WESTERN TECHNOLOGIES INC.

4085 Nevso Drive, Suite G
Las Vegas, Nevada 89103
(702) 252-0580

Clark County General Services Department
ASBESTOS ABATEMENT SPECIFICATIONS FOR
Centennial Building - Las Vegas

PART 1 - GENERAL

PROJECT/WORK IDENTIFICATION

Part 1 - General: Project name is Clark County Centennial Building ACM Abatement as shown on Contract Documents prepared by Western Technologies Inc. (WT). Specifications are dated 01-28-91.

Specifications prepared by: Valerie S. Mitchell, CIH Date: 01-28-91 License No. IJMPO114 (Nevada)

Contract Documents: Indicate the work of the Contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:

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CENTENNIAL BUILDING

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1100 Bidding Requirements

1101 Bid Submittal Deadline

Bids for this project must be submitted by _____. Bids shall be sent to:

Western Technologies, Inc.
4085 Nevso Drive, Suite G
Las Vegas, Nevada 89103
Attn: Valerie S. Mitchell

A complete copy of the bid package shall concurrently be sent to:

1) Clark County General Services Department
Facilities Services Division
401 South 4th Street
Las Vegas, Nevada 89101
Attn: Mr. James Novak

1102 Site Investigation

1102.1 By submitting a bid, 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 materials, access to water, electric or other utilities or otherwise affect performance of required activities; b) the character and quantity of all surfaces and subsurface materials or

obstacles to be encountered in so far as this information is reasonably ascertainable from an inspection of the site, including exploratory work done by the Owner or designated consultants as well as information presented in specification included with this contract; c) the environmental condition, including the presence, location, and condition of asbestos-containing materials, at the site. 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.

1102.2 Under no circumstances shall the Contractor rely on the material quantities indicated in this document as the total basis for the bid price. All quantities indicated herein are approximate and intended to alert the Contractor to the general scope of the project. Scheduled quantities refer only to asbestos-containing materials the contractor may expect to encounter. No increase in contrast cost will be considered due to the Contractor's failure to physically verify all quantities of the ACMs specified by this document for removal.

1102.3 The Contractor shall include in his bid price the total estimated linear footage or square footage of material anticipated for each type of ACM specified and indicate a unit fee which would be binding for additions or deletions of material that may later be determined to be asbestos-containing or non asbestos-containing. Since numerous factors come into play in pricing such projects, the gross fee for each material to be removed need not be indicated on a per square foot basis.

1102.4 The Owner is not responsible for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner.

1102.5 No bids will be accepted from any Contractor who has not inspected the job site either in person or through a qualified designated representative.

1102.6 A mandatory pre-bid walkthrough for all prospective bidders will take place at the job site on _____. For details regarding this item please contact Western Technologies, Valerie S. Mitchell, at (702) 252-0580, prior to the walkthrough date.

1103 Patents/Licenses

By submitting a bid on this project, the Contractor acknowledges and accepts full responsibility for compliance with patent or licensing requirements on any equipment procedures or systems utilized on this project.

1104 Discrepancies

1104.1 Should a Bidder 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, no later than five (5) days prior to the bid opening, (scheduled for _____) request clarification from the Owner or it's representative. Discrepancies with regard to conflicts between the Contract Documents and applicable Federal, State or Local regulations or requirements shall be included herein. Failure to request such clarification is a waiver to any claim by the Bidder for expense made necessary by reason of later interpretation of the Contract Documents by the Owner or their representative.

1104.2 Explanations desired by a prospective Bidder regarding the specifications or other bid documents shall be requested from the Owner's representative no later than five (5) days prior to the bid opening. Requests shall be directed to Western Technologies, Inc. (WT) 4085 Nevso Drive, Suite G, Las Vegas, Nevada 89103, Attn: Valerie Mitchell.

1104.3 Oral explanations or instruction will not be binding. Only written addenda are binding. Any addenda resulting will be mailed to all listed holders of the Bid document no later than three (3) days prior to the bid opening deadline. The Bidder shall acknowledge the receipt of all addenda.

1105 Modification and Withdrawal of Bids

1105.1 Withdrawal or modifications to bids are effective only if written notice thereof is filed prior to time and bid opening deadline. A notice of withdrawal or modifications to a bid must be signed by the Contractor or his designated representative. This provision is not applicable to change order items.

1105.2 No withdrawal or modifications shall be accepted after the time specified for opening of bids, except for change order modifications if requested by the Owner or the Owners representative.

1106 Bonding Requirements

1106.1 Each bidder must furnish a surety bond issued by a reputable security company with his proposal. The bond must be in an amount not less than 10% percent of the amount of the base bid.

1106.2 Contractor shall furnish and maintain a Performance Bond and Payment Bond (with a provision for one (1) year guarantee against defects in materials and workmanship from the date of acceptance of work, which Bonds shall ensure the full and faithful performance of this Agreement by Contractor, and the payment by Contractor for all labor and materials used by it in the performance hereof, in form and with sureties acceptable to Owner. Said Bonds shall be furnished within ten (10) days of the date of this Agreement and the premiums for such Bonds shall be paid solely by Contractor.

1107 Licenses and Insurance Requirements

1107.1 By initiating work in this project the Contractor acknowledges and accepts full responsibility for advising his current insurance carrier(s) of the fact that he is engaging in asbestos abatement work.

1107.2 All Bidders shall show proof of Nevada Abatement Contractors License, and registration with the Nevada Registrar of Contractors. Such proof shall be submitted as a part of the bid package.

1107.3 All bidders shall show proof of and maintain One Million Dollars ($1,000,000.00) Asbestos Specific (True) Occurrence Insurance that will protect the Contractor and Owner from claims that may arise out of or result from the Contractors activities under this contract, whether those activities are performed by himself or by any subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whom acts any of them may be liable. The policy shall specifically name the owner as an additional insured under the policy. Insurance Pools will not be acceptable for this requirement. Bidders shall also

submit proof of coverage under the Workman's Compensation insurance system of the State of Nevada or other similar benefit acts. Proof of insurance and coverage under the workman's compensation systems shall be submitted as a part of the bid package.

1107.4 Bidders shall submit a certificate of general liability insurance for personal injury, occupational disease and sickness or death and property damage. Insurance shall include "Occurrence" claim provisions. Minimum acceptable coverage is:

$1,000,000.00 (each occurrence) for Bodily Injury and Personal Injury.

$1,000,000.00 (each occurrence) for Property Damage.

Insurance must specifically include and state coverage for claims resulting from asbestos abatement work.

1107.5 All Bidders must show proof that its workers are properly trained, certified, and licensed to perform the work. Such proof will be required prior to the commencement of abatement activities but need not be a part of the bid package.

1108 Qualifications

1108.1 Bidders shall demonstrate as part of the bid package, prior experience on asbestos abatement projects of similar nature and scope through the submission of letters of reference from at least three bidding Owners including the name, address, and telephone number of contact person (someone specifically familiar with the Contractor's work) for at least three (3) previous years of service. Include descriptions of projects, locations, and records of all air monitoring data that were generated during the project.

1108.2 Bidders shall submit a notarized statement with the bid package, signed by an officer of the company, containing the following information:

1108.2.1 A record of any citations issued by Federal, State or Local regulatory agencies relating to asbestos abatement activity. Include projects, dates, and resolutions.

1108.2.2 A list of penalties incurred through non-compliance with asbestos abatement project specifications including liquidated damages, overruns in scheduled time limitations and resolutions.

1108.2.3 Situations in which an asbestos related contract has been terminated including projects, dates and reasons for terminations.

1108.2.4 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, issuer and resolution to date.

1108.3 The bid submittals must include a schedule of total project duration, with phasing and milestones noted.

1109 Rejection of Bids

A bid may be rejected if it is found incomplete or in non-compliance with any provisions of these specifications, or for any other reason, in owner's sole discretion. The contract may be terminated if any information supplied by Bidder pursuant to Sections 1107 and 1108 is found to be incorrect.

1200 Definitions

General: Definitions contained in this Article are not necessarily complete, but are general to the extent that they are not defined more explicitly elsewhere in the Contract Documents.

Regulations: The term "Regulations" includes laws, statute, ordinances, rules, regulations, requirements, guidance documents and similar guidelines and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the

construction industry that control performance of the Work, whether they are lawfully imposed by authorities having jurisdiction or not.

Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations."

Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations."

Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

Installer: An "Installer" is an entity engaged by the Contractor, either as an employee, subcontractor or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

Project Site: The space available to the Contractor for performance of the work, either exclusively or in conjunction with others performing other construction as part of the project. The extent of the project site will be identified at the pre-bid walk-through.

Testing Laboratories: A "testing laboratory" is an entity certified by the appropriate federal, state and/or local agencies engaged to perform specific analysis of asbestos bulk or air samples, either at the project site, or elsewhere, and to report on, and, if required, to interpret, results of those analyses.

Owner's Representative: This is Western Technologies, Inc. or any employee of WT who will represent the Owner during construction and until final completion of the work. WT will advise and consult with the Owner. The Owner's instructions to the contractor will be forwarded through the Owner's Representative.

