

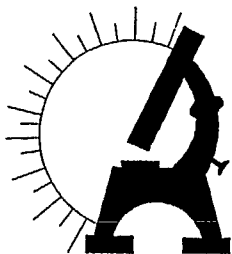
SET 1
November 02, 2000

*Abatement Plan for the Removal
of Asbestos at
ASARCO Various Sites November 2000
El Paso, Texas*

Prepared for:

ASARCO, Inc.
ATTN: Peggy Munsell
P.O. Box 1111
El Paso, Texas 79999

Prepared by:



Sun
City
Analytical,
Inc.

Received MSDS for
Sulfuric H⁺
Contam dust
11/22/00
R. Hor

ENVIRONMENTAL SERVICES

1409 Montana
El Paso, Texas 79902
(915) 533-8840
Fax (915) 533-8843
E-mail Scai@flash.net

NOTE: This project manual was designed for work directed herein and is designed to be used with *Sun City Analytical, Inc.* air monitoring SOP's and manuals. This booklet may not be used for any other purpose. *SUN CITY ANALYTICAL, INC.* assumes no responsibility for any other use or misuse of this project manual. Copyright (C) 1999 *SUN CITY ANALYTICAL, INC.* All rights reserved. No portion may be reproduced without expressed written consent from *Sun City Analytical, Inc.*

November 02, 2000

ABATEMENT PLAN

Design For:

ASBESTOS ABATEMENT
at
ASARCO Various Sites November 2000
2301 Paisano
El Paso, Texas 79901

FOR

ASARCO, INC.
ATTN: Peggy Munsell
P.O. Box 1111
El Paso, Texas 79999

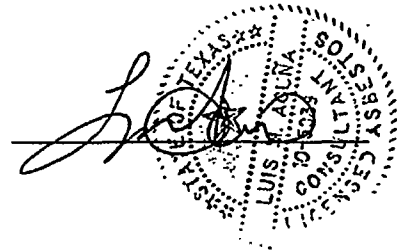
LICENSED ASBESTOS CONSULTANT AGENCY:



TEXAS LICENSE #10-0011
SUN CITY ANALYTICAL, INC.
1409 MONTANA
EL PASO, TEXAS 79902

LICENSED INDIVIDUAL ASBESTOS CONSULTANT:

Luis M. Acuña, P.E.A.
TEXAS LICENSE #10-5039
Expires February 9, 2001
SUN CITY ANALYTICAL, INC.
1409 MONTANA AVENUE
EL PASO, TEXAS 79902



ASARCO ELP 0013770

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END OF THIS SECTION

**BID ADVERTISEMENT
FOR
ASBESTOS ABATEMENT
AT
ASARCO Various Sites
2301 W. Paisano
El Paso, Texas 79901**

Notice is hereby given that sealed proposals will be accepted for asbestos abatement of the above location **ONLY** from invited contractors. The proposal shall be in accordance with Plans and Specifications designed by:

SUN CITY ANALYTICAL, INC.
1409 Montana
El Paso, Texas 79902
(915) 533-8840

The Proposal will be accepted until 11:00 a.m. (MST), Friday November 10, 2000 at:

SUN CITY ANALYTICAL, INC.
1409 Montana
El Paso, Texas 79902
(915) 533-8840

where they will be publicly opened by Owner and Consultant.

Bid proposal shall be accompanied by a Bid Bond, or cashiers check payable without recourse to ASARCO, Inc. in the amount of not less than 5% of the total bid, *if applicable*. Bid proposal when submitted indicates the Bidder will furnish all Insurance called for in the provisions. The Bidder also certifies that each project will be completed on or before the specified date.

Successful Bidder shall complete project in accordance with dates set forth in Project Schedule included in this project manual. If Bidder fails to finish project in said dates, he is liable to ASARCO Inc. or have deducted from funds owed, as liquidated damages the sum of five-hundred (\$500.00) dollars per day plus Consultant and/or Air monitoring costs per day for each calendar day of delay until the project is substantially completed.

There will be a mandatory pre-bid walk-thru of the project on **Tuesday November 7th 2000, at 10:00 a.m.** (MDST). All interested Bidders are required to attend. Prospective contractors should arrive no later than **10:00 a.m. (MDST)** on **Tuesday November 7th 2000**, at the ASARCO security gate located at **2301 W. Paisano** in El Paso, Texas. Contractors should bring a hard hat, goggles, hearing protection, long sleeve shirt, respirator with HEPA filters and hard sole boots or shoes. Individuals are reminded that proper use of respirators shall be enforced and beards and/or hair growth shall be grounds for denying access to project site.

Owner reserves the right to refuse any and all offers for any reason that serves the best interest of the Owner or building Occupants. Owner reserves the right to waive any technicality or irregularity in the project plans and/or Bidder documentation.

Conflicts and questions arising during the bid phase and throughout any asbestos abatement activities will be resolved on a basis of whether an asbestos or non-asbestos related activity is involved. Any asbestos related conflicts and questions will be governed by the appropriate project manual sections. Otherwise, the Owner's supplementary and/or up-front "boiler plate" documents and any other non-asbestos related sections of the project manual will be applicable.

Conflicts and questions which the selected Contractor fails to bring to the attention of Owner and/or Consultant prior to being awarded the contract will be resolved at no additional cost to Owner and/or the Consultant.

Contractors desiring Plans and Specifications may obtain Bid Documents at the Walk Thru Meeting from SUN CITY ANALYTICAL, INC., after a fifty dollar (\$50.00) deposit is required per set of plans and specifications. The deposit will be returned to each bidder upon return of plans and specifications in good condition. Sun City Analytical, Inc. will not be obliged to refund for documents returned later than ten (10) days after date of bid opening.

SUPPLEMENTARY CONDITIONS TO THE CONTRACT

- 1.01 All protective equipment required for all employees and Owner's representative the IH and any authorized visitors shall be provided by the Contractor.
- 1.02 Contractor shall submit construction, proposed completion, and proposed work schedule to the IH at the pre-construction meeting.
- 1.03 Contractor shall post competent person at entrance to regulated area at all times during working hours. After working hours and when regulated area has been established Contractor shall post security guard at entrance to regulated area. The primary duty of person at entrance to regulated area is to prevent anyone from entering regulated area without wearing proper protective equipment and otherwise complying with all applicable requirements in this Project Manual.
- 1.04 Contractor hereby agrees to indemnify and hold Sun City Analytical and Asarco free and harmless from any obligations, costs, claims, judgments, attorneys' fees, and attachments arising from or growing out of this any damage to property or injury or death to persons (including any damage or injury caused to property or person of any party including any employee of Contractor and/or associated with companies and/or any third party) arising from or growing out of the performance of these services under this Contract, except when the same are caused by the willful misconduct or negligence of the Consultant.
- 1.05 Conflicts and questions arising throughout any asbestos abatement activities will be resolved on a basis of whether an asbestos or non-asbestos related activity is involved. Any asbestos related conflicts and questions will be governed by the appropriate project manual sections. Otherwise, the Owner's supplementary and/or up-front "boiler plate" documents and any other non-asbestos related sections of the project manual will be applicable.
- 1.06 As the representative of the Owner, the IH shall perform air monitoring of all areas of work to ensure compliance with this Project Manual and all applicable asbestos laws. This air monitoring does not relieve the contractor from monitoring required for compliance with all applicable asbestos laws. IH has the right to take action or direct Contractor to take whatever means deemed necessary to protect the environment, persons in the work area, and the general public when his air monitoring results indicate non compliance airborne concentrations of Asbestos fiber levels established by this Project Manual or applicable asbestos laws. IH shall retain at site daily air monitoring results for Contractor, Contractor employees, on regulatory agency to view at their discretion. In the event of any job-related injury, requirements of first aid or accident the IH shall be notified and Contractor shall take appropriate action.
- 1.07 When Contractor Crew consist of personnel whose predominant language is not English Contractor shall ensure:
 - A. All training respiratory, supervisor, worker, etc., is conducted in predominant language. Contractor shall submit proof of all documents and proof that workers passed appropriate test.

- B. All instructions and safety procedures and emergency instructions shall be posted in both English and Spanish. Contractor shall have an interpreter fluent in English and dominant language for communications between IH and workers.
- C. All workers shall be under direct supervision of fluent interpreters especially in the regulated area.

1.08 *RESERVED*

- 1.09 Contractor shall complete project in accordance with dates set forth in Project Schedule included in this project manual. If bidder fails to finish project in said dates, he is liable to ASARCO, Inc. or have deducted from funds owed, as liquidated damages the sum of five hundred (\$500.00) dollars per day for Consultant and/or Air monitoring costs per day for each calendar day of delay until the project is substantially completed.

BID FORM

(Company Name)

Submits following proposal for:

**ASBESTOS ABATEMENT AT
ASARCO, Inc. at
Various Sites
P.O. Box 1111
El Paso, Texas 79999**

By signing and submitting this form, the Bidder is attesting to a site visit of said location, in order to become familiar with conditions affecting the work. Successful Bidder agrees to furnish all labor, materials, equipment, and pay any expenses incurred (taxes, travel, per diem, etc.) to complete work in total compliance with Contract Documents such as but not limited to, Plans, Specifications, Invitation to Bidders, and any addenda issued thereto.

The successful Bidder agrees to complete project with conditions set forth in contract documents, Plans and Specifications and time schedule set forth in the Project Schedule in this specification, furthermore successful Bidder understands that five hundred dollars (\$500.00) per day plus Industrial Hygienist and/or air monitoring costs will be the measure of liquidated damages assessed for each calendar day in excess thereof required to complete the work under this contract.

