. A worker with cleaning tools and/or HEPA vacuum should also accompany this inspection so that minor items may be cleaned immediately. Should this additional cleaning prove to be in excess the inspection should be suspended until additional cleaning has been done and the job supervisor has requested another final visual.

3.9.1.3. Inspect all surfaces from which ACM has been removed for completeness of removal. Thorough inspection for the presence of residue is essential. The surface from which ACM was removed should be touched and brushed for the purpose of dislodging any ACM debris that may not be visible. Should this brushing cause the release of residue or the visibility of airborne residue, the surface brushed should be re-cleaned. This process can be greatly enhanced by using a narrow beam flashlight during the inspection. Unless the lighting is very good a flashlight should always be used. To obtain the best results when using a flashlight while brushing the abated surface it should be held parallel to the abated surfaces. The room light should be minimized during this type of inspection to enhance the effects of the flashlight. The surface should also be rubbed by hand to assure its cleanliness.

3.9.1.4. Pay special attention to areas that are difficult to reach or to see. Use a small screwdriver for poking into places such as the spaces between steel beams and the roof or ceiling frames or air duct flanges. Give special care to elbows, valves, and tees on the mechanical system.

3.9.1.5. No lock-down is to be applied until this inspection is complete and the inspector has given the approval for lock-down. After the lock-down is applied the area should be reinspected to assure that all surfaces have been completely coated with the lock-down.

3.9.1.6. Should the abatement of any areas not include the complete removal of all ACM the remaining ACM must be inspected to assure that there are no damaged areas. This inspection must assure that there will be no fiber release from this material if left undisturbed.

3.9.2. Clearance Air Monitoring

3.9.2.1. Following the completion of clean-up operations, and after inspection by the project manager and the project supervisor, final samples shall be taken as set forth by the AHERA guidelines. The project manager has the express permission of the Consultant to conduct the final clearance inspection and sampling.
3.9.2.2. Permission for this final visual and for the final air samples is given to the project manager for this project.
3.9.2.3. Samples shall be taken following E.P.A. guidelines. Negative pressure ventilation units shall NOT be shut down until final clearance is achieved.
3.9.2.4. Final air samples shall be analyzed **as per section 1.4.7.10**. Should the first set fail the contractor will completely re-clean the area and a second set of finals will be taken. The cost of these additional samples will be paid for by the contractor.
3.9.2.5. All samples at all locations shall indicate concentrations of airborne fibers less than or equal to the requirements as set forth in the AHERA regulations.
3.9.2.6. Aggressive sampling shall be performed with portable fans circulating air in the work area to simulate actual use conditions. Negative pressure ventilation units shall NOT be utilized for this purpose.
3.9.2.7. Final air samples shall be analyzed **as per section 1.4.7.10**, samples taken during the course of the project as well as background samples will be analyzed by PCM.
3.9.2.8. All samples at all locations shall indicate concentrations of airborne fibers less than 0.01 f/cc for release of the work area.
3.9.2.9. Areas exceeding this level shall be re-cleaned using procedures in Section 3.7 and re-tested until satisfactory levels are obtained.
3.9.2.10. Cost of re-testing shall be borne by the Contractor.

3.10. Disposal Procedures

3.10.1. As the work progresses, to prevent exceeding available storage capacity on site, sealed and labeled containers of asbestos containing waste shall be removed and transported to the pre-arranged disposal location.
3.10.2. Disposal must occur at an authorized site in accordance with regulatory requirements of NESHAP and applicable State and Local guidelines and regulations.
3.10.3. All dump receipts, trip tickets, transportation manifests or other documentation of disposal shall be delivered to the Building Owner for his records. A recommended record-keeping format utilizes a chain of custody form, which includes the names, and addresses of the Generator (Building Owner), Contractor, pickup site, and disposal site, the estimated quantity of the asbestos waste and the type of containers used. The form should be signed by the Generator, the Contractor, and the Disposal Site Operator, as the responsibility for the material changes hands. If a separate hauler is employed, his name, address, telephone number and signature should also appear on the form.