Project Administrator: The Project Administrator is a WT employee and is a full time representative of the Owner at the job site with authority to stop the work upon verbal order to Contractor, if requirements of the Contract Documents are not met, or if in the sole judgement of the Project Administrator, Owner's Representative, Owner, the interests of the Owner, safety of any person or the Owner's property are jeopardized by the work.

General Superintendent: This is the Contractor's Representative at the work site. This person shall be the Competent Person required by OSHA in 29 CFR 1926, and licensed as a supervisor in Nevada.

DEFINITIONS RELATIVE TO ASBESTOS ABATEMENT

Accredited or Accreditation: (when referring to a person or laboratory): A person or laboratory accredited in accordance with section 206 of Title II of the Toxic Substance Control Act (TSCA) and other federal, state and local laws applicable to the work.

Adequately Wet: Adequately wet means sufficiently mix or penetrate with liquid 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.

Aerosol: A system consisting of particles, solid or liquid, suspended in air.

Air Monitoring: The process of measuring the fiber content of a specific volume of air.

Amended Water: Water to which a surfactant has been added to decrease the surface tension to 35 dynes or less.

Asbestos: The asbestiform varieties of serpentine (chrysotile), riebeckite (crocodolite), cummingtonite, grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

Asbestos-Containing Material (ACM): Any material containing more than 1% by weight of asbestos of any type or mixture of types.

Asbestos-Containing Building Material (ACBM): Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on structural members or other parts of a building.

Asbestos-Containing Waste Material: Asbestos-containing waste materials means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovations operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.

Asbestos Debris: Pieces of ACBM that can be identified by color, texture, or composition, or dust, if the dust determined by an accredited inspector to be ACM.

Authorized Visitor: The Owner, the Owner's Representative, testing lab personnel, the Architect/Engineer, emergency personnel or a representative of any federal, state or local regulatory or other agency having authority over the project or the work.

Barrier: Any surface that seals off the work area to inhibit the movement of fibers.

Breathing Zone: A hemisphere forward of the shoulder with a radius of approximately 6 to 9 inches.

Category I Nonfriable Asbestos-Containing Material: Category I nonfriable asbestos-containing material (ACM) means asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy.

Category II Nonfriable ACM: Category II nonfriable ACM means any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Ceiling Concentration: The concentration of an airborne substance that shall not be exceeded.

Certified Industrial Hygienist (C.I.H.): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Disposable Bag: A properly labeled 6 mil thick leak-tight plastic bag used for transporting asbestos waste from work areas to the disposal site.

Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.

> Bridging encapsulant: An encapsulant that forms a discrete layer on the surface of an in-situ asbestos matrix.
>
> Penetrating encapsulant: An encapsulant that is absorbed by the in-situ asbestos matrix without leaving a discrete surface layer.
>
> Removal encapsulant: A penetrating encapsulant specifically designed to minimize fiber release during removal of asbestos-containing materials rather than for in-situ encapsulation.

Filter: A media component used in respirators or ventilation equipment to remove solid fibers and particles from the processed air.

Friable Asbestos Material: Friable asbestos material means any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763 Section 1. Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

Glovebag: Glove bag means a sealed compartment with attached inner gloves used for the handling of asbestos-containing materials, properly installed and used, glove bags provide a small work area enclosure typically used for small-scale asbestos stripping operations.

HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in diameter.

HEPA Filter Vacuum Collection Equipment (or Vacuum Cleaner): High efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.

High-Efficiency Particulate Air Filter: HEPA refers to a filtering system capable of trapping and retaining 99.97% of all monodispersed particles 0.3 micron in diameter or larger.

Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

Negative Pressure Ventilation System: A pressure differential air ventilation system.

Nonfriable Asbestos-Containing Material: Nonfriable asbestos-containing material means any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1. Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Owner: Clark County General Services Department, Facilities Services Division, 401 South 4th Street, Las Vegas, Nevada 89101.

Pressure Differential and Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a pressure differential with the inside of the Work Area at a lower pressure than any adjacent area, and which cleans recirculated air or generates a constant air flow from adjacent areas into the Work Area.

Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

Regulated Asbestos-Containing Material (RACM): Regulated asbestos-containing material (RACM) means (a) Friable asbestos material. (b) Category I nonfriable ACM that has become friable. (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart.

Remove: Remove means to take out RACM or facility components that contain or are covered with RACM from any facility.

Resilient Floor Covering: Resilient floor covering means asbestos-containing floor tile, including asphalt and vinyl floor covering containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy.

Respirator: A device to protect the wearer from the inhalation of harmful atmospheres.

Strip: Strip means to take off RACM from any part of a facility or facility components.

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

Transite: Cement asbestos products, e.g. shingle, pipe, panel.

Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.

Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

Waste Shipment Record: Waste shipment record means the shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.

Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloth, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.

Work Area: The area where asbestos-related work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a Regulated Area as defined by 29 CFR 1926.

Working Day: Working day means Monday through Friday and includes holidays that fall on any of the days Monday through Friday.

Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations as referenced in Contract Documents are defined to mean associated names. Names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of Contract Documents:

AIHA American Industrial Hygiene Association
475 Wolf Ledges Parkway
Akron, OH 44311
(216) 762-7294

ANSI American National Standards Institute
1430 Broadway
New York, NY 10018
(212) 354-3300

ASTM American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
(215) 299-5400

CFR Code of Federal Regulations
Available from Government Printing Office:
Washington, D.C. 20402
(usually first published in Federal Register)
(202) 783-3238

CS Commercial Standards of NBS
(U.S. Dept. of Commerce)
Government Printing Office
Washington, D.C. 20402
(202) 377-2000

DOT Department of Transportation
400 Seventh St.,SW
Washington, D.C. 20509
(202) 382-3949

EPA Environmental Protection Agency
401 M. St.,SW
Washington, D.C. 20460
(202) 382-4000

NIST National Institute of Standards and Technology
(U.S. Department of Commerce)
Gaithersburg, MD 20899
(301) 975-4016

OSHA Occupational Safety & Health Administration
(U.S. Dept. of Labor)
Government Printing Office
Washington, D.C. 20402
(202) 783-3238

UL Underwriters Laboratories
333 Pfingten Road
Northbrook, IL 60062
(312) 272-8800

WT Western Technologies
4085 Nevso Drive., Suite G
Las Vegas, Nevada 89103
(702) 252-0580

1300 Scope of Work

1301 This specification covers the abatement of exposure to asbestos hazards from building components listed in 1306. It is the intent of the Contract Documents to show all of the work necessary to complete the project.

1302 The Contractor will furnish all labor, materials, services, insurance and equipment necessary for the total removal of all areas of ACM listed in 1306.2 and ACM debris associated with those portions of the project site. The Contractor will consult the general job descriptions (1400) and the ACM listing in 1306 as a guide and will visit the building to assess the exact amounts of ACM present as well as the extent of physical difficulty involved in its complete removal. There will be an Owner's Representative (WT representative) at the job site throughout all phases of the work. The Contractor will seal off the internal work zones with 6 mil polyethylene containment barriers according to the provisions of Section 3101, erect decontamination facilities and air-locks, install negative air systems capable of changing all air in the containment area at least once each fifteen (15) minutes, and conduct comprehensive personnel air sampling tests during all phases of the work.

1303 The Contractor shall dispose of all ACM and asbestos debris in a certified landfill in a safe and approved manner in compliance with all applicable Federal, State and Local statutes, laws, rules, regulations and requirements, and provide Owner with records of the same. In the event procedural questions not covered by this job specification arise, the Contractor will be guided by the overall purpose of Section 1302. Intentional or willful violations of these job specifications will be grounds for immediate termination of the contract and possible assessment of damages.

1304 The Contractor shall remove all ACM from the areas specified in Section 1306.2 and leave those areas of the site in a condition free of ACM.

1305 Supplemental General Conditions: a) The Contractor shall after removing the asbestos-containing materials, spray the exposed substrates with a bridging encapsulant.

1306 Asbestos-Containing Materials:

1306.1 If, at any time during the specified scope of work, the Contractor encounters any suspect, friable ACMs which are not characterized by the original specifications as containing or not containing asbestos, or if the Contractor encounters any other material which might contain friable asbestos as a matter of common knowledge in the asbestos abatement industry and which is not characterized by the original specifications as containing or not containing friable asbestos, then the Contractor shall stop work immediately. The Contractor also shall immediately give notice to WT, in person or by telephone, describing the nature and location of the discovery. By the end of the next business day, the Contractor shall confirm the notices in writing. WT shall determine whether testing is necessary and shall make any test results available to the Contractor. The Contractor shall not resume work in these areas until WT has given written notice to the Contractor to proceed in all, or specified parts, of the work as indicated, with or without change order. Where a change order is indicated, Contractor shall not proceed with respect to that part of the work until the execution of the change order.

1306.2 The following friable asbestos-containing materials and amounts (± 10%) are scheduled for removal at the project site.