Bidder agrees to execute the Asarco Contract within three (3) working days for date of notification of Award. Bidder agrees to furnish within five (5) working days from notice to proceed, all required insurance policies covering public and property damage, asbestos occurrence liability, and workman's compensation in the amounts specified in the supplementary conditions of the project. Successful Bidder shall furnish performance and payment bonds equal to 100% of the amounts of the Contract within (5) working days *where applicable*.

Bidder further agrees that he understands the exact scope of the project and that he is willing to perform any increase or decrease in the work in accordance with set provisions of these contract documents. Bidder furthermore guarantees that he has become familiar with local conditions, local laws and ordinances, local permits, and rules that may in any manner affect cost, progress or performance of this contract.

Owner reserves the right to refuse any and all Bidders for any reason that serves the best interest of the Owner or building Occupants. Owner reserves the right to waive any technicality or irregularity in the project plans and/or Bidder documentation. Bidder understands that to be considered a successful Bidder, he must include with the Bid Proposal all submittals required below. Failure to submit required documents and submittals shall be basis to disqualify Bidder at bid opening. Disqualified Bidder shall be considered non-responsive and his bid shall not be

recorded. This contract will not be awarded solely on lowest bid consideration, the submittal package and the unit prices shall be evaluated for the best responsive bidder.

A. Experience

1. Working experience on the ASARCO Plant (Evaluation points 40%).
2. Experience working with OSHA, EPA and TDH asbestos regulations (Evaluation points 30%).

B. Proof of personnel qualifications, training and experience:

1. Submit Texas State Contractor License to be able to do asbestos abatement work in Texas.
2. Submit name of supervisor and alternate to be used on project. Submit his current medical, EPA approved supervisor training certificate, and Texas State License. This will be used on TDH 10 day notification.
3. Submit name of every worker to be used on project. Submit his current medical, EPA approved worker training certificate, and Texas State License.

BID ITEM 1: Sulfuric Acid Loading: Remove and dispose of 425 l.f. of thermo insulation from a pipe rack that is about 15 feet from the ground.

Dollars \$ _____

BID ITEM 2: main office ~~Environmental Office~~ ^{Prepare}: Remove ~~and dispose of~~ a minimum of 55 s.f. of linoleum material at the Environmental Office and includes the replacement by stick down tile.

Dollars \$ _____

BID ITEM 3: Reverb Plant:

1. Remove ~~and dispose of~~ 70 s.f. of tank ends and ~~702~~ ^{in correct 350 s.f.} s.f. of tank insulation as shown in the bid walk through.
2. Remove ~~and dispose of~~ 350 l.f. of pipe run and fitting insulation material.
3. Remove ~~and dispose of~~ 150 s.f. of flue duct insulation material.

Dollars \$ _____

BID ITEM 4: Yard Office ^{→ piperack} Remove ~~and dispose of~~ 25 l.f. of electrical wire insulation material at the yard office ^{piperack}.

Dollars \$ _____

- ASARCO to dispose of waste.
- Contractor must bag/wrap ACM to meet EPA requirements.

UNIT PRICES: Additive/Deductive Unit Prices

Removal of linoleum \$ _____ per s.f. _____ Dollars per s.f.

Removal of pipe run \$ _____ per l.f. _____ Dollars per l.f. and fittings from pipe racks above 15' from ground.

Removal of electrical wire \$ _____ per l.f. _____ Dollars per

Removal of tank \$ _____ per s.f. _____ Dollars per s.f. insulation using scaffolds or mechanical lift.

Respectfully submitted:

(Firm Name)

Firm's Address: _____

By

(Authorized Signature)

Phone (____) _____

(Name Title)

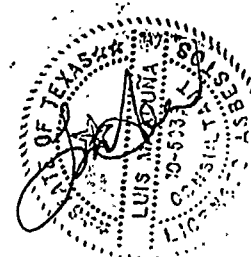
Seal _____

**PROJECT SCHEDULE
ASARCO Various Sites November 2000**

ACTIVITY	DATE AND TIME	LOCATION
Advertisement	BY INVITATION ONLY	BY INVITATION ONLY
Pre-bid walk-thru	November 7 th , 2000 10:00 a.m. (MDST)	ASARCO 2301 Paisano El Paso, Texas
Bids Due	November 10 th , 2000 11:00 a.m. (MDST)	Sun City Analytical 1409 Montana El Paso, Texas
Bids Open	November 10 th , 2000 11:00 a.m. (MDST) Public Opening	Sun City Analytical 1409 Montana El Paso, Texas
Contract Award	TBA	
Pre-Construction	TBA	
SAFETY ORIENTATION	November 15, 2000 7:30 a.m. (MDST)	ASARCO 2301 Paisano El Paso, Texas
Begin Project	November 27, 2000 8:00 a.m. (MDST)	ASARCO 2301 Paisano El Paso, Texas
Project Complete	December 12, 2000 3:30 p.m. (MDST)	ASARCO 2301 Paisano El Paso, Texas
Final Acceptance	December 12, 2000 3:30 p.m. (MDST)	ASARCO 2301 Paisano El Paso, Texas
TBA = To Be Announced		

END OF THIS SECTION

SECTION 01010 SUMMARY OF WORK



PART I - GENERAL

1.01 Statement of Work: The work consists of furnishing all labor, plant, and materials and performing all work in strict accordance with this plan. Work shall include but not be limited to: preparation, clean up of debris, and removal of ACM flooring, electrical wire insulation, tank insulation, pipe runs and fitting insulation materials at Various Sites. (using Isolation, decontamination unit and wet methods.) and all OSHA, EPA air monitoring and air sampling. Where there is a conflict of applicable laws or this specification, Contractor shall immediately notify Owner or his representative the owners representation the industrial hygienist (IH).

1.02 Project Objectives:

- A. Remove asbestos containing materials from areas described in Scope of Work, Drawings, and this Project Manual.
- B. No individual shall be exposed to asbestos in excess of the OSHA Standards and these specifications.
- C. The Contractor shall ensure that no asbestos contamination occurs outside any containment erected.
- D. *The Contractor shall ensure that all waste is properly packaged and disposal is coordinated with the owner. Disposal of the material will be burden by the owner, however the contractor is responsible for the proper packaging and labeling of the waste.*
- E. The Contractor shall document all activities pertaining to this project in accordance with these specifications and all applicable laws. At the conclusion of the project, contractor shall submit this documentation to the Owner after it has been reviewed by the Industrial Hygienist (IH).
- F. The Contractor shall ensure that all special precautions, as stated in these documents, have been taken to protect the environment and personnel working at the Plant.

1.03 Scope of Work:

- A. Remove asbestos from the areas shown at the pre-bid conference, and in the specifications and addenda. Bidder must field verify types, location, quantities, and access to ACM and any other special or unusual circumstances during the mandatory pre-bid conference. Bidder shall be responsible to base its bid upon actual types, quantities and conditions present at the project site.
- B. The purpose of this project is to completely remove all specified asbestos materials from the areas shown on the drawings, specifications, addenda and pre-bid conference.

BID ITEM 1: Sulfuric Acid Loading

- 1. Remove and dispose of 425 l.f. of pipe runs and fittings insulation material at the Sulfuric Acid Loading. *(includes 25 l.f. at ammonia tank).*
- 2. The pipes are accessible from the ground at certain locations, however the majority of the pipe is on pipe racks which are above the ground at least 15 feet. Contractor is warned that there is a possibility of sulfuric acid exposure and contractor should

take all precautions and safety requirements to protect his workers and the environment.

BID ITEM 2: Environmental Office

1. Remove and dispose of a minimum of 55 s.f. of linoleum material at the Environmental Office.
2. Contractor shall repair the area removed by replacing the linoleum with glued down floor tile of the same color of linoleum removed. The edge of the linoleum may be glued down and/or tacked down with appropriate nails or fasteners.
3. The work in this area shall be performed during any weekend or after normal business hour of 8:00 am to 5:00 p.m. This work shall be coordinated with Peggy Munsell and the SCAI 24 hours in advance.

BID ITEM 3: Reverb Plant

1. Remove and dispose of 70 s.f. of tank ends and 702 s.f. of tank insulation material.
2. Remove and dispose of 350 l.f. of pipe run and fitting insulation material.
3. Remove and dispose of 150 s.f. of flue duct insulation material.
4. Contractor is warned that the area is very old and deteriorated which may have various unsafe walking platforms especially where the tank insulation is located. The Contractor is responsible for erecting a safe walking platform and inspect the area for fall hazards prior to starting any work.
5. Contractor shall protect and educate employees from the dangers of histoplasmosis and bio-hazards.

BID ITEM 4: Yard Office

1. Remove and dispose of 25 l.f. of electrical wire insulation at the yard office.
 2. Contractor shall ensure that there is no electrical current on the wires being removed.
- C. Additive/Deductive Unit Prices for work described on the specifications for **Asbestos Abatement at ASARCO at various sites**. If a Deductive price varies from the Additive price than Contractor shall state so. BIDDER must submit unit prices. These unit prices shall be used to calculate any additions or deletions to this contract and will be used to make the final determination on the successful bidder.
1. Provide price per s.f. for removal and disposal of linoleum to include the price for repair and replacement with glued down tile.
 2. Provide price per l.f. for removal and disposal of pipe run and fittings from pipe racks above 15' from ground.
 3. Provide price per l.f. for removal and disposal of electrical wire insulation.
 4. Provide price per s.f. for removal and disposal of tank insulation using scaffolds or mechanical lift.

END OF THIS SECTION



SECTION 01030 SPECIAL PROCEDURES OR CONDITIONS

1.01 The ASARCO - Various sites

- A. Before beginning abatement the Contractor shall do the following:
 - 1. Ensure that all high voltage is turned off and locked out with appropriate safety tags.
 - 2. All electrical facilities will be covered with 6 mil polyethylene. ***Some high lines are near the building. Contractor shall ensure any cranes or manlifts are operated a safe distance from these power lines.***
 - 3. Ensure that all workers have attended the ASARCO safety training course.
 - 4. Ensure the containment and/or regulated area has been set up according to this manual.
 - 5. Obtain written approval from the Building Owner representative before beginning work.
 - 6. Minimum respiratory protection necessary for all asbestos removal at this project site shall be PAPR for removal of friable material and half face for removal of non-friable material.