3.11. Transportation to the landfill

3.11.1. Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an ENCLOSED truck or dumpster for transportation. At no time is the asbestos waste to be stored in anything that is not enclosed and lockable. All dumpsters must be enclosed.
3.11.2. When moving containers, utilize hand truck, carts and proper lifting techniques to avoid back injuries. Trucks with lift gates are helpful for raising drums during truck loading.
3.11.3. The enclosed cargo area of the truck shall be free of debris and lined with 6-mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extended up the side walls. Wall sheeting shall be overlapped and taped into place.
3.11.4. Drums shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structural components shall be secured to prevent shifting and bags placed on top. Do not throw containers into truck cargo area.
3.11.5. Personnel loading asbestos waste shall be protected by disposable clothing including head, body and foot protection and, at a minimum, half face piece, air purifying dual cartridge respirators equipped with high efficiency filters.

3.11.6. Any debris or residue observed on containers or surface outside of the work area resulting from clean-up or disposal activities shall be immediately cleaned-up using HEPA filtered vacuum equipment and/or wet methods as appropriate.
3.11.7. Large metal dumpsters are sometimes used for asbestos waste disposal. These should have doors or tops that can be closed and locked to prevent vandalism or other disturbance of the bagged asbestos debris and wind dispersion of asbestos fibers. Un-bagged material shall not be placed in these containers, nor shall it be used for non- asbestos waste. Bags shall be placed, not thrown into containers to avoid splitting.
3.11.8. **Before the waste leaves the owners site it must have a waste manifest properly filled out and signed by the owner or his representative. The contractor must then make sure that the owners copy is given to the individual signing the waste manifest.**

3.12. Disposal at the landfill

3.12.1. Prior to unloading the waste manifest is to be presented to the landfill operator for signing. The landfill operator then must after signing it, send the original copy of the waste manifest to the owner.
3.12.2. Upon reaching the landfill, trucks are to approach the dump location as closely as possible for unloading of the asbestos containing waste.
3.12.3. Bags, drums and components shall be inspected as they are off-loaded at the disposal site. Material in damaged containers shall be re-packed in empty drums or bags as necessary. (Local requirements may not allow the disposal of asbestos waste in drums. Check with appropriate agency and institutions for appropriate alternative procedures.)
3.12.4. Waste containers shall be PLACED on the ground at the disposal site, not pushed or thrown out of trucks (weight of wet material could rupture containers).
3.12.5. Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable head, body and foot protection and, at a minimum, half-face piece, air purifying dual cartridge respirators equipped with high efficiency filters.
3.12.6. Following the removal of all containerized waste, the truck cargo area shall be decontaminated using HEPA vacuums and/or wet methods to meet the no visible residue criteria. Polyethylene sheeting shall be removed and discarded along with contaminated cleaning materials and protective clothing, in bags or drums at the disposal site.
3.12.7. If landfill personnel have not been provided with personal protective equipment for the compaction operation by the landfill operator Contractor shall supply protective clothing and respiratory protection for the duration of this operation.

3.13. Re-establishment of the Work Area and Systems

3.13.1. Re-establishment of the work area shall only occur following the completion of clean-up procedures and after clearance air monitoring has been performed and documented to the satisfaction of the Building Owner.
3.13.2. Polyethylene barriers shall be removed from walls and floors at this time, maintaining decontamination enclosure systems and barriers over doors, windows, etc. as required.
3.13.3. The Contractor and Owner shall visually inspect the work area for any remaining visible residue. Evidence of contamination will necessitate additional cleaning requirements in accordance with Section 3.7.
3.13.4. Additional air monitoring shall be performed in accordance with Section 3.9 if additional clean-up is necessary.
3.13.5. Following satisfactory clearance of the work area, remaining polyethylene barriers may be removed and disposed of as asbestos contaminated waste.
3.13.6. At the discretion of the Contractor, mandatory requirement for personal protective equipment may be waived following the removal of all barriers.
3.13.7. Re-secure mounted objects removed from their former positions during area preparation activities.
3.13.8. Relocate objects that were removed to temporary locations back to their original positions.
3.13.9. Re-establish HVAC, mechanical and electrical systems in proper working order. Remove contaminated HVAC system filters and dispose of as asbestos contaminated waste.