MATERIALS IDENTIFIED IN PROJECT AREA:

MATERIAL TYPE & AMOUNT	ASBESTOS CONTENT	LOCATION
Mudded pipe fittings (approximately 120)	50-60% Chrysotile	above ceiling throughout building
9"x 9" Vinyl asbestos floor tile (approximately 1880 sq. ft.)	5% Chrysotile	various areas throughout building
Floor tile mastic (approximately 1880 sq. ft.)	20% Chrysotile	beneath 9"x 9" VAT various areas throughout building
Brown ceiling tile mastic (approximately 2400 sq. ft. total)	30% Chrysotile	under 12"x 12" ceiling tiles various areas throughout building
Baseboard mastic (1180 lineal feet)	20-30% Chrysotile	various areas throughout building

1307 General Removal Procedures The following general abatement procedures will be utilized.

1307.1 Mudded Pipe Fittings - Critical barriers and negative pressure glovebags.

1307.2 Carpeted Areas w/ACM Ceiling Tile Mastic - Full containment with two layers of 6-mil polyethylene on walls and floors.

1307.3 For Areas With ACM Floor Tile, (and mastic), ACM Ceiling Tile Mastic and Baseboard Mastic - Critical barriers and two layers of 6-mil polyethylene sheeting on walls to within 2 inches of top of baseboards.

1307.4 For Areas With ACM Floor Tile (and mastic) and Baseboard Mastic Only - Critical barriers and two layers of 6-mil polyethylene sheeting on walls extending from approximately 2 inches above baseboards to at least 4 feet above floor.

1400 Description of Work

1401 The work specified herein shall be the complete licensed removal of all specified asbestos-containing materials (Section 1306.2) and associated ACM debris by competent licensed 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 internal 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. All such persons shall be properly licensed, certified and accredited. The Contractor will be responsible for verifying the validity of each workers licensing, certification, and accreditation.

1402 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.

1403 Contractor shall examine the site and verify that there are no known "special conditions" which must be considered by the Contractor when performing the asbestos abatement (e.g. high temperatures equipment that must remain in operation, other toxic substances in the air, running through pipes or contaminated surfaces or fixtures). Any failure by the Contractor to identify "special conditions" will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work.

1404 Throughout the removal and subsequent cleaning operations, the Contractor is responsible for all personal air-monitoring as required under OSHA regulations for the protection of his employees. Samples shall be taken to establish an 8 hour Time-Weighted Average and exposure for each type of employee operation. Sampling and analysis shall be conducted in strict accordance w/ applicable OSHA regulations. Analytical results of personal air samples shall be made available to the Owner's representative on a 24 hour maximum turnaround basis. Written reports shall be sent directly to the Owner's representative from the laboratory. A minimum of 25% of the workers in each type of work operation shall be monitored continuously. All air samples submitted by the Contractor for analysis shall be submitted to a laboratory currently enrolled in the AIHA/NIOSH Proficiency Analytical Testing (PAT) program. The microscopist responsible for asbestos analysis shall have successfully completed the NIOSH 582 course and shall be listed in the AIHA Asbestos Analysts Registry.

1405 Baseline, removal and final clearance area air sampling will be conducted by the Owner's representative. The results of this air sampling will be made available to the Contractor as a part of his copy of the final report. Should the Contractor desire this information earlier, he shall make a written request to the Owner's representative. Area air monitoring samples will be analyzed by PCM, NIOSH Method 7400.

1500 Schedule of Work

1501 Upon verbal award of the Contract, Contractor shall immediately file all necessary notifications with the State of Nevada, Department of Industrial Relations and NESHAPS notifications, to EPA Region IX and the Clark County Health District.

1502 Abatement work on this project shall commence on _____. Successful bidder shall be notified of award of contract at least 10 days in advance.

1503 Abatement work on this project shall be completed and all abatement areas shall be ready for final visual inspection and/or clearance air monitoring no later than _____.

1504 Contractor shall schedule abatement work on this project in such a manner so as to complete work by the scheduled completion date without requiring any Contractor employees to work more than 40 hours in any single work week, nor more than 8 hours in any single working day. Any overtime by Contractors employees will require advance approval by the Owners representative.

1600 Applicable Standards and Guidelines

1601 General Requirements

1601.1 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 (including removal, transportation and disposal), and any other trade work done in conjunction with the abatement.

1601.2 By initiating work on this project the Contractor acknowledges that has reviewed and is knowledgeable of all current Federal, State and Local regulations (including those listed below) affecting the work on this project. The act of initiating work on this project indicates that the Contractor is willing to solely accept responsibility for the adherence to all regulations and the enforcement of all personnel protection and safety requirements. The Contractor further acknowledges willingness to solely accept responsibility for the defense and resolution of any claims, filed by any party, as they may relate to the work performed by the Contractor on this project.

1601.3 Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Owner's Representative for a decision before proceeding.

1601.4 Copies of all standards, regulations, codes and other applicable documents relating to the work, including this specification and those listed in Section 1602 shall be made available at the work site in the clean change area of the worker decontamination system.

1602 Specific Regulations

1602.1 Occupational Safety and Health Administration (OSHA).

1602.1.1 Title 29 Code of Federal Regulations Section 1910.1001 - General Industry Standard for Asbestos.

1602.1.2 Title 20 Code of Federal Regulations Section 1910.134 - General Industry Standard for Respiratory Protection.

1602.1.3 Title 29 Code of Federal Regulations Section 1926.58 - Construction Industry Standards for Asbestos.

1602.1.4 Title 29 Code of Federal Regulations Section 1910.2 - Employee Exposure and Medical Records.

1602.1.5 Title 29 Code of Federal Regulations Section 1910.1200 - Hazard Communication.

1602.1.6 Title 29 Code of Federal Regulations Section 1910.58 - Asbestos.

1602.2 Environmental Protection Agency (EPA).

1602.2.1 Title 40 Code of Federal Regulations Part 61 Subparts A and M (Revised Subpart M-11/20/90) - National Emission Standard for Asbestos.

1602.3 Hazardous Materials Transportation Act.

1602.3.1 49 United States Code SS 1801 et seq.

1602.4 State of Nevada, Department of Industrial Relations, Division of Occupational Safety and Health, Regulations for the Control of Asbestos.

1603 Copies of Standards: Each entity engaged in construction of any part of the Project is required to be familiar with industry standards applicable to that entities' construction activity. Copies of applicable standards are not bound with the Contract Documents.

Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

Although copies of standards needed for enforcement of requirements may be part of required submittals, the Owner's Representative reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.

1700 Submittals and Notices

1701 Contractor Submittals (Prior to Abatement)

1701.1 Submit proof satisfactory to the WT representative that required permits have been obtained and that disposal, 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. If a separate hauler (other than the abatement contracting firm) is to be employed to transport the ACM waste to the landfill, copies of the haulers licenses and permits shall be submitted to WT. Obtain and submit a signed statement from the landfill owner/operator that all provisions of Section 61.154 of the November 20, 1990 revisions to the asbestos NESHAPs rule (40 CFR, Part 61, Subpart M) shall be met.

1701.2 Submit documentation satisfactory to the WT representative 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, are properly licensed, and have received adequate training.

1701.3 Submit evidence acceptable to the Owner's representative that the laboratory responsible for PCM analysis of the Contractor's employees OSHA-mandated personal air samples is currently enrolled in the AIHA/NIOSH PAT program. The laboratory's results from the most recent four (4) rounds shall be provided. The laboratory shall have received a proficiency rating in each of the last four rounds with a maximum of 2 outliers total in the four rounds. Additionally, the Contractor shall submit evidence acceptable to the Owner's representative that the microscopist responsible for the PCM analyses has taken the NIOSH 582 class (or equivalent) and is listed in the AIHA Asbestos Analysts registry.

1701.4 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 (j). The Contractor must be aware of and provide information to the examining

physician about unusual conditions in the workplace environment (i.e., high temperatures, humidity, chemical contaminant) that may impact on the employee's ability to perform work activities.

1701.5 Submit, to the WT representative, shop drawings for layout and construction of decontamination enclosure system and barriers for isolation of the work area, as appropriate.

1701.6 Submit, to the Owner's Representative, manufacturer's certification that HEPA vacuums (negative pressure ventilation units) and other local exhaust ventilation equipment conform to ANSI 29.2-79.

1701.7 When rental equipment is to be used in abatement areas or to transport asbestos contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency with a copy submitted to the Owner's Representative.

1701.8 Document NIOSH approvals for all respiratory protective devices utilized onsite. Include manufacturer certification of HEPA filtration capabilities for all cartridges and filters.

1701.9 Submit documentation of respirator fit-testing for all Contract employees and agents who must enter the work area. This fit-testing shall be in accordance with qualitative procedures as detailed in the OSHA Asbestos Standard 20 CFR 1910.1001 Appendix C, Qualitative Fit Test Protocol or be quantitative in nature.

1701.10 Post the project site with multilingual danger signs and other warnings against exposure to hazardous substances and other dangers.