1.02 Alternate Procedures

- A. Any alternate abatement procedure other than those specified herein shall be submitted in writing to IH for approval. IH has final authority to approve or disapprove or discontinue any procedure used if it violates any provision of this specification or applicable asbestos regulations.
- B. Any alternate procedure shall provide equal to or greater protection than the procedure it is intended to replace.

1.03 Pre-abatement Inspection

- A. Contractor shall inspect the work area and shall document all items which are broken or inoperative, and those which shall be retained by Owner which includes computer equipment on shelves in some rooms. This Contractor inspection is intended to protect the Contractor from any claims made by the Owner following the completion of the Scope of Work. The results of the Contractor's inspection shall be reported to the Owner prior to initiation of the Scope of Work.

1.04 Schedule of abatement

- A. ***The contractor shall maintain a minimum crew of 4 fully accredited asbestos workers and 1 fully accredited asbestos supervisor on site at all times during the project. This workers shall ensure they are registered at the front gate prior to entering the plant.***
- B. ***Contractor shall ensure that his working hours coincide with the working hours of the ASARCO Plant. The Plant is closed at 3:30 and all contractor employees should be at the front gate at 3:30. Contractor is responsible for securing his area prior to leaving the facility.***
- C. ***Contractor shall begin asbestos abatement on November 27th, 2000 and be completed by December 12th, 2000.***

1.05 Site Security

- A. The Contractor shall provide a qualified site security during all the abatement phase. The intent of this precaution is to guard against unauthorized entry into the regulated areas as well as a fire watch.
 - 1. Site Security shall have EPA certification to enter the containment
 - 2. Site Security shall have an OSHA physical.
 - 3. Site Security shall have communication equipment to notify the IH, contractor, fire and or police if the need arises.
 - 4. Site Security shall have a state license to do asbestos work.
 - 5. Site Security shall be licensed as a TDH worker as a minimum.

B. RESERVED

1.06 Emergency Repairs

- A. The Contractor shall immediately notify the IH of any damages, repair any pipe leaks, or electrical failures that might occur during abatement.
- B. Contractor shall have a telephone on site for emergencies.
- C. Emergency phone numbers shall not be limited to but shall include the Industrial Hygienist (IH), Project Manager, Contractor, Etc). All emergency phone numbers shall be posted at the control center.

1.07 Medical Emergencies

- A. The Contractor shall provide at least one person on site who is qualified in First Aid and Cardiac Pulmonary Resuscitation (CPR). The contractor shall submit this persons name and qualification to the IH at the pre-construction meeting.

1.08 Rental Equipment

- A. The Contractor shall obtain written permission for any rental equipment (includes rental trucks or vehicles) to be used on the asbestos project. The rental company shall be notified of the intended use of equipment and shall submit notice to the Industrial Hygienist (IH) that the equipment may be used on this asbestos abatement project. The Industrial Hygienist (IH) has the right to reject any rental equipment that does not confirm with said letter of understanding. The Contractor assumes all liability for failure to disclose the use of rental equipment for an asbestos abatement project.

1.09 Patented Products

- A. The Contractor shall submit a license or equivalent, or written permission to use any patented product and/or procedure in connection with this project. In the event that no patented product and/or procedure is used, the contractor shall submit a notarized statement acknowledging that he is not using patented products or procedures on this project. The contractor assumes all liabilities for failure to disclose the use of a patented product and/or procedure.

1.10 Electrical Work

BEFORE ANY ELECTRICAL WORK IS PERFORMED ON ASARCO PROPERTY, THE CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION FROM ASARCO safety personnel and/or ASARCO electricians.

- A. All of the electrical work shall be performed by either a licensed electrician or a licensed apprentice electrician under direct supervision of a licensed electrician. All electrical work shall meet electrical code requirements.
- B. Any electrical work performed in the regulated area shall be done by a licensed electrician who has met the requirements of OSHA 1926.1101, AHERA 40 CFR 763 (24 hour worker Course), OSHA medical exam, respirator fit test and any license required by any Local, State or Federal Asbestos Law.

1.11 Special Garments and Training

- A. Before any contractor personnel are allowed on ASARCO property they are required to attend a safety orientation course provided by the ASARCO safety personnel at no cost to the contractor. This course is scheduled for November 15, 2000 at 7:30 a.m. with Ms. Peggy Munsell at (915) 521-3640.
- B. All contractor personnel are required to wear long sleeve shirts, boots, hard hat, safety eye wear, hearing protection and a half face respirator with dual HEPA filters. ASARCO will not provide this equipment. Any personnel not complying with this policy shall be removed from the Plant.
- C. All contractor personnel shall have proof of attending an awareness course in accordance with the OSHA standards.
- D. Prior to starting any work in the Plant all workers shall attend the necessary courses and register at the gate.

1.12 Noise Hazard

- A. ASARCO, Inc. has designated certain areas in the Plant as high noise areas. Contractor shall comply with all requirements outlined in the safety meeting regarding high noise areas.
- B. The owners representative has the authority to enforce this hearing protection program.

1.13 **RESERVED**

1.14 Landscape

- A. The Contractor is to ensure that his personnel and equipment do not damage or litter the exterior of any building requiring Work under this Contract. Any damage to the environment shall result in monetary damages or replacement by the Contractor. If the possibility of any such damage exist, the Contractor shall submit to the IH a written explanation of the expected damages and the physical location where the damages are expected to occur. The Owner may, at his option, waive the Contractor's responsibility for protection of that portion of the landscape.
- B. Contractor shall ensure daily that the exterior of the buildings are organized and free of objects, material, or waste generated by his work or personnel.
- C. All authorized construction waste containers will be dumped upon being filled to capacity. Overflow of waste will not be permitted.

1.15 Building Interior

- A. The Contractor shall be responsible for the replacement and/or repair of any damages to areas of the buildings which are not scheduled for removal or

demolition in the plans and specifications. If the Contractor, after on site inspection of the work specified, expects any damages to unspecified areas, the Contractor shall submit along with the abatement plan an explanation of any expected damages. This abatement plan is subject to approval by the Owner and/or his Representative (IH).

1.16 Heat Stress

- A. Contractor shall be responsible for properly training his personnel under 1926.21 regarding Heat Stress. The following chart enclosed (Heat Stress) shall be posted on the emergency bulletin board located in the control center.
- B. Contractor shall ensure that the workers in containment are allowed frequent breaks outside the containment or at the discretion of the Industrial Hygienist or the employee.

1.17 Precedence Regarding Conflicts And/Or Questions

- A. Conflicts and questions arising during the bid phase and throughout any asbestos abatement activities shall be resolved on a basis of whether an asbestos or non-asbestos related activity is involved. Any asbestos related conflicts and questions will be governed by the appropriate project manual sections.
- B. Otherwise, the owner's supplementary and/or up-front "boiler plate" documents and any other non-asbestos related sections of the project manual shall be applicable.
- C. Conflicts and questions which the selected Contractor fails to bring to the attention of Owner and/or Consultant prior to being awarded the contract shall not be considered.

1.18 DISPUTE RESOLUTION:

- A. In an effort to resolve any conflicts that arise during the construction of the project or following the completion of the project, the owner and contractor agree that all disputes between them arising out of or relating to this agreement shall be submitted to non-binding mediation, unless the parties mutually agree otherwise. Mediation shall be prior to the initiation of arbitration or litigation.
- B. Mediation shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association.

1.19 Confined Space Entry

- A. Any crawlspace, attic or other areas in this project may be considered by OSHA as confined spaces and are subject to 29 CFR 1910.146. The contractor shall inspect and test all work areas to ensure the space is not a permitted confined space area. The contractor shall issue entry permit for his workers if required.
- B. Contractor shall ensure that all applicable sections of 1910.146 & 1910.120 are met.

1.20 PIGEON WASTE AND ASSOCIATED DANGER:

- A. Contractor shall provide training to all employees regarding the potential health risks and dangers of working around pigeon dropping (Histoplasmosis).

END OF SECTION

SECTION 01043 PROJECT COORDINATION

1.01 Work Requirements:

- A. The contractor shall schedule his work-hours to accomplish the abatement as specified in this project manual, drawing and any addenda. Contractor shall not perform any work on days other than those specified working days without the written permission of the owner.
- B. Before starting work at any location the Contractor shall inform the Owner and his representative the Industrial Hygienist (IH) or his authorized representative of the intent to start such work. Strict adherence with NESHAPS 10 day notice is required.
- C. Before beginning any work under the contract the Contractor shall provide in writing to the Owner and the IH the name of the person assigned as project supervisor and alternate. If a different person is assigned during the performance period, written notification and all documentation required under these specifications shall be provided to the IH before the new person assumes responsibility as project superintendent.
- D. Working Conditions:
 - 1. The contractor and *his project supervisor* shall visit the site to thoroughly familiarize himself with all the details of the work and the existing conditions, and to verify all dimensions in the field. The Contractor shall notify the IH, in writing, when a discrepancy is found in the contract drawings, specifications, and/or field conditions.
 - 2. The contractor will not be compensated for any unauthorized work.
 - 3. The contractor shall maintain the interior and exterior of the building clean of any and all debris that result from the performance of this project.
 - 4. The contractor shall ensure safe working conditions and abide by all applicable OSHA safety regulations during the performance of the contract with the occupants in the building.
 - 5. The Industrial Hygienist (IH) on site does not have the authority to approve any additional work or change the scope of work set forth in these documents. Contractor shall not be paid for any unauthorized work. For any additional work or change of scope of work the Contractor shall follow the directions for addition work set forth in these documents.