Decontaminate filter assembly using HEPA vacuums and wet cleaning techniques. Install new filters in HVAC systems. Dispose of old filters.

3.14. Repair

3.14.1. Repair all areas of damage that occurred as a result of abatement activities.

4. SUPPORT ACTIVITIES AND PERSONNEL

4.1. Training

4.1.1. Training shall be provided by the contractor to all employees or agents who may be required to disturb asbestos containing or asbestos contaminated materials for abatement and auxiliary purposes and to all supervisory personnel who may be involved in planning, execution or inspection of abatement projects.
4.1.2. All workers must have a minimum of 24 hours training as required by the EPA, OSHA, NIOSH, and any state requirements, such as additional training and license.
4.1.3. All workers must have received the required medical examination.
4.1.4. All workers must be trained in the proper use of the type of respirators used on this job.
4.1.5. Personal hygiene including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking, and chewing in the work area.
4.1.6. Special safety hazards that may be encountered including electrical hazards, air contaminant, wetting agents, encapsulants, materials from Owner's operation, fire and explosion hazards, scaffold and ladder hazards, slippery surfaces, confined spaces, heat stress and noise.
4.1.7. Workshops affording both supervisory personnel and abatement workers the opportunity to see the construction of containment barriers and decontamination facilities.
4.1.8. Supervisory personnel shall, in addition, receive training or contract specifications, liability insurance and bonding, legal considerations related to abatement, establishing respiratory protection medical surveillance programs, EPA, OSHA (and State) record keeping requirements and other topics as requested by the Building Owner.
4.1.9. Training must be provided by individuals qualified by virtue of experience and education to discuss the topic areas in 4.2.
4.1.10. Training is to have occurred within 12 months prior to the initiation of abatement activities.
4.1.11. Contractor must document training by providing date of training, training entity, course outline, and names and qualifications of trainers.

4.2. Medical Monitoring

4.2.1. Medical Monitoring must be provided by the Contractor to any employee or agent that may be exposed to asbestos in excess of background levels during any phase of the abatement project. (Due to the synergistic effect between smoking and asbestos exposure, it is highly recommended that only non-smokers be employed in positions which may require them to enter asbestos contaminated atmospheres).
4.2.2. Medical monitoring shall include at a minimum:
4.2.2.1. A work/medical history to elicit symptomatology of respiratory disease.
4.2.2.2. A chest x-ray (posterior-anterior, 14x13 inches) evaluated by a certified B-reader.

4.3. Safety

4.3.1. PPE – All personal protective equipment must be properly maintained and cleaned. A record of all maintenance and cleaning must be kept and available for verification.
4.3.2. Potable water – There must be potable water available for the workers. It must be dispensed from a tap and there must be disposable cups available.
4.3.3. Toilets – There must be sufficient toilet facilities to meet OSHA’s minimum requirements.
4.3.4. Illumination – There must be sufficient lighting to meet OSHA’s minimum requirements.
4.3.5. Haz-Com – There must be a Hazardous Communications Program on the project with proof of employee acknowledgment of this program.

4.3.6. Fire Extinguishers – There must be sufficient fire extinguishers to meet OSHA's minimum requirements.

4.3.7. Air Flow – If any electrical or other equipment must be left operational inside the containment it must:

A. Be isolated from the contained work area with its own access that is completely separate from the work area.

B. Sufficient airflow must be maintained to assure proper operation for the duration of the project.

4.3.8. Electrical – All electrical must be locked out and tagged out when possible. In addition, all electrical within the containment must be checked by a competent person.

4.3.9. Fall Protection – Fall protection must be provided to meet OSHA's minimum requirements.

4.3.10. Scaffold – All scaffolding must meet OSHA's minimum requirements and;

A. Must have a competent person as defined by OSHA on all projects where scaffolding is erected.

B. All scaffold erection must be designed by a professional engineer, and after creation must be inspected by this professional engineer.

C. All workers must be trained on scaffold safety as per OSHA requirements.

4.3.11. Flash Point – No material may be used with a flash point less than 140 degrees.