1701.11 Send written notification in accordance with 40 CFR Part 61.145 of Subpart M (11/20/90 Revision) to the appropriate State administrator and Federal air pollution control agency responsible for the enforcement of the National Emission Standard for Asbestos at least ten (10) working days prior to the commencement of any onsite project activity. Provide the WT representative with a copy of the notice prior to beginning removal of ACMs.

1701.12 Should abatement projects involve more than 3 linear feet of friable ACM located on pipes or more than 3 square feet of friable ACM located on any other surface, the Contractor shall, at least ten (10) days before any onsite work is begun at the project, notify the State of Nevada, Division of Occupation Safety and Health as per the provisions of NAC 618.954.

1702 Contractor Submittals During Abatement Activities

1702.1 Submit job progress reports detailing abatement activities as requested by the WT representative. Include review of program with respect to previously established milestones and schedules, major problems and action taken, injury reports, equipment breakdown and all bulk material and air sampling results conducted by Contractor's Air Sampling Professional.

1702.2 Submit to WT copies of all transport manifests, waste shipment records, trip tickets and disposal receipts for all asbestos waste materials removed from the work area during the abatement process.

1702.3 Submit to WT daily, copies of worksite entry logbooks with information on worker and visitor access.

1702.4 Submit to WT logs documenting filter changes on respirators. HEPA vacuums, negative pressure ventilation units and other engineering controls, if such equipment is utilized.

1702.5 Submit to WT results of any bulk asbestos analysis and air sampling data and compliance air monitoring results.

1702.6 Post in the clean room area of the worker decontamination enclosure a list containing the names, addresses, and telephone numbers of the Contractor, the Owner, and WT representative, the General Superintendent, the Air Sampling Professionals, the testing Laboratory and any other personnel who may be required to assist during abatement activities.

1703 Owner/Owners Representative Submittals to Contractor

1703.1 During Abatement

Submit, to the Contractor, results of ambient air sampling data collected during the course of the Abatement. These sample results are for information only and may not be relied upon by Contractor for any purpose. They serve only to monitor Contractor performance during the project and shall not release the Contractor from any responsibility to sample for OSHA compliance or to otherwise perform Contractor's obligations hereunder.

1703.2 All ambient and final clearance air monitoring will be performed by the Owner's representative; a copy of which shall be submitted to Contractor for inclusion in his permanent record.

1704 Potential Asbestos Hazard

The disturbance or dislocation of asbestos-containing materials may cause asbestos fibers to be released into the building or ambient atmosphere, thereby creating a potential health hazard to workmen, building occupants and others present at or near this site. Apprise all workers, supervisory personnel, subcontractors, consultants and others who will be at the job site of the seriousness of the hazard and of proper work procedures which must be followed.

Where in the performance of the work, workers, supervisory personnel, subcontractors, consultants or others may encounter, disturb or otherwise function in the immediate vicinity of any identified asbestos-containing materials, take appropriate continuous measures as necessary to protect all building occupants or others from the potential hazard of exposure to airborne asbestos. Such measures shall include the procedures and methods described herein, and compliance with regulations of applicable Federal, State and Local agencies.

1705 Stop Work

It is the Owner's Representative, or the Project Administrator presents a written stop work order immediately and automatically stop all work. Do not recommence work until authorized in writing by Owner's Representative.

1706 Site Use

1706.1 General: During the entire construction period the Contractor shall have the use of the project area for construction operations. Contractor must confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed except as necessary to insure the safety of those present at or near the site. Conform to site rules and regulations affecting the work while engaged in project construction.

1706.2 Keep existing driveways and entrances serving the premises clear and available to the Owner and his employees at all times. Do not use these areas for parking or storage of materials without prior consent from Owner.

1706.3 Do not unreasonably encumber the site with materials or equipment. Storing of materials is to be approved by owner in advance. Confine stockpiling of materials to the areas indicated by the Owner. If additional storage is necessary obtain and pay for such storage offsite.

1800 Site Security

1801 The work area is to be restricted only to authorized, licensed, trained, and protected personnel. This may include the Contractor's employees, and employees of 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 workers decontamination facility.

1802 Entry into the work by unauthorized individuals shall be reported immediately to the Owner's representative by the Contractor.

1803 A log book shall be maintained by the Contractor in the clean room areas of the worker decontamination system. Anyone who enters the work area must record name, affiliation, time in, and time out for each entry.

1804 Access to the work area shall be through a single worker decontamination system. 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 removal of containerized asbestos waste from the work area, and emergency exits in 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.

1805 Contractor shall control site security during abatement operations whenever possible, in order to protect work efforts and equipment.

1900 Emergency Planning

1901 Emergency planning shall be developed prior to abatement initiation and agreed to by Contractor, Owner and WT representative.

1902 Emergency procedures shall be prepared by successful bidder in written form and prominently posted in the clean change area and equipment room of the worker decontamination area.

1903 Emergency procedures shall include written notification of police, fire, and emergency medical personnel of planned abatement activities, work schedule and layout of work area, particularly barriers that may affect response capabilities.

1904 Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided.

1905 Employees shall be trained in evacuation procedures in the event of workplace emergencies.

1905.1 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.

1906 Telephone numbers of all emergency response personnel (including environmental substance agencies) shall be prominently posted in the clean change area and equipment room, along with the location of the nearest telephone and the location of the nearest hospital.

PART 2 - MATERIALS AND EQUIPMENT

2100 Materials

2101 General

2101.1 Deliver all materials in the original packages, containers or bundles bearing the name of the manufacturer and the brand name (where applicable).

2101.2 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.

2101.3 Damaged, deteriorating or previously used materials shall not be used and shall be removed from the worksite and disposed of properly.

2101.4 If used, glove bags shall be minimum of six (6) mil thickness. If used, any bags with any portions of thickness or strength less than that of six (6) mil polyethylene will not be accepted. All glove bags shall be removed from the original packing material and thoroughly inspected for defects around all seams and at the point of glove and accessory attachments. Any defective glove bags will be repaired or discarded.

2101.5 Polyethylene sheeting for walls and stationary objects shall be a minimum of six (6) mil thick.

2101.6 For floors and all other uses, sheeting of at least six (6) mil thickness shall be used in widths selected to minimize the frequency of joints.

2101.7 Method of attaching polyethylene sheet shall be agreed upon in advance by the Contractor and Owner's representative). Method of attachment may include any combination of duct tape or other waterproof tape, furring strips, spray glue, staples, nails, screws or sheets of polyethylene and capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions (including the use of amended water).

2101.8 Polyethylene sheeting utilized for worker decontamination enclosure shall be opaque white or black in color.

2101.9 Disposal bags shall be of six (6) mil polyethylene, preprinted with labels per OSHA requirement 20 CFR 1910.1001 (j)(2)(ii).

2101.10 Disposal drums shall be metal or fibercoated with interlocking ring tops.

2101.11 Stick-on labels as per OSHA requirements (see 2101.9) for disposal drums.

2101.12 Warning signs as required by OSHA 20 CFR 1910.1001 (j)(1)(ii).

2102 Removal

2102.1 Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethylene ether polyoxyethylene ester, or equivalent, mixed in a proportion of one (1) fluid ounce of five (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.") Where work area temperature may cause freezing of the amended water solution, the addition of ethylene glycol in amounts sufficient to prevent freezing is permitted.

2102.2 Chemical Remover shall be suitable to aid in the removal of ACM (EPA 55, or approved equal).

2102.3 Removal Encapsulant shall be suitable to aid in removal of ACM such as Asbestite 1000, Serpiflex Shield #4, BWE 5000, or equivalent; the removal encapsulant shall act as its own solvent and be capable of binding and encapsulating individual asbestos fibers.

2102.4 Penetrating encapsulants shall be Asbestite 2000, American Coating Cable Coating 22P, SK 13-1C, BWE 3000, or approved equal. The encapsulant shall have a coverage of approximately 80 square feet per gallon.

2102.5 Bridging encapsulants shall be American Coating FNE High Temperature Sealant, Ocean 666, or approved equal. Bridging encapsulants shall have a coverage of approximately 25 square feet per gallon.

2103 Lockdown

2103.1 Encapsulation lockdown materials shall be bridging type and conform with the following characteristics:

2103.1.1 Encapsulants should not be solvent-based or utilize a vehicle (the liquid in which the solid parts of the encapsulant are suspended) consisting of hydrocarbons.

2103.1.2 Encapsulants shall not be flammable.

2200 Equipment

2201 General

2201.1 A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration and operated in accordance with ANSI Z9.2 - 79 (local exhaust ventilation requirements) and EPA guidance document EPA 560/5-43-002 Guidance for Controlling Friable Asbestos - Containing Materials in Buildings Appendix F. Recommended Specifications and Operating Procedures for the Use of Negative Pressure Systems for Asbestos Abatement shall be utilized so as to provide at least one workplace air change every fifteen (15) minutes. If air-supplied respirators are utilized, estimate the volume of supplied air, and add to workplace air volume when calculating ventilation requirements. For small removal and glove bags, a HEPA filtered vacuum system may be utilized to provide negative air pressure.