1.02 Personnel Qualifications:

- A. All Contractor personnel involved with this project must be trained and have EPA approved certification showing they are fully qualified to do asbestos removal. Contractor shall ensure every worker is thoroughly familiar with the standard operating procedure of the Contractor for abatement work and with all Applicable Laws. All personnel shall have current OSHA (1926.1101) medical examinations and be trained in the use and care of respirators. Anyone without the proper qualifications listed herein shall not be allowed to work in the abatement area at any time. **ALL PERSONNEL ARE REQUIRED TO ATTEND THE ASARCO SAFETY ORIENTATION PRIOR TO ENTERING THE PLANT. THIS CLASS SHALL BE SCHEDULED WITH ASARCO PRIOR TO PERFORMING ANY WORK**
 - 1. Experience using Occupational Safety and Health Administration (OSHA),

and/or Environmental Protection Agency (EPA) recommended asbestos removal methods.

2. Shall not have previous history, during the last three years of abatement projects started and completed by the Contractor, of any "Serious" (OSHA) fines and/or notices of violation regarding compliance with asbestos removal procedures by any State, Local, or Federal Agency.
3. Shall have, as a minimum, a project manager and/or foreman having a working knowledge and three years experience in asbestos related projects. This shall include but not be limited to meeting requirements of 1.03 B. of this section.
4. Contractor shall be licensed to do work in the State of Texas.

B. Supervisor Qualifications are as follows:

1. Meet requirements of OSHA competent person.
2. Must have knowledge of methods and procedures of the removal, treatment, handling, and disposal of asbestos and asbestos containing materials and subsequent cleaning of affected environment.
3. This person shall be knowledgeable of Federal, State and Local regulations pertaining to the handling of asbestos.
4. This person shall remain on the job site and in immediate contact with those under his supervision during all phases of this project. The supervisor shall be inside the asbestos containment at least 25% of the time supervising the actual asbestos abatement. Whenever the site supervisor leaves the job site, the IH has the requirement under TDH to stop work until the supervisor returns to site. Any and all extra cost arising from said event shall be the responsibility of the Contractor.
5. Persons shall have current OSHA Medical & EPA approved Supervisors Certificates.
6. Shall have a Texas State License to work as a supervisor.
7. Proof they have attended ASARCO safety and orientation course.
8. Shall have proof of attending an OSHA safety course on the hazards of working with sulfuric acid.

C. Worker Requirements:

1. Meet requirements of OSHA (1926.1101).
2. Must have knowledge of methods and procedures of the removal, treatment, handling, and disposal of asbestos and asbestos containing materials and subsequent cleaning of affected environment.
3. This person shall be knowledgeable of Federal, State and Local regulations pertaining to the handling of friable asbestos.
4. Workers shall have current TDH license, OSHA 1926.1101 medical & and fit testing certification. The workers shall also have the EPA, AHERA current refresher certification as well as a copy of their original certification as an AHERA workers on site as per TDH and ASHARA.
5. All workers shall have State License to do work as an Abatement Worker.
6. Proof they have attended ASARCO orientation.
7. Shall have proof of attending an OSHA safety course on the hazards of working with sulfuric acid.

1.03 Permits:

A. The contractor shall obtain all necessary permits from the City Building Inspection Department, Police, Fire Department and any other Agencies having Jurisdiction prior to commencement of work. Some permits required are, but not limited to:

1. Electrical Permits where new or reinstalled electrical devices are performed.
2. Building Permits where any structure of the building is disturbed. This includes removal of asbestos pipe insulation.
3. **EPA NESHAPS 10 day notice shall be signed and sent by owner. Contractor nor consultant are allowed to send notification.**
4. Texas State Health Department Notice
5. Local permits such as fire, police etc.

END OF THIS SECTION



SECTION 01091 DEFINITIONS AND STANDARDS

1.01 Applicable Publications:

- A. The regulations listed below form a part of this specification to the extent referenced. The regulations are referred to in the text by basic designation only. The following regulations shall be on site during all operations of this project.
- B. OSHA Regulations:
 - 1. 29 CFR 1910.20 Access to Employee Exposure and Medical Records
 - 2. 29 CFR 1910.134 Respiratory Protection
 - 3. 29 CFR 1910.1001 OSHA - Asbestos Industry Standard.
 - 4. 29 CFR 1926.1101 Asbestos, Tremolite, Anthophyllite, and Actinolite Construction Standard.
 - 5. 29 CFR Parts 1910 and 1926 Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules; Amendment
 - 6. 29 CFR 1910.1200 Hazard Communications
 - 7. 29 CFR 1910 Occupational Safety and Health Standards
 - 8. 29 CFR 1926.55 Gases, Vapors, Fumes, Dusts and Mists
 - 9. 29 CFR 1926.57 Ventilation
 - 10. 29 CFR 1910.1018 Arsenic
 - 11. 29 CFR 1910.1025 Lead
 - 12. 29 CFR 1910.1027 Cadmium
 - 13. 29 CFR 1910.95 Occupational Noise Exposure
 - 14. All applicable OSHA regulations such as but not limited to Heat Stress, Noise, Electrical Standards, (Lockout and Tagout) Scaffolding, Ladders, OSHA 200, Slips, Trips, and Falls, and Fire Safety-Contingency Plans.
- C. Environmental Protection Agency:
 - 1. 40 CFR 61 Subparts A & M. (Revised Subpart B) National Emission Standards for Hazardous Air Pollutants.
 - 2. 40 CFR Part 763, Subpart E Asbestos Containing Material in Schools; Find Rules and Notice.
 - 3. 40 CFR Part 763, Subpart G Asbestos Abatement Projects; Worker Protection; Final Rule.
 - 4. Environmental Protection Agency (EPA) Publication, Guidance for Controlling Friable Asbestos-Containing Materials in Buildings, June 1985.
- D. Department of Transportation (DOT):
 - 1. 49 CFR Part 173, Subpart J.
 - 2. 49 CFR 172 Hazardous Materials Tables & Communications Regulations
 - 3. 49 CFR 178 Shipping Container Specification
- E. American National Standards Institute, Inc., (ANSI), Standards:
 - 1. ANSI Z88.2-1980 Practices for Respiratory Protection
 - 2. ANSI Z9.2-1979 Fundamentals Governing Design & Operation of Local Exhaust Systems.
- F. Testing Standards
 - 1. NIOSH Method 7082 Lead
 - 2. NIOSH Method 7400 Fiber Analysis of Asbestos using PCM
 - 3. NIOSH Method 7402 Fiber Analysis of Asbestos using TEM
 - 4. NIOSH Method 7082 Lead (AA)
 - 5. NIOSH Method 7300 Arsenic, Cadmium, and Lead (ICP)

1.02 Definitions:

- A. **Abatement** - Means all activities associated with the control of Asbestos containing materials for Buildings during removal.
- B. **ACGIH** - American Conference of Governmental Industrial Hygienists 6500 Glenway Avenue Building D-5 Cincinnati, Ohio 45211
- C. **AIHA** - American Industrial Hygiene Association, 345 White Pond Dr. Akron, Ohio 44320
- D. **Aggressive Air Sampling** - Means using extreme efforts to simulate actual building conditions. Occupancy characteristics by causing air circulation patterns with equipment such as fans or leaf blowers.
- E. **Airlock** - A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways separated by a distance of at least 3 feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow through contamination.
- F. **Air Monitoring** - Means the process of collecting air samples on a fiber membrane cassette and then having them analyzed to determine the number of fibers present. Analytical results are expressed in terms of fibers per cubic centimeter of air.
- G. **Air Monitoring Professional** - A specially trained individual, who has successfully completed a NIOSH 582 Training Course, employed by the Owner, who is qualified by education and/or experience to obtain and test air samples in and around the work areas to determine airborne concentrations of asbestos fibers.
- H. **Amended Water** - Water to which surfactant has been added. Surfactant should be 50% polyoxyethylene ester and 50% polyethylene ether according to EPA recommendations.
- I. **A.N.S.I.** - American National Standards Institute, 1430 Broadway, New York, New York 10018.
- J. **Asbestos** - means a mineral that readily separates into long flexible fibers suitable for use as a noncombustible, nonconducting or chemically resistant material. Asbestiforms include chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.
- K. **Asbestos Containing Material (ACM)** - Material composed of asbestos of any type and in an amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials.
- L. **Asbestos Containing Waste Material** - Asbestos containing material or asbestos contaminated objects requiring disposal.
- M. **Asbestos Fibers** - Means asbestos fibers longer than 5 micrometers.
- N. **Asbestos Project Manager** - An individual designated as the Owner's representative and responsible for overseeing the asbestos abatement project.
- O. **Asbestos Worker** - Means employees that meet all the requirements outlined in OSHA Regulations 29 CFR 1926.1101.
- P. **ASTM** - American Society For Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.
- Q. **Authorized Visitor** - The Building Owner [and any designated representatives] and any representative of a regulatory or other agency having jurisdiction over the project.
- R. **Bidder** - Each prospective Contractor who bids on the work specified herein, and has been pre-qualified by Sun City Analytical, Inc.
- S. **Building Owner** - Owner is **ASARCO INC.**, or his representative.
- T. **Bulk Sample** - The collection of any building material section suspected of containing asbestos. A small portion of suspected material is removed from sample area and placed in a plastic bag or air tight container.
- U. **CIH** - An Industrial Hygienist who by virtue of their education and passing the American Board of Industrial Hygiene Core Examination in either the Comprehensive Practice or an Aspect Examination has been given the right to use CIH by AIHA.