2201.1.1 Each negative air machine (NAM) must have a minimum of 1800 to 2000 cfm capacity.

2201.1.2 Each negative air machine (NAM) which is utilized on the project shall be tested/certified under the "DOP Test" within the six-month period prior to the start of work. This test is intended to ensure that air does not bypass or leak around the HEPA filter assembly within the negative air machine. Tests shall be performed and written results shall be provided by an agency approved by the Owner. Testing agency shall be Technical Safety Services, in San Francisco at (415) 233-8378, or approved equal.

2201.1.3 Each negative air machine shall have a backdraft damper installed on the discharge of the machine. Dampers shall be properly fitted to the equipment utilizing a 20 gauge sheet metal transition fitting. Dampers shall be Ruskin Model BD2-A2, 18"x 18" minimum size.

2201.2 Type "C" air-supplied respirators in positive pressure or pressure demand mode with full face pieces and HEPA filtered disconnect protection have traditionally been recommended by the EPA for all full shift abatement work until the successful completion of final clearance air monitoring. However, powered air purifying respirators equipped with HEPA filters and full face-pieces with highest NIOSH assigned protection factor may be used if the personnel air fiber level does not exceed 0.5 f/cc during removal work. 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. Air purifying respirators with dual high-efficiency (HEPA) filters may be utilized during work area final cleaning only as long as both of the following criteria have been met:

1) The areas have been inspected by the WT representative and have been found to be free of visible ACM debris; and

2) The air fiber level does not exceed 0.1 f/cc.

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.

2201.3 Compressed air systems, if used, shall be designed to provide 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. Compressors must meet the requirements of 29 CFR1910.134 (d). Compressors must have an observable in-line carbon monoxide monitor. Documentation of adequacy of compressed air systems/respiratory protection system must be retained onsite. This documentation will include a list of compatible components with the maximum number of and type of respirators that may be used as described in Compressed Gas Association Specifications G-7.1. The contractor is responsible for having a type "C" System at its immediate disposal in case it is required.

2201.4 Full body disposable protective clothing, including head, body and foot coverings (unless using footwear described in 2201.6) consisting of material impenetrable by asbestos fibers (Tyvek or equivalent) authorized visitors in sizes adequate to accommodate movement without tearing.

2201.5 Additional safety equipment (e.g. hard hats meeting the requirements of ANSI Standard Z87.1-1981, eye protection meeting the requirements of ANSI Standard Z87.1-1979, safety shoes meeting the requirements of ANSI Standard Z41.1-1967, disposable PVC gloves), as necessary, shall be provided to all workers and authorized visitors.

2201.6 Non-skid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

2201.7 If launderable clothing is to be worn underneath disposable protective clothing, it shall be provided by the Contractor to all abatement workers. (It is recommended that launderable clothing be a unique, specific color to enable it to be distinguished from general purpose blue, gray of black coveralls which are commonly worn.) Laundering must occur in accordance with 29 CFR 1910.1001 (d) (4) (iii). However, it is preferable that the following procedures be utilized:

2201.7.1 Launderers must be trained in proper techniques for handling asbestos contaminated clothing and provided with personal protective equipment consisting of appropriate respirators and disposable clothing for use when needed.

2201.7.2 Machines used for laundering asbestos contaminated clothing shall be isolated and restricted for such use.

2201.7.3 Washers shall be equipped with filters to remove asbestos fibers from discharged water (see Section 3102.7).

2201.7.4 Dryers shall be isolated and restricted for use with asbestos contaminated fabrics and have HEPA filtered exhaust.

2201.7.5 Machine maintenance shall be performed by protected individuals (as per 2201.7.1).

2201.8 A sufficient supply of disposable mops, rags and sponges for work area decontamination shall be available.

2202 Removal

2202.1 A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g. scrapers, wire cutters, brushes, utility knives, wire saws, etc.) shall be provided as needed and shall be erected or set-up and maintained in a safe manner.

2202.2 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.

2202.3 Rubber or plastic dustpans, shovels, and squeegees shall be provided for cleanup.

2202.4 Brushes utilized for removing loose asbestos containing material shall have nylon or fiber bristles, not metal.

2202.5 A sufficient supply of HEPA filtered vacuum systems shall be available during abatement and cleanup. If an outside vacuum system such as a "Guzzler" is used, a full containment enclosure with negative air pressure will be required around the system so as to prevent possible contamination to the outside ambient air.

2300 Substitutions

2301 Approval Required:

2301.1 The Contact is based on the materials, equipment and methods described in the Contract Documents.

2301.2 The Owner's Representative 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's Representative to evaluate the proposed substitution. All substitutions must comply with applicable federal, state and local laws.

2301.3 Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this work by the Owner's Representative.

2302 "Or Equal"

2302.1 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's Representative unless the item has been specifically approved for this work by the Owner's Representative.

2302.2 The decision of the Owner or Owner's Representative shall be final.

2303 Separate substitute bids: Bidders may, if they wish, submit completely separate bids using materials and methods other than those described in the Contract Documents, provided that all substitutions are clearly identified and described, and that the Bid in all other respects is in accordance with the provisions of the Contract Documents.

2304 Availability of Specified Items

2304.1 Verify prior to bidding that all specified items will be available in time for installation during orderly and timely progress of the work.

2304.2 In the event that specified items will not be available, notify the Owner prior to receipt of bids.

2304.3 Costs of delays because of non-availability of specified items, when such delays could have been avoided by the Contractor, will be back-charged as necessary and shall not be borne by the Owner or Owner's Representative.

PART 3 - EXECUTION

3100 Preparation

3101 Work Areas - General Requirements

3101.1 Post caution signs and warning tape meeting the specifications of OSHA 29 CFR 1910.1001 (j)(1)(ii) at locations and approaches where airborne fiber concentrations may be reasonably expected to exceed ambient background levels. Signs and warning tape shall be posted at a distance sufficiently far enough away from the work area to permit an employee or others to read the sign and take the necessary protective measurers to avoid exposure. Additional signs may be posted following construction of workplace enclosure barriers.

3101.2 Shut down and lock out electric power to all work areas. Make provisions to draw temporary power and lighting from outside the abatement area. 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. All costs for electric shall be paid by the Owner.

3101.3 The Contractor shall provide sanitary facilities for abatement personnel outside of the enclosed work area maintain them in a clean and sanitary condition throughout the project or use and maintain in a sanitary condition the facilities designated by the Owner.

3101.4 The Owner will provide water and power for construction purposes. The contractor should connect to existing systems where possible.

3101.5 Preclean all movable objects within the work area using a HEPA filtered vacuum and/or wet cleaning methods as appropriate. After cleaning these objects, including carpeting, shall be removed from the work area and carefully stored or disposed of in compliance with all applicable Federal, State and local laws.

3101.6 Seal off all windows, doorways, corridor entrances, drains, ducts, grates, diffusers, skylights and any other openings leading into, out of, or through the contaminated areas from uncontaminated areas outside of the work area (including the outside of the building, tunnels and crawl spaces) with six (6) mil polyethylene sheeting and duct tape. Doors accessing the glove bag removal area must be sealed with two layers of six (6) mil polyethylene sheeting.

3101.7 In areas where no ACM floor tile and/or mastic is to be removed cover floors with polyethylene sheeting.

3101.7.1 Floors inside the containment area and decontamination chambers shall be covered with two layers of six (6) mil (minimum) sheeting. Layers of sheeting should be utilized as drop cloths to aid in cleanup of bulk materials.

3101.7.2 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. A distance of at least six (6) feet between seams in sufficient. Do not locate any seams at wall/floor joints.

3101.7.3 Floor sheeting shall extend at least twelve (12) inches up the sidewalls of the work area.

3101.7.4 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.)

3101.8 Cover walls in the work area with polyethylene sheeting. Walls that are non-porous and will not be damaged by water, surfactant or encapsulate do not necessarily need protection. They can be decontaminated using HEPA vacuums and wet cleaning techniques. Walls with mortar joints (e.g. tile) are considered porous. In addition, openings through these walls to uncontaminated areas of the building must be sealed as described in Section 3101.6.

3101.8.1 Walls shall be covered to the extent stipulated in Section 1307.

3101.8.2 Walls shall be covered with two layers of six (6) mil polyethylene sheeting.

3101.8.3 Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six (6) feet.

3101.8.4 In full containment areas, wall sheeting shall overlap floor sheeting by at least twelve (12) inches beyond the wall/floor joint to provide a better seal against water damage and for negative pressure.

3101.8.5 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.

3102 Worker Decontamination Systems

3102.1 Worker Decontamination enclosure systems shall be provided at locations as close as practically possible to the working areas. One system at a single location for each contained work area (hallway) is preferred. These systems may consist of existing rooms or areas 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.

3102.2 A shower for decontamination must be available near the glove bag area for the purpose of decontamination in the event of a glove bag failure.

3102.3 Plans for construction, including materials and lay-put shall be submitted as shop drawings and approved, in writing, by the Owner's representative prior to work initiation. Such approval shall not release or relieve Contractor from its obligation to perform the work in

accordance with the Contract documents or the terms thereof. Worker decontamination enclosure systems constructed at the worksite shall utilize six (6) mil opaque black or white polyethylene sheeting or other acceptable materials for privacy. Detailed descriptions of portable, pre-fabricated units, if used, must be submitted for the Owner's Representative's approval. Plans must include floor plan (showing areas identified in 3102.3) with dimensions, materials, size, thickness, plumbing and electrical utilities and waste pass out and storage areas.

3102.4 The worker decontamination enclosure 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 airlocks.

3102.5 Entry to and exit from all airlocks and decontamination enclosure system chambers shall be through curtained doorways consisting of two (2) sheets of overlapping polyethylene sheeting. One (1) 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 designs, providing equivalent protection and acceptable to the Owner's Representative may be utilized.

3102.6 Access between any two (2) rooms in the decontamination enclosure system shall be through an airlock with at least three (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.

3102.7 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 required to secure valuables in their cars). Shelves for storing respirators shall also be provided in this area. Clean work clothes (if required under disposable clothing), clean disposable clothing, replacement filters for respirators, towels and other necessary items shall be provided in adequate supply in the clean room. A location for postings shall also 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.

3102.8 Shower room shall contain one shower head per every five (5) workers in containment or more as necessary to adequately accommodate workers. Each shower head shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed and available at all times. Shower water shall be drained, collected and filtered through a system with at least 0.5 to 1.0 micron particle size collection capability.

(Notice: 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).

3102.9 No contaminated water may be allowed to evaporate or leak into non-work areas. All filtered water must be disposed of in a sanitary sewer. This water must not be allowed to go to storm drains, or run off onto adjacent soil or paved surfaces.

3102.10 The equipment room shall be suited for storage of equipment and tools at the end of a shift after they have been decontaminated using HEPA filter 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. A pool or equivalent filled with water shall be located in the work area just outside the equipment room for workers to clean off foot coverings after leaving the work area and prevent excessive contamination of the worker decontamination enclosure system. A drum lined with a labeled six (6) mil polyethylene bag for collection of disposable clothing may be located in this room. Contaminated footwear (e.g. rubber boots, other reusable footwear) shall be stored in this area for reuse the following work day.

3103 Waste Container Pass-Out Airlock

3103.1 The waste container pass-out airlock shall be constructed at a location away from the worker decontamination enclosure system. Whenever possible, this shall be located where there is direct access from the work area to the outside of the building.

3103.2 This airlock system shall consist of an airlock, a container staging area, and another airlock with access to outside the work area.

3103.3 The waste container pass-out airlock shall be constructed in a similar fashion to the worker decontamination enclosure system using similar materials and airlock and curtain doorway designs.

3103.4 This airlock system shall not be used to enter or exit the worksite.

3104 Maintenance of Workplace Barriers and Worker Decontamination Enclosure Systems

3104.1 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.

3104.2 All polyethylene barriers inside the workplace, in the worker decontamination enclosure system, in the waste container pass-out airlock and at partitions constructed to isolate the work area from occupied areas 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 on separate sheet or in the daily project log.

3104.3 Damage and defects in the enclosure system are to be repaired immediately upon discovery.

3104.4 Use smoke tubes to test the effectiveness of the barrier system when directed by the Owner's Representative.

3104.5 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.

3104.6 If air samples collected outside of the work area during abatement activities indicate airborne fiber concentrations greater than 0.01 f/cc or pre-measured background levels (whichever is lower) work shall immediately stop for inspection and repair of barriers. Clean-up of surfaces outside of the work area using HEPA vacuum or wet cleaning techniques may be necessary.

3104.7 Install and initiate operation of negative pressure ventilation equipment as needed to provide one air change in the work area every fifteen (15) minutes (see Section 2201.1). 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 (1) unit is installed, they should be turned on one at a time, checking the integrity of wall barriers for secure attachment and need for additional reinforcement. Insure that adequate power supply is available to satisfy the requirements of the ventilating units. Negative pressure ventilation units shall be exhausted to the outside of the building whenever feasible. They shall not be exhausted into occupied areas of the building. Twelve (12) inch extension ducting shall be used to reach from the work area to the exhaust area. Contractor shall insure that HEPA filters are changed regularly, filters are not obstructed or damaged and that the exhaust ducting does not release fibers into uncontaminated building areas.

3105 Testing Enclosures

Once constructed and reinforced as necessary, with negative pressure ventilation units in operation as required, test enclosure for leakage utilizing smoke tubes. Repair or reconstruct as needed.

3106 Emergency Exits

Clearly identify and maintain emergency and fire exits from the work area. Emergency exits shall be established and clearly marked with duct tape arrows or other effective designations to permit easy visibility 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.

3107 Removal of Fixtures

Clean, enclose in polyethylene and remove the ceiling mounted objects such as lights and other items that may interfere with the abatement process and where not previously cleaned and sealed off. In the case of fixtures which will not interfere with timely abatement progress if left in place, clean and enclose such fixtures during work preparation activities. Utilize localized spraying of amended water and/or HEPA vacuums to reduce fiber dispersal during the removal of these fixtures.

3108 Commencement of work shall not occur until:

3108.1 Enclosure systems have been constructed and tested.

3108.2 Negative pressure ventilation systems are functioning adequately.

3108.3 All pre-abatement submissions, notifications, postings, permits, and abatement drawings have been provided and are satisfactory to the Owner's Representative (see Section 1701).

3108.4 All equipment for abatement, clean-up and disposal are on hand and proven to be in operating order.

3108.5 All worker training (and certification) is completed and evidence thereof has been provided to Owner's Representative.

3108.6 Contractor receives written permission from the Owner or Owner's Representative to commence abatement.

3200 Workplace Entry and Exit Procedures

3201 General Requirements

3201.1 All workers and authorized personnel shall enter the work area through the worker decontamination enclosure system.

3201.2 All personnel who enter the work area must sign the entry log, located in the clean room, upon entry and exit.

3201.3 All personnel, before entering the work area, shall read and be familiar with all posted regulations, personal protection requirements (including workplace 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.

3202 Worker Protection Procedures During Entry and Exit

3202.1 All personnel shall proceed first to the clean room, remove all street clothes and appropriately don respiratory protection (as deemed adequate for the job conditions) and launderable 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.

3202.2 Personnel wearing designated personal protective equipment shall proceed from the clean room through the shower room and equipment room to the main work area.

3202.3 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 using brushes or other appropriate equipment just prior to entering the equipment room.

3202.4 Personnel shall proceed to equipment room where they remove all protective equipment except respirators. Deposit disposable (and launderable) clothing into appropriately labeled containers for disposal (and laundering).

3202.5 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).

3202.6 Still wearing respirators, personnel shall proceed to the shower area, clean the outside of the respirators and the exposed face area under running water prior to removal of respirator and shower and shampoo to remove residue 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. Cartridges must be changed for each new entry into the work area.

3202.7 After showering and drying off, proceed to the clean room and don clean disposable (and/or launderable) clothing if there will be later re-entry into the work area or street clothes if it is the end of the work shift.

3202.8 Worker Protection Procedures for glove bag removal areas shall include:

3202.8.1 Each worker and authorized visitor shall, upon entering the worksite: remove street clothes to a minimum of street clothing and don protective coveralls with attached hoods and boots.

3202.8.2 Each worker and authorized visitor shall, each time he leaves the work area: HEPA vacuum the exterior of the coveralls which shall then be disposed of as asbestos contaminated waste. The worker shall then dress into his street clothes before leaving the work site.

3202.8.3 A full decontamination shower unit shall be provided on close proximity to the glove bag work area. In the event of a glove bag rupture, or any other disturbance of asbestos-containing material that results in any release of dust from that material, the workers shall follow the decontamination procedures set forth in the gross removal portion of this specification. Any street clothes involved in such decontamination shall be handled in the manner required for reusable clothing as detailed in 29 CFR 1910.1001.

3202.8.4 Workers removing waste containers containing glove bag waste shall do so wearing a respirator and dressed in coveralls.

3202.8.5 Workers shall not eat, drink, smoke, or chew gum or tobacco at the time work site except in the established clean areas.

3202.8.6 Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos-containing or contaminated materials and until final cleanup is completed.

3203 These procedures shall be posted in the clean room and equipment room.

3300 <u>Waste Container Pass-out Procedures</u>

3301 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 been constructed).

3302 Waste pass-out procedures shall utilize two (2) teams of workers, an "inside" team and an "outside" team.

3303 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. The cleaned containers shall then be placed into the waste container pass-out airlock. No worker from the inside team shall further exit the work area through this airlock.

3304 The outside team, wearing a different color protective clothing and appropriately assigned respirators, shall enter the airlock from outside the work area, enclose the containers in clean, labeled, six (6) mil polyethylene bags and remove them from the airlock to the outside. No worker from the outside team shall enter any further into the work area through this airlock.