- V. **Clean Room** - An uncontaminated area or room which is a part of the worker decontamination enclosure system with provisions for storage of worker's street clothes and clean protective equipment.
- W. **Clean Air Sample** - Means air sample collected immediately following the completion of corrected action. These samples are routinely collected to determine the effectiveness of the corrected action and establish the contractual requirements of acceptable fiber concentrations levels prior to breaking down of abatement control area.
- X. **Containment** - When used in this specifications means the same as regulated area, shrouding, bubble, temporary enclosure, or controlled area. The means of using plastic to establish work areas and using air filtration pressure to prevent fiber contamination of building and occupants.
- Y. **Contractor** - Means any contractor that has been pre-approved by ASARCO and Sun City Analytical, Inc.
- Z. **Control Center** - Means the area in close proximity of the entrance to the regulated area where the supervisor or outside man is stationed. This center should be where all documentation required by specifications are, along with emergency numbers and first-aid kits, are available.
- AA. **CSP** - A Safety Professional who by virtue of their education and passing the Board of Certified Safety Professionals Core Examination has been given the right to use CSP by BCSP.
- AB. **Curtained Doorway** - Means a device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the door and along the opposite vertical side of the doorway. Other effective designs are permissible.
- AC. **Designated Decontamination Area** - Means an area designated by the Industrial Hygienist (IH). The area is used for the purpose of decontaminating asbestos contaminated objects and shall be located adjacent to the work area and meet Industrial Hygienist (IH) approval.
- AD. **Designated Clean Area** - Means an area designated by Industrial Hygienist (IH). The area is within site of the work area free of any asbestos for the purpose of storing decontaminated objects.
- AE. **Designated Holding Area** - Means an enclosed area designated by Industrial Hygienist (IH). The enclosure is used for the storing of sealed containers of asbestos containing materials and asbestos contaminated waste.
- AF. **Decontaminate** - Means to remove all visible asbestos dust from the surface to be decontaminated by the means of damp cleaning and/or vacuuming with HEPA filtration equipment.
- AG. **Encapsulant** - A liquid material which can be applied to asbestos containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- AH. **Enclosure** - The construction of an air-tight, impermeable, permanent barrier around asbestos containing material to control the release of asbestos fibers into the air.
- AI. **EPA** - U.S. Environmental Protection Agency 401 M Street S.W., Washington, D.C. 20460
- AJ. **Equipment Decontamination Enclosure System** - Means that a portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom and holding area.
- AK. **Equipment Room** - A contaminated area or room which is part of the worker decontamination enclosure system with provisions for storage of contaminated clothing and equipment.
- AL. **Filtered Exhaust System** - A portable exhaust system equipped with HEPA filtration and

capable of maintaining a constant low velocity air flow through contaminated areas from adjacent uncontaminated areas and maintaining a lower pressure in the containment area as compared to the adjacent uncontaminated areas.

- AM. **Fixed Object** - A piece of equipment or furniture in the work area which cannot be removed from the work area.
- AN. **Friable Asbestos** - Asbestos containing material which can be crumbled to dust, when dry, under hand pressure.
- AO. **HEPA Filter** - Means High Efficiency Particulate Air Filter that is capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micro meters in diameter or larger.
- AP. **HEPA Vacuum** - Means a special type of vacuum cleaner used in the abatement project that must be equipped with a HEPA filter.
- AQ. **Glovebag** - Means a special purpose custom containment bag with protective gloves and arm sleeves, tool pouch and side port for the use of repairing or removing pipe insulation.
- AR. **HVAC** - Means heating, ventilation and air conditioning system.
- AS. **Industrial Hygiene** - "Is that science and art devoted to the recognition, evaluation, and control of those environmental factors or stresses, arising in or from the work place, which may cause sickness, impaired health and well-being, or significant discomfort and inefficiency among workers or among the citizens of the community."
- AT. **Industrial Hygienists (IH)** - An individual who by education or experience has gained competence in the field of industrial hygiene. In this manual the IH is the owners representative and/or the air monitoring professional.
- AU. **Movable Object** - A piece of equipment or furniture in the work area which can be removed from the work area.
- AV. **Air Filtration System** - A portable exhaust system equipped with HEPA filtration and capable of maintaining a constant low velocity air flow into contaminated areas from adjacent uncontaminated areas.
- AW. **NESHAPS** - The National Emission Standards for Hazardous Air Pollutants.
- AX. **NIOSH** - The National Institute for Occupational Safety and Health. CDC -NIOSH Building J.N.E. Room 3007 Atlanta, GA 30333.
- AY. **OSHA** - The Occupational Safety and Health Administration, 200 Constitution Avenue, Washington, D.C. 20210. For work in New Mexico the regional office the Environmental Improvement Division (505) 827-2452. In Texas the Regional OSHA office is 1-800-692-4202.
- AZ. **Regulated Area** - The demarcated areas in which asbestos train personnel activity takes place. This includes any area roped off by the contractor or owner with asbestos warning signs and/or tape.
- BA. **Shower Room** - A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water controlled at the tap and suitably arranged for complete showering during decontamination.
- BB. **Shrouding (Full)** - Means the process of covering all the interior surfaces (floor, walls, doorways, windows, ceiling) of a room with polyethylene sheeting.
- BC. **Semi-Shrouding** - Means the process of covering a portion of the interior surfaces (floor, walls doorways, windows, ceiling, etc.) of a room with polyethylene sheeting.
- BD. **Surfactant** - A chemical wetting agent added to water to improve penetration.
- BE. **Tunnelling** - Means the forming of connected enclosed corridors with plastic sheeting for passageways between shrouded and/or semi-shrouded enclosures.
- BF. **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.
- BG. **Waste Transfer Airlock** - A decontamination system utilized for transferring containerized waste from inside to outside of the work area.

- BH. **Wet Cleaning** - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.
- BI. **Work Area** - Means the portion of the building (or structure) comprised of the room(s) and connecting passageway(s) (such as other rooms, hallway, corridors, etc.) required to gain access to the designated material(s) to be removed.
- BJ. **Work day** - Means any day between the project start and the completion date, with the exception of weekends. Weekends may become work days if authorized by the Owner.

END OF THIS SECTION

SECTION 01300 SUBMITTALS

1.01 Submittal with Proposal

A. Experience

1. Working experience on the ASARCO Plant (Evaluation points 40%).
2. Experience working with Sulfuric Acid (Evaluation points 30%).
3. Experience working with OSHA, EPA and TDH asbestos regulations (Evaluation points 30%).

B. Proof of personnel qualifications, training and experience:

1. Submit Texas State Contractor License to be able to do asbestos abatement work in Texas.
2. Submit name of supervisor and alternate to be used on project. Submit his current medical, EPA approved supervisor training certificate, and Texas State License. This will be used on TDH 10 day notification.
3. Submit name of every worker to be used on project. Submit his current medical, EPA approved worker training certificate, and Texas State License.

1.02 Submittals required 5 working days prior to the Pre-Construction Meeting. This submittal shall be sent to Sun City Analytical, Inc. at 1409 Montana in El Paso, Texas 79902.

- A. Prior to starting project Contractor shall submit to the Industrial Hygienist the following data on all materials, fixtures or equipment intended for use on this project. All material, equipment, and fixtures shall be approved by the Industrial Hygienist. Each item not meeting standard shall be repaired or replaced by Contractor at no added expense to Owner. Each item on the list submitted by the Contractor shall be clearly identified as to proposed location with appropriate reference to drawings and/or specifications. Catalogs, drawing and similar literature shall be clearly marked to identify the items as noted on the lists submitted, and shall be cross-reference therewith. Approval of such items will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor shall be responsible for the dimensions and design of adequate connections, details and satisfactory construction of all work. Contractor shall submit complete narrative, pictorial or manufactures' specifications and technical data brochure(s) to describe:
 - B. All enclosures, shrouding complete with detailed layout of decon facilities, air filtration system units, emergency exit waste load out and control center.
 - C. Air filtration system machines shall have the following:
 1. HEPA filter set, along with primary and secondary filter.
 2. Time meter and filter pressure drop gauge.
 3. All accessories of air filtration system as: automatic shut-down if HEPA ruptures or air discharge is blocked, lockout to prevent usage without HEPA filter.
 4. Air Filtration System pressure recorder, water gauge or equivalent for use to verify pressure differential.
 - D. Work force to be used, supply number and work schedule for completion of project. Show back up personnel capabilities in the event Contractor falls behind schedule.
 - E. Truck or vehicle to be used to transport ACM waste to landfill. Show load capabilities and condition of vehicle.

- F. Proof that EPA 10 Day Notice has been submitted. Also proof that local police and fire departments have been notified of project and conditions of project.
 - G. **RESERVED**
 - H. Decontamination center to be used:
 - 1. Pre-fab or portable showers to be used have Hot and Cold water taps, and made of non-porous materials.
 - 2. Waste water filtration system to be used that have 20 micron primary filter and 5 micron secondary filter. Also submit data on replacement filters.
 - I. All respiratory protection equipment brochures describing:
 - 1. Air purifying respirator with HEPA filters and NIOSH approval number. (Only to be used during preparation on this project).
 - 2. Powered Air Purifying respirators with full-facepiece, HEPA filters and NIOSH number.
 - 3. Type C Supplied air complete with full face piece, pressure demand regulator, NIOSH approval number, back up egress system. Panel board complete with compressor failure alarm, high temperature alarm, carbon monoxide alarm, in line filtration to assure Grade D air, low pressure compressor, and proper CO alarm calibration procedure.
 - J. Submit samples of the following:
 - 1. Fire Retardant plastic sheeting.
 - 2. Duct tape.
 - 3. Plastic bags.
 - 4. **RESERVED**.
 - 5. Warning signs, labels and barrier tape.
 - 6. Disposable clothing.
 - 7. Glove-bags
 - K. Submit brochures for other equipment and supplies:
 - 1. Wetting agent (surfactant).
 - 2. Encapsulants.
 - 3. Plastic lined drum.
 - 4. Vacuum equipment along with HEPA filter to be used.
 - 5. Air sampling apparatus.
 - 6. Ground fault interpreters.
 - 7. Communication system between regulated area and control area.
 - L. Contractor shall submit the TDH laboratory license and the individual license of all air monitors to used on this project. Laboratory to be used shall be capable of analyzing the air samples and have results to the field within in 2 hours daily.
 - M. Submit company Standard Operating Procedures for asbestos abatement projects.
 - N. Submit company fire and emergency procedures and spill response plan.
 - O. Submit company Respiratory Program and Hazard Communications Program.
- 1.03 Submittals required Daily during Abatement:
- A. Daily, during the project the following items shall be maintained by the contractor and may be verified by the IH.
 - B. Air monitoring results from previous day of sampling. The results shall be hard copy from the approved lab. All air sample results must be posted within twenty four (24) hours.

- C. Daily narrative log of work progress, to include delays, potential change orders, stoppage of work and results of visitors' inspections.
 - D. Documentation of inspection of all areas and equipment. Contractor shall note corrections or planned actions for correction.
 - E. Notification of any accident or emergency requiring a doctor's treatment or evacuation of any employee.
 - F. Documentation of all personnel entering and leaving regulated area.
 - G. Within 24 hours submit the documentation of any ACM waste that has been taken to landfill.
 - H. Updated construction schedule and abatement plan.
 - I. Documentation of filter changes on respirators, HEPA vacuums, filtered Air Filtration System, and other engineering controls.
 - J. When Grade D air is required Contractor shall provide compliance with OSHA 1910.134 and document that CO monitor is calibrated on daily basis.
 - K. Site Security daily logs submitted to the IH.
- 1.04 Submittals Required at Conclusion of Project
- A. Submit within five (5) days of final ACM dumping the Texas waste manifest documenting landfill used and total amount of ACM that was buried.
 - B. All air sample results from testing lab that were not previously submitted.
 - C. A complete log book of all documentation acquired during the project. Contractor shall ensure that minutes of final walk-thru with IH, and Owner are incorporated into final project documents along with corrective action taken by Contractor.
 - D. Complete written reports on proper OSHA forms of any accident, emergency or other safety and/or health incident.
 - E. Summary of corrective actions taken on punch list, if any, drawn up by Owner and IH.
- 1.05 Disapproved Submittals:
- A. Submittal which have been disapproved, the Contractor shall re-submit within 5 days of receipt of the disapproved submittals.

END OF THIS SECTION

SECTION 01410 TESTING LABORATORY SERVICES

1.01 Air Monitoring and Sampling:

- A. General Requirements: Air monitoring and sampling shall be in accordance with standards and methods required by all applicable regulations. All air monitoring technicians and the testing laboratory shall be licensed in the State of Texas in accordance with 295.31 through 295.70 Texas rules and regulations.
- B. The Contractor shall obtain the services of an Industrial Hygienist or Professional Air Monitor specialized in air monitoring for the purpose of air monitoring and sampling. The AMP shall be supervised by a person who meets one of the following:
 - 1. Shall be an American Industrial Hygiene Association (AIHA) Certified Industrial Hygienist.
 - 2. Shall be registered with AIHA as an industrial hygienist and have at least 4 years field experience in air sampling.
 - 3. A Certified Safety Professional with 3 years experience in air sampling.
- C. The Contractor shall retain a list of qualifications and experience of the individuals who shall be responsible for air monitoring and sampling.
- D. Throughout the removal and subsequent cleaning operations, AMBIENT (AREA) MONITORING will be conducted by the Contractor's representative to ensure compliance with all regulations and is conducting the work in a manner which minimizes airborne asbestos levels as well as minimizes the contamination of other facilities. Analytical results will be available at the Control Center.
- E. For each set of air samples submitted to the laboratory by the Contractor for analysis, the Contractor shall submit blank cassettes for analysis (minimum of 10%). Each blank cassette shall be submitted as a part of the Contractor's quality control program.
- F. The Industrial Hygienist (IH) may request to QC sample taken by the Contractor. The Industrial Hygienist (IH) will randomly ask for wedge of cassette filter or read a percentage of the Contractor's samples.
- G. Air monitoring results shall include as a minimum for each sample the following: sample ID, laboratory ID, date sample taken, flow (liters/minutes), time (minutes), blank count (fibers/field), fibers/cc, detection limit (fibers/cc), location, employee's name, type of activity and the name of the analyst and the date the sample was analyzed.
- H. All personnel samples for asbestos shall be in accordance with 29 CFR 1926.1101 and as specified in this manual. The Contractor shall sample employees who are anticipated to have the greatest risk of exposure as determined by the industrial hygienist. At least 25% of the work crew or a minimum of two employees, whichever is greater, during a work shift shall be sampled.
- I. Contractor shall also be responsible for monitoring for arsenic following 29 CFR 1910.1018, lead following 1910.1025, cadmium following 29 CFR 1910.1027, and occupational noise exposure following 1910.95. All sampling shall be posted on site during the entire project.

1.02 Third-party Air Monitoring:

- A. General Requirements: Third party area monitoring and project clearance for airborne concentrations of asbestos fibers during an abatement project shall be

performed by a project monitor under contract to the building owner to collect samples by and for the owner of the facility being abated.

- B. Project monitors observe abatement activities performed by contractors and generally serve as a building owner's representative to ensure that abatement work is completed according to specification and in compliance with all relevant statutes and regulations.
- C. Project monitors perform the vital role of air monitoring for purpose of determining final clearance.
- D. Project monitor is required to comply with ASHARA, have EPA 5-day supervisor course, NIOSH 582 or 3-day Air Monitoring course, the OSHA medical, TDH license.
- E. Schedule of Air Samples:

- 1. Baseline: The owner's representative will secure the following air samples to establish a baseline before start of work.

The samples will be taken in accordance with the following schedule:

LOCATION	SAMPLES	VOLUME	RATE
At the discretion of the Industrial Hygienist	3	1,250 liters	< 10 LPM

Baseline shall be an ambient air quality level expressed in fibers per cubic centimeter (f/cc). The baseline results shall be used for reference in establishing clearance criteria. The baseline or a level of <0.005 F/cc which ever is the least shall be the established clearance criteria.

- 2. Daily: From start of work through the end of the project, the owner's representative shall take the following samples on a daily basis. The samples should be taken in accordance with the following schedule:

LOCATION	VOLUME	RATE
Inside containment	Quantification by air monitoring professional (AMP)	< 10 LPM
Outside containment but inside the building	Quantification by the AMP	< 10 LPM
At negative air unit discharge	Quantification by the AMP	< 10 LPM
Immediately outside the entrance to the decontamination facility	Quantification by the AMP	< 10 LPM
Outside the bag out facility (during gag out activities)	Quantification by the AMP	< 10 LPM

3. Additional samples may be taken at the owner's representative's discretion. If airborne fiber counts exceed allowed limits, additional samples may be taken as necessary to monitor fiber levels.

1.03 Methods of Analysis:

- A. Air samples shall be analyzed by Phase Contrast Microscopy method using the NIOSH 7400 method.
- B. Air samples shall be analyzed by an analytical laboratory who possess the following:
 1. Lab shall use the NIOSH 7400 method for analysis according to 29 CFR 1926.1101, Appendices A or B which describes the OSHA ORM method and which utilizes the acetone/triacetin sample preparation or equal.
 2. Lab to used shall be independent of the Contractor and shall be approved by the Industrial Hygienist.
 3. Lab shall have technicians who have their NIOSH 582 Class. Certificate must be submitted to Industrial Hygienist (IH) upon request.
 4. Lab shall be a successful participate in the Proficiency Analytical Testing Program (PAT) for the last 4 rounds and have National Institute of Standards and Technology (NIST) certification.
 5. Lab shall be capable of delivering results within 24 hours of sampling to the client so the can be posted on the job site.
 6. Lab shall have current Texas State License.

1.04 Clearance Samples

- A. Transmission Electron Microscopy - is not required on this contract. If the contractor requests such testing, then he shall bear all costs associated with TEM sampling and analysis. Owner reserves the right to use TEM analysis for clearance testing to verify PCM analysis.
 1. Any TEM analysis shall follow 40 CFR 763 AHERA regulations sampling and analysis protocols.
- B. On this project Phase Contrast Microscopy with NIOSH 7400 method in accordance with SECTION 01714 WORK AREA CLEARANCE, shall be the method used for clearance testing. Clearance samples shall be done in the normal work shift of the contract and shall be noted in the contractors construction schedule and abatement plan. The clearance level has been established as <.005 f/cc or baseline data which ever is lower.

END OF THIS SECTION

SECTION 01500 TEMPORARY FACILITIES AND CONTROLS

1.01 Temporary Buildings

- A. Contractor shall provide first aid facilities at control center and in waste disposal vehicle.

1.02 Telephone Service

- A. The Owner will not furnish telephone service, Contractor shall provide a telephone for emergencies. Contractor shall not use any owner's or site phone.

1.03 Water for Construction

- A. The Owner will furnish water used during construction so long as the required amounts are within the capacity of the existing building systems. Contractor shall provide piping, valves, and any other appurtenances required to properly convey the water to the location where it is needed.
- B. No water connection from any potable public water supply system shall be made inside the containment area or from any other area where there could be a potential for contamination of the public water source unless connected with an internal air gap or a mechanical back-flow prevention device. No water hoses or pipes shall be brought into the containment area or from any other area where there could be a potential for contamination of the public water source can occur unless hoses or pipes are connected to the previously described devices in this section, 1.03.
- C. All internal air gap or mechanical back-flow prevention devices shall conform to American Water Works Association (AWWA) C150, C151, and manual M14 in accordance with Texas Natural Resources Conservation Commission (TNRCC) Title 30 Environmental Quality Part 1, Chapter 290, Sub-Chapter D.