3305 The exit from this airlock shall be secured to prevent unauthorized entry.

3400 Personnel Protection Requirements

3401 General

The Contractor, by initiating work on this project acknowledges that he alone is responsible for providing for and enforcing the personnel protection requirements on this project.

3402 Training

3402.1 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, in accordance with this document and all applicable regulations.

3402.2 Special onsite training on equipment and procedures unique to this job site shall be performed as required.

3402.3 Training in emergency response and evacuation procedures shall be provided.

3403 Respiratory Protection

3403.1 All respiratory protection shall be provided to workers in accordance with the submitted written respiratory protection program, which includes all items in OSHA 29 CFR 1910.134 (a) (1-11). This program shall be posted in the clean room of the worker decontamination enclosure system.

3403.2 Workers shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.

Implementation Suggestions: The use of engineering controls such as negative pressure ventilation units and HEPA vacuums and good work practices such as the wetting of ACM prior to abatement (when applicable), removal in small sections, use of glove bags and proper clean-up and containerization all help to reduce airborne fiber levels in the work area. A property designed air monitoring program, implemented by a qualified air sampling professional and analytical laboratory, may support the use of respiratory protective devices that provide a lower factor of protection to the workers than air supplied respirators, for some abatement activities. Safety problems associated with the use of airline systems and time and financial constraints may be reduced through the use of alternative types of

respiratory protection. It is imperative, however, that adequate air monitoring of fiber levels and a well designed respiratory protection program (in accordance with 29 CFR 1910.134) be implemented. Basic points of the respirator program include: proper selection of respirator type and size, training of personnel in the proper inspection, donning, cleaning and maintenance procedures for the respirator selected including their use limitations, and a good filtering and fit testing program to provide proper protection. Single-use disposable respirators are not recommended for use during any asbestos abatement activities. Negative-pressure dual cartridge respirators shall be equipped with high efficiency filters and exhalation and inhalation valves to permit the performance of positive and negative pressure fit checks.

3403.3 Persons working within the glove bag area will wear a minimum of a half-mask, dual-cartridge, HEPA-filtered respirator. Each employee will wear a disposable, full-body suit, with hood covering respirator straps.

3403.4 Fit Testing

3403.4.1 Workers must perform positive and negative pressure fit checks 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.

3403.4.2 Workers shall be given a qualitative fit test in accordance with procedures detailed in the OSHA Asbestos Construction Standard (29 CFR 1926.58, Appendix C) for all respirators to be used on this abatement project. An appropriately administrated quantitative fit test may be substituted for qualitative fit test.

3403.4.3 Documentation of adequate respirator fit must be provided to the Owner's representative.

3403.5 No one wearing a beard shall be permitted to don a respirator and enter the work area.

3403.6 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.

3404 Protective Clothing

3404.1 Disposable clothing including head foot and full body protection shall be provided by the contractor in sufficient quantities and adequate sizes for all workers and authorized visitors.

3404.2 Launderable clothing, if required, shall be provided by the Contractor in sufficient quantities and adequate sizes for all workers and authorized visitors.

3404.3 Protective eyewear, gloves, rubber boots and/or other footwear shall be provided by the Contractor as required for workers and authorized visitors. Safety shoes may be required for some activities.

3500 Removal Procedures

3501 Full Containment Areas

3501.1 Clean, isolate and prepare the work area in accordance with Section 3100.

3501.2 Wet the ACM with a removal encapsulant solution using appropriate equipment. Saturate the material to the greatest extent possible. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal.

3501.3 Removed material should be containerized (double bagged) before moving to a new location for continuance of work.

3501.4 Materials removed from building structures or components shall not be dropped or thrown to the floor and/or ground. Materials should be removed as intact sections or components whenever possible, double bagged and carefully lowered to the floor.

3501.5 Containers (six (6) mil polyethylene bags or drums) shall be sealed when full. (Wet material can be exceedingly heavy. Double bagging of waste material is always necessary.)

3501.6 Asbestos containing waste with sharp-edge components (e.g. nails, screws, metal lath, tin sheeting, etc.) will tear the polyethylene bags and sheeting and shall be placed in drums for disposal.

3501.7 After completion of any stripping work, surfaces from which ACM has been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residue.

3501.8 Clean-up shall proceed in accordance with Section 3600.

3501.8.1 After the work area has been rendered free of visible residues, two coats of a satisfactory lockdown encapsulant 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.

3502 Glove Bag Removal Procedures

3502.1 Requirements for glove bag procedures to be followed.

3502.2 Glove bags are approximately 40-inch-wide by 64-inch-long fitted with internal gloves through which the work can be performed. The bags are made of transparent 6 mil thick polyethylene plastic with areas of Tyvek 1 material. When properly installed and used, they permit workers to remain completely isolated from the asbestos material during removal activities. Glove bags provide a flexible, easily installed, and quickly-dismantled, temporary, small negative pressure work area enclosure that will be used for pipe insulation removal maintenance jobs. These bags are single-use control devices that are disposed of at the end of each job. Glove bags are readily specialty supply houses. Glove bags come pre-labeled with the asbestos warning label prescribed by OSHA and EPA for bags used to dispose of asbestos waste.

3502.3 Glove bag equipment and supplies - Supplies and materials that are required to use glove bags include:

3502.3.1 Portable light source for above ceiling areas.

3502.3.2 Tape to seal glove bag to the abatement area.

3502.3.3 Amended water or other wetting agents.

3502.3.4 An airless sprayer for the application of the wetting agent.

3502.3.5 Bridging or removal encapsulant (a paste-like substance for coating asbestos) to seal the rough edges of any asbestos-containing materials that remain within the glove bag at the points of attachment after the rest of the asbestos has been removed.

3502.3.6 Tools such as razor knives, wire cutters, and nylon brushes (or other tools suitable for cutting wires, etc.).

3502.3.7 A HEPA filter-equipped vacuum for maintaining a negative pressure in the glove bag (to minimize the release of asbestos fibers) during any use of the bag and for cleaning any material that may have escaped during the installation of the glove bag or suspect debris from the work area.

3502.3.8 HEPA-equipped dual-cartridge or better protective respirators for use by the employees involved in the removal of asbestos with the glove bag.

3502.3.9 Personal air monitoring pump and appropriate cassettes.

3502.4 Glove Bag Work Practices

The proper use of glove bags requires appropriate training and includes the following steps:

3502.4.1 Glove bags must be designed so that a HEPA vacuum will be attached and operating throughout the entire removal process.

3502.4.1.1 Cut a small slit in the upper section of the glove bag on the opposite side from the vacuum nozzle attachment. Secure a piece of 6 mil plastic over the inside of the silt to act as a oneway flap.

3502.4.1.2 Or, securely attach a HEPA filter in the upper section of the glove bag on the opposite side from the vacuum attachment. Secure the filter in place with both tape and spray adhesive. Test the integrity of the filter and glove bag prior to installation.

3502.4.2 The section of material where removal is to occur shall be wet wiped and sprayed with bridging or removal encapsulant prior to installation.

3502.4.3 Glove bags must be installed so that they completely cover the pipe or other structure where asbestos work is to be done. Glove bags are to be installed by cutting the sides of the glove bag to fit the size of the pipe from which asbestos is to be removed. The glove bag is attached to the pipe by folding the open edges together and securely sealing the flaps with spray adhesive and/or tape. All openings in the glove bag must be sealed with duct tape or equivalent material. The bottom seam of the glove bag must also be sealed with duct tape or equivalent to prevent any leakage from the bag that may result from a defect in the bottom seam.

3502.4.4 The employee who is performing the asbestos removal with a glove bag must wear, at a minimum, a half-mask dual-cartridge, HEPA-equipped respirator; respirators should be worn by employees who are in close contact with the glove bag and who may thus be exposed as a result of small gaps in the seams of the bag or holes punched through the bag by a razor knife or piece of wire mesh.

3502.4.5 Prior to removal of asbestos-containing materials using the glove bag method, the area beneath the removal must be covered with a 6 mil thick drop cloth covering an area of 8 feet by 8 feet (8 x 8), to guard against contamination of the room.

3502.4.6 Once the asbestos material has been thoroughly wetted, it can be removed from the pipe, or other surface. Asbestos-containing materials are generally covered with painted canvas and/or wire mesh. Painted canvas can be cut with a razor knife and peeled away from the asbestos-containing material underneath. Once the canvas has been pealed away, the asbestos-containing material underneath may be dry, in which case it should be resprayed with a wetting agent to ensure that it generates as little dust as possible when removed. If the asbestos-containing material is covered with wire mesh, the mesh should be cut with nips, tin snips, or other appropriate tool and removed. A wetting agent must then be used to spray any layer of dry material that is exposed beneath the mesh, the surface of the stripped underlying structure and the inside of the glove bag.

3502.4.7 After removal of the layer of asbestos-containing material, the pipe or surface from which asbestos has been removed must be thoroughly cleaned with a nylon brush and wet-wiped with a wetting agent until no traces of the asbestos-containing material can be seen.