1.04 Electricity for Construction

- A. Any electrical hook up shall be coordinated with Asarco safety personnel and/or plant electrician.
- B. The Owner will provide electrical energy from existing panels as required to operate power tools and equipment and to provide temporary light so long as the required amounts are within the capacity of the existing building systems. Contractor shall provide temporary wiring and outlets as required and temporary lighting if necessary. Contractor is responsible to verify quantity quality of the electrical source provided to them.

1.05 Employee Conduct

- A. The Contractor shall be responsible for ensuring that all employees comply with all Applicable Laws and perform work in a safe manner. Any employees entering the work area under the influence of alcohol or drugs shall be immediately removed by the Industrial Hygienist from the job site.
- B. The Contractor shall instruct all his employees to refrain from talking with anyone about this project. Any interviews or discussions about the asbestos project shall be done only by written consent from the owner.

- 1.06 Advertising
A. At no time will any kind of advertisement be displayed, published, or reported to news media without the expressed written consent of the Owner and IH.
- 1.07 Barricades
A. The Contractor shall provide sufficient barricades, walkways to protect all personnel from injury or exposure to asbestos. All work areas shall be barricaded with proper signs.
- 1.08 Security
A. Site security shall be provided by Contractor at Contractor's expense. See Section 01030.
- 1.09 Toilets
A. Contractor shall provide chemical toilets adjacent to the Decontamination Chamber. Contractor shall maintain these units in good sanitary conditions.
- 1.10 Scaffolds / Platforms
A. During this project the Contractor shall erect scaffolding to reach high work areas. Contractor shall comply with OSHA 1910 subparts D walking-Working surfaces.
B. When powered work platforms are used the Contractor shall comply with OSHA 1910 Subpart F. Powered Platforms, Manlifts, and Vehicle-Mounted work platforms.
C. Contractors work involves work to be performed on high areas. Contractor shall ensure the safety of all employees entering in this area.
D. The Contractor is responsible for erecting a safe walking platform and inspect the area for fall hazards prior to starting any work. Walking planks or platforms (secured properly) shall be provide by the contractor inside the Reverb Plant.

END OF THIS SECTION

SECTION 01513 AIR FILTRATION SYSTEM

1.01 Air filtration system ***WHEN REQUIRED***

- A. Air Filtration must be established in the work area by means of a local exhaust system. The equipment shall exhaust through a three-(or more) stage HEPA filtration system to outside of the building. The equipment shall be in operation for 24 hours per day until final air clearance.
- B. The system shall have the following characteristics:
 - 1. Filtration equipment in compliance with ANSI Z9.2, Local Exhaust Ventilation.
 - 2. Capable of maintaining a minimum pressure differential of minus 0.02 inches of water (4.98 Pa) gauge in the work area relative to adjacent areas.
 - 3. Air filtration system pressure system units shall be employed in sufficient quantity to provide four (4) air changes per hour in the work place. Use the formula to determine total air flow requirement.
$$\text{Total CFM} = \text{Volume of work area} / 15 \text{ min}$$
$$\text{Total M}^3/\text{min} = \text{Volume of work area} / 15 \text{ min}$$
$$\text{Number of units} = \text{Total CFM} / 80\% \text{ capacity of unit}$$
$$(\text{Number of units} = [\text{Total M}^3/\text{min}] / [80\% \text{ capacity of unit}])$$
 - 4. The hose used to duct the exhaust shall be either new temporary plastic tubing or new wire reinforced ducts.
 - 5. The air filtration unit shall have a warning sound or horn if any restriction is found in the intake or exhaust.
- C. Provide a chart recording measuring device or equivalent for use to verify the pressure differential. This data shall be submitted to the IH at the end of the work shift.
- D. Contractor shall install on the containment one fully operational (including filters) backup ventilation machine.
- E. Units shall be placed to provide maximum air flow and prevent short circuiting air flow.
- F. Pre-filter shall be changed as needed as conditions warrant or when directed by the I.H.
- G. The HEPA filter will be checked by Industrial Hygienist (IH) for integrity and usage, and shall be changed by Contractor if damaged or overloaded.
- H. Any electrical work performed by the Contractor in association with this section will be done by a licensed electrician. Any electrical work performed in the regulated area shall be done by a licensed electrician who has met the requirements of OSHA 1926.1101, AHERA 40 CFR 763 (24 hour worker Course), OSHA medical exam, respirator fit test and any license required by any Local, State or Federal Asbestos Law. All electrical work will conform to current National Electrical Codes (NEC) requirements.
- I. All fan unit(s) will be factory made and certified by current industry standards related to air movement equipment and air filters.

2.01 Fan Unit Instrumentation

The Contractor shall provide but not limited to the following:

- A. Manometer: Factory installed manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed

- B. Static Pressure Table: A table indicating the usable air-handling capacity for various static pressure readings on the manometer affixed near the gauge for reference, or the manometer reading indicating at what point the filters should be changed, noting Cubic Feet per Minute (Cubic Meter per Minute) air delivery at that point
 - C. Time Meter: Factory installed or equivalent elapsed time meter to show the total accumulated hours of operation
 - D. Pressure Chart Recorder: Provide factory installed chart recording measuring device or equivalent for use to verify the pressure differential. This data shall be submitted to the IH at the end of the work shift.
- 3.01 Fan Unit Safety and Warning Devices: All fan unit safety and warning devices will be factory installed. All fan unit safety and warning devices will meet current National Electric Codes (NEC) , National Electrical Manufacturers Association (NEMA) requirements, and any other pertinent safety industry standards and government regulations related to fan unit air movement equipment as required in this section. The Contractor will need prior approval for the factory installed safety and warning devices from the IH before installing and operating any fan unit(s) in the containment area.
- A. Lockout(s): Electrical and/or mechanical lockout(s) to prevent fan from operating without a HEPA filter.
 - B. Automatic Shutdown: An automatic shutdown system to stop fan in the event of a rupture in the HEPA filter or blocked air discharge.
 - C. Warning Lights: The color of the warning lights will be of the type which meet current acceptable industry standards and government regulations.
 - 1. Normal operation--GREEN LIGHT or equal
 - 2. Too high a pressure drop across the air filters due to but not limited to a filter overloading--YELLOW LIGHT or equal
 - 3. Too low of a pressure drop due to but not limited to a rupture in HEPA filter, obstructed discharge, etc.--RED LIGHT or equal
 - D. Audible Alarm:
 - 1. If fan unit(s) shut down due to any operation of previously described of safety systems, an audible alarm will be activated to alert the Contractor and/or site security.
 - 2. The audible alarm will generate a sound level, dbA scale, which currently meets local, state, and federal government safety regulations. If local, state, and federal regulations to not exist, the sound level will be as the manufacture recommends for the working conditions at the project site. The warning device such as bell or horn if should sound if:
 - a. any restriction is found in the intake or exhaust, or
 - b. any rupture occurs in the HEPA filter, or
 - c. any loss of electrical power occurs.
 - E. Smoke and Heat Detector(s):
 - 1. At least one, smoke and heat detector shall be placed near the fan inlet to alert security, the Contractor and any workers in the containment area that a fire heat and/or smoke danger is in progress.
 - 2. Site security and/or containment worker supervisor shall have a readily accessible "kill switch" to de-energize the electrical power to all negative air fan units.

3. The smoke and heat detector(s) shall be approved by but not limited to Underwriters Laboratory (UL), National Electrical Codes (NEC), or Federal Mutual (FM).
4. The factory installed smoke and heat detector(s) shall be an integral ancillary component of the fan unit(s) used by the asbestos abatement Contractor.
5. In the case of fan unit(s) that do not have factory installed smoke and heat detectors, the Contractor shall need to follow the manufacturer's recommends to the use and location of their product(s).
 - a. The recommendations shall also adhere to current industry, local, state, and federal regulations.
 - b. The Contractor will obtain prior approval from the IH before locating and installing the smoke and heat detectors.
6. The smoke and heat detector(s) shall be "hard wired" and/or battery powered as per manufacturer requirements. If the smoke and heat detector(s) are "hard wired" by the Contractor, the wiring will be perform by a licensed electrician and all electrical work will conform to current NEC codes.

F. Fan Unit Electrical Components:

1. The fan unit's electrical components shall be approved by but not limited to the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL) requirements.
2. Each fan unit shall be equipped with factory installed overload protection sized for the respective electrical components. The fan electric motor shall be equipped with factory installed manual reset thermal overload protection. Automatic reset thermal overload shall not be permitted unless current local, state, or federal regulations allow the use of this type of reset under specific work site conditions.
3. Fan unit components including but not limited to the electric motor, fan, fan housing, and cabinet shall be grounded in accordance with current National Electrical Codes (NEC) and National Electrical Manufacturers Association (NEMA) standards.

4.01 Auxiliary Generator(s):

If the availability of electrical power is insufficient and/or unreliable at any of the building project sites, the asbestos abatement Contractor shall provide auxiliary generator(s) to operate, as a minimum, the negative air fan unit(s) and any other ancillary equipment related to asbestos abatement activities. The Contractor may use other alternate sources of electrical power with prior approval from the Project Manager and/or IH.

- A. Auxiliary Generator(s): Provide generator(s) with the capacity to power all the required HEPA filtered fan unit(s) and any other ancillary equipment related to asbestos abatement activities. The generator(s) shall be of the self-starting type or manually start type depending on the project site conditions. The starting method shall be reviewed and approved by the Project Manager prior to operating any generator(s).
- B. Power Outages: In buildings where power outages are possible, the Contractor shall connect auxiliary generator output power to the building's existing power panel(s) or provide other electrical power routes that conform to current industry

standards and/or current NEC requirements.