3502.4.8 The asbestos material removed from the pipe or other surface that has fallen into the enclosed bag must be kept thoroughly wetted with a wetting agent (applied with an airless sprayer through the precut port provided in most glove bags or through a small taped hole in the bag).

3502.4.9 A maximum of 6 inches of adjacent insulation shall be removed and insulation edges must be encapsulated with bridging encapsulant to ensure that the surfaces do not release fibers to the atmosphere after the glove bag has been removed.

3502.4.10 When the asbestos removal and encapsulation have been completed, a vacuum hose from a HEPA-filtered vacuum must be inserted into the glove bag through the port to remove any air in the bag that may contain asbestos fibers. When the air has been removed from the bag, the bag should be squeezed tightly (as close to the top as possible), twisted, and sealed with tape, to keep the asbestos materials safely in the bottom of the bag. The HEPA vacuum can then be removed from the bag and the glove area to be disposed of properly by placing it in a separate 6 mil labeled bag. Twist this bag into a "gooseneck" and tape shut.

3502.4.11 The HEPA vacuum shall be used to clean areas adjacent to the work area that contain suspect debris.

3502.4.12 Exposed pipe fittings shall be wrapped with bright yellow duct tape and labeled with the date of removal and removal persons initials.

3503 Removal Procedures for Vinyl-Asbestos Floor Tile, Floor Tile Mastic and Baseboard Adhesive

3503.1 Follow containment requirements specified in Sections 1307.3 and 1307.4. Install critical barriers on all windows, doors, corridor entrances, drains, diffusers and skylights.

3503.2 Where VAT and mastic are to be removed and the VAT and mastic are in a previously contained work area, remove the primary barriers from the floor only but not the walls and remove the VAT and mastics so that they do not become friable during removal.

3503.3 Where VAT and mastics are the only ACMs to be removed in a room, the room shall be secured against entry by any unauthorized or untrained person throughout the work. Post warning signs and erect temporary barricades, install critical barriers and 4 foot high splash guards using 6 mil plastic sheeting. The removal shall be executed in such a manner so that the non-friable VAT and mastics not become friable during removal. After removal of VAT and mastic, the Owners representative shall perform a final inspection and testing of the room. When the area is found acceptable to the Owners representative, the warning signs and temporary barricades will be removed and the room will be released as decontaminated.

3503.4 Removal of the VAT and mastics shall be performed with wet methods and handscrapers. Heating and/or the application of dry ice may be used also. Solvents may be used as long as; Contractor shows proof of proper respiratory protection; solvents are not used in conjunction with heating techniques; and the use of solvents will not void manufacturers warranty for subsequent flooring to be used. Power tools, grinders or other machines which may produce any dust during removal of VAT that are not HEPA filtered, and misfed during debris collection are not allowed.

3600 Clean-up Procedure for Areas Governed by Section 3501

3601 Remove and containerize all visible accumulations of ACM and asbestos contaminated debris utilizing rubber dust pans 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.

3602 Clean all surfaces in the work area using wet-dry HEPA vacuums, rags, mops and sponges as appropriate.

3603 Remove the cleaned outer layer of plastic sheeting from walls and floors. Windows, doors, HVAC system vents and all other openings shall remain covered. Decontamination enclosure systems shall remain in place and continue to be utilized.

3604 Remove all containerized waste from the work area and waste container pass-out airlock.

3605 Decontaminate all tools and equipment and remove at the appropriate time in the cleaning sequence.

3606 Inspect the work area for visible residue. If any accumulation of residue is observed, it will be assumed to be asbestos and the twenty-four (24) hour settling period/cleaning sequence will occur.

3607 The work area shall be cleaned until it is in compliance with Federal, State and Local requirements and any more stringent criteria agree upon by the Contractor and Owner's representative prior to initiation of abatement. Any additional cleaning cycles shall be provided, as necessary, at no cost to the Owner, until all criteria have been met.

3700 Clearance Inspections/Air Monitoring

3701 Following the completion of clean-up operations, the Contractor shall notify the Owner's representative that work areas are ready for clearance air monitoring.

3702 The Owner's representative shall then arrange with a Contractor's representative to aggressively sample the air in the work area for airborne fiber concentrations.

3703 The air sampling shall be conducted using sampling pumps calibrated at a flow rate of at least two (2) and not more than ten (10) liters per minute using collection media and procedures in accordance with NIOSH Standard Analytical Method 7400. Air volumes shall be sufficient to provide reliable results down to a concentration of 0.01 fibers per cubic centimeter of air (f/cc) or lower. Minimum air volumes of 1200 liters shall be collected for method 7400.

3704 The number of samples that are required and the specific locations where they shall be taken will be established by the Owner Representative's licensed Air Monitor/Consultant before abatement activity begins.

3705 Air samples shall be analyzed by Phase Contrast Microscopy unless specifically required or requested otherwise by the Owner or the Contractor. If the Contractor requests an alternate method, he shall be liable for any additional analysis costs.

3706 All air samples collected for clearance purposes shall indicate concentrations of airborne fibers less than 0.01 f/cc for release of the work area.

3707 Any areas exceeding this level shall be recleaned using appropriate procedures and retested at the contractors expense until satisfactory levels are obtained.

3800 Waste Disposal Procedures

3801 For asbestos-containing waste material to be transported off the facility site, label containers or wrapped materials with the name of the waste generator and the location at which the waste was generated.

3802 As the work progresses, if available storage capacity on site is exceeded, sealed and labeled containers of asbestos containing waste shall be removed and transported to the prearranged disposal location. As per NESHAPs, all asbestos-containing waste material shall be deposited as soon as is practical by the waste generator.

3803 Disposal must occur at certified landfill authorized to accept asbestos waste in accordance with regulatory requirements of NESHAP and other applicable federal, state and local statutes, laws, ordinances, rules, guidelines and regulations.

3804 Copies of all dump receipts, trip tickets, transportation manifests or other documentation of disposal shall be delivered to the owners representative for inclusion in his records. The record keeping format shall utilize a chain-of-custody form which includes the names and

addresses of the Generator (Owner as identified in General Specifications), Contractor, pickup site, and disposal site, the estimated quantity of the asbestos waste and the type of containers used. The form shall 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 shall also appear on the form.

3805 For all asbestos-containing waste material transported off the facility site, maintain waste shipment records (WSR) as stipulated in Section 61.150 of the November 20, 1990 NESHAPs Asbestos Revision (40 CFR, Part 61, Subpart M.).

3806 Transportation to the Landfill

3806.1 Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an enclosed truck or container for transportation.

3806.2 Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of waste so that the signs are visible. The markings must conform to the requirements of 61.149 (d)(1) (i),(ii), and (iii).

3806.3 When moving containers, utilize hand trucks, carts and proper lifting techniques to avoid back injuries. Trucks with lift gates are helpful for raising and lowering drums of material to and from the truck.

3806.4 The encapsulated cargo area of the truck shall be free of debris and lined with six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extended up the sidewalls. Wall sheeting shall be overlapped and tapped into place.

3806.5 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.

3806.6 Personnel loading asbestos containing 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.

3806.7 Any debris or residue observed on containers or surfaces 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.

3806.8 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. Unbagged material shall not be placed in these containers, nor shall the dumpster be used for non-asbestos waste. Bags shall be placed, not thrown, into these containers to avoid splitting.

3807 Disposal at the Landfill

3807.1 If an independent transporter is employed, he shall, for the purposes of compliance with these specifications, be considered a subcontractor to the abatement contractor and shall be supplied with and held to the provisions of this section.

3807.2 Upon reaching the landfill, trucks are to approach the dump location as closely as possible for unloading of the asbestos containing waste.

3807.3 Bags, drums and components shall be inspected as they are off-loaded at the disposal site. Material in damaged containers shall be placed in empty drums or bags or repaired using duct tape as necessary.

3807.4 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).

3807.5 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-facepiece, air-purifying, dual cartridge respirators equipped with high efficiency filters.

3807.6 Following the removal of all containerized waste, the truck cargo area shall be decontaminated using EPA vacuums and/or wet methods to meet the nonvisible 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.

3900 Release and/or Reestablishment of the Work Area

3901 Reestablishment of the work area shall only occur following the completion of clean-up procedures and after clearance visual inspections and air monitoring has been performed and documented to the satisfaction of the Owner and the Owner's representative.

3902 Polyethylene barriers shall be removed from walls and floors at this time, maintaining decontamination enclosure system and barriers over doors, windows, etc. as required.

3903 The Contractor and the Owner's representative shall visually inspect the work area for any remaining visible residual. Evidence of contamination will necessitate additional cleaning requirements in accordance with the provisions of Section 3600, to be performed at the Contractors expense.

3904 Additional air monitoring shall be performed at the Contractors expense in accordance with Section 3700 if additional clean-up is necessary.

3905 Following satisfactory clearance of the work area, remaining polyethylene barriers may be removed and disposed of as asbestos contaminated waste.

3906 At the discretion of the Contractor, mandatory requirements for personal protective equipment may be waived following the removal of all barriers.