1. State-of-the-art solid state automatic power switching shall be provided to start the operation of auxiliary generator(s). State-of-the-art solid state automatic switch-over components shall provided the transfer of electrical power generated from the auxiliary generator(s), at a switch-over rate as recommended by the generator manufacturer, to the HEPA filtered fan unit(s) and/or any other ancillary equipment being used in abatement activities.

2. There shall be no electrical conflicts between the switch-over and "kill switch" electrical circuits of auxiliary generator(s).

C. Location of Auxiliary Generator(s):

1. Provide auxiliary generator(s) outside of the building in a location protected from the weather and/or as recommended by the manufacturer.

2. The asbestos abatement Contractor will ensure that the location of the auxiliary generator(s) will not create a fire and/or safety hazard to the workers and any structures in the vicinity or in the structure where asbestos abatement activities are occurring. Any fire damage or injury costs related to the use and location of the auxiliary generator(s) will be at the Contractors own expense.

END OF SECTION

SECTION 01527 WORK AREA PROTECTION

1.01 Preparation of Work Areas

- A. Post warning signs meeting the specifications of OSHA 29 CFR 1926.1101 at any location and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure. Additional signs may need to be posted following construction of workplace enclosure barriers: Contractor shall post warning signs in both English and Spanish.
- B. Protect all electrical equipment located below work areas. Some high voltage power lines are located near the areas. Contractor shall ensure that worker are protected when working near these wires. Provide temporary power and lighting. Ensure safe installation (including ground faulting) to temporary power sources and equipment by compliance with all applicable electrical code requirements and OSHA requirements for temporary electrical systems.
- C. Shut down and lock out of all fans or venting systems. Investigate the work area and agree on pre-abatement condition with the Industrial Hygienist (IH). Isolate work area using barrier tape.
- D. Preclean area by picking up all loose debris in and around the building area. This material should be properly bagged and labeled for disposal.
- E. Install insulation barriers and set up regulated area.
- F. Set up decontamination center as described in SECTION 01563. The unit shall have be set as follows:
 - 1. Cover floors with fire rated polyethylene sheeting. Floor shall be covered with two layers of 6 mil (minimum) sheeting. Additional layers of sheeting may be utilized as drop cloths to aid in cleanup of bulk materials.
 - 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 6 feet between seams is sufficient. Do not locate any seams at wall/floor joints.
 - 3. Floor sheeting shall extend at least 12" up the sidewalls of the work area. Sheeting shall be installed in a fashion so as to prevent slippage between successive layers of material.
 - 4. Cover walls with two (2) layers of 6 mil fire rated polyethylene sheeting. They can be. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least 6 feet. Wall sheeting shall overlap floor sheeting by at least 12 inches beyond the wall/floor joint to provide a better seal against water damage and for establishing air filtration pressure.
 - 5. A smoke and/or heat detector shall be located in the cleanroom area.
 - 6. Install a 4A/60BC chemical extinguishers shall be located at either end of the Decon Chamber.

1.02 RESERVED

1.03 RESERVED

END OF THIS SECTION

SECTION 01528 ENTRY INTO CONTROLLED AREAS

1.01 Entry and Exit of Work Area

- A. General Requirements: Unless otherwise indicated (such as contract drawing, emergency evaluation, and these specifications) entry and exiting of the work area shall be through the "Worker and Equipment Enclosure" or an "Airlock".
- B. Entry and Exit through "Worker and Equipment Enclosure":
- C. Entering the Work Area: Each worker and/or authorized visitor shall enter the clean room, remove street cloths, put on a clean approved respirator and protective clothing and disposable footwear. From this point, workers and/or visitors shall not eat, drink, smoke, chew gum or tobacco while in the work area. Respirator shall be tested for proper fit and operation. After completing the work and/or visiting the worker and/or visitor shall then proceed through shower room to the equipment room. At the discretion of the Industrial Hygienist (IH) smoke testing of respirator shall be performed on all personnel donning respirators.
- D. In the Equipment Room any tools, equipment, etc. needed shall be picked up here. Non-Disposable footwear shall be put on then proceed to work area.
- E. Exiting the Work Area: Prior to entering the equipment room, worker and/or authorized visitor shall brush off any gross contamination. Use the buddy system to visually check clothing for asbestos debris.
- F. In the equipment room, any tools, equipment, etc. shall be stored, and all clothing except respirator shall be removed. Disposable type clothing shall be placed in a disposable container (plastic bag). Non-disposable footwear shall be removed and stored while still wearing the respirator the proceed naked to the shower.
- G. While showering, first wash and soak filters and then remove respirator and continue to wash respirator with soap and water after washing respirator, proceed to wash body and hair with appropriate soap and shampoo. Finally dry off and proceed to the clean room.
- H. In the clean room, worker and/or visitor shall proceed to dress in street their clothes or clean coveralls. Coveralls worn outside the clean room of the enclosure shall be of a different color or marked for easy identification from those worn in the work area.
- I. Before re-entering the work area from the clean room, each worker and/or authorized visitor shall put on a clean respirator and dress in clean protective clothing and follow the above procedures.
- J. In the vestibule airlock remove protective clothing while still wearing the respirator and place into a disposable bag. The exterior of the respirator shall then be wiped with a damp rag or disposable towel which is placed in the disposable bag. While still wearing the respirator, exit the airlock after the disposable bag is sealed and left in vestibule.
- K. Once outside the airlock, the respirator shall be removed, respirator cartridges removed and disposed as asbestos contaminated waste. The respirator shall then be washed, new cartridges installed and placed in a the appropriate storage container.

END OF THIS SECTION

SECTION 01560 RESPIRATORY PROTECTION

1.01 Respiratory Protection

- A. Respiratory protection shall be provided to workers in conjunction with a Respiratory Protection Program which shall meet the requirements of 29 CFR 1910.134. This program shall be posted at the work site and shall meet the new April 1998 version of OSHA 1910.134 which requires the program to be work site specific. Respirators shall be personally issued, fitted and marked. All workers shall be familiar with the contents of the respiratory program.
- B. The Contractor shall provide documentary evidence that all personnel required to wear respiratory protection have been trained in accordance with 40 CFR Part 763, 29 CFR 1910.134, 1910.1001 and 1926.1101.
- C. The Contractor shall provide the workers with clean and properly maintained respiratory equipment approved by NIOSH/MSHA during all work phases in this project.
- D. PAPR respirators with high efficiency particulate (HEPA) filters shall be the used to remove friable material and half face respirators for non-friable materials on this project.
- E. **RESERVED**
- G. When Type C respirators are employed, the air supply system shall provide grade "D" or better breathing air in accordance with OSHA 29 CFR 1910.34 and ANSI Z862.1 Commodity Specification for Air.
- H. The air shall be tested by the Contractor to verify that certain criteria established by the Compressed Gas Association, Inc., has been met or exceeded. The Contractor must provide a written copy of the analytical test results prior to using system. The Contractor shall be responsible for all fees associated with these tests. All tests will be performed at the job site and in the presence of the Owners representative.
- I. For bottled air filled with compressed air, or manufactured air Contractor shall follow the same test as above. For bottled air the Contractor must provide a certificate from the supplier stating the air is grade "D" or better.
- J. It is the Contractor's responsibility to provide adequate respiratory protection for any foreseeable contingency.
- K. Anytime the compressor or the Grade D Panel is moved, the Contractor shall perform a new Grade D air Test as stated in G and H. above.
- L. The Carbon Monoxide (CO) calibration of the panel shall be done and recorded in the log book daily.

END OF THIS SECTION

SECTION 01562 PERSONNEL PROTECTION

1.01 Personnel Protection:

- A. General Requirements: The Contractor shall provide all personnel training, equipment, materials, services and liability insurance required to perform the work in accordance with applicable Federal, State and Local regulations and this specification. Contractor shall have 1.5 respirators per man on site to comply with the Texas rules and regulations.
- B. Prior to commencement of work, workers shall be instructed, and be knowledgeable of the specific Asbestos Removal Procedures to be used in this project. In addition to the instructions, on-site training in the use of equipment and facilities unique to the job site shall be performed, to include emergency procedures, such as equipment power failures, fires, evacuations, etc.

1.02 Worker and Visitor Protection

- A. Provide workers with sufficient sets of protective full-body clothing. Such clothing shall consist of full-body coveralls and respirator. Provide eye protection and hard hats as required by applicable safety regulations. Non-disposable type protective clothing and footwear shall be left in the contaminated equipment room until the end of the abatement work, at which time such items shall be disposed of as asbestos waste, or shall be thoroughly cleaned of all asbestos containing waste. Disposable type clothing, and footwear may be used and shall be disposed of as asbestos waste. Bare feet will not be permitted.
- B. Provide authorized visitors with suitable protective clothing, respirator, headgear, eye protection and footwear, as described in paragraph A. above, whenever they are required to enter the work area.
- C. Each worker shall, upon entering the job site: Remove street clothes in the clean change room, put on a respirator and clean protective clothing before entering the equipment room or work area; the exception shall be that workers intending to reuse contaminated protective shall enter equipment room wearing respirators.
- D. Each time the worker leaves the work area; the worker shall remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except respirators; Still wearing the respirator, proceed to the shower; clean the outside of the respirator with soap and water while showering; remove the respirator; thoroughly shampoo and wash themselves, remove filters (where required) and place them in the container provided for the purpose; and wash and rinse the inside of respirator.
 - 1. Contractor is responsible for providing soap, shampoo, clean and dry towels daily to employees and visitors.
- E. After showering, each worker shall proceed directly to the clean change room and dress in clean clothes at the end of each day's work, or before eating, smoking or drinking. Before re-entering the work area from the clean change room, each worker and authorized visitor shall put on a clean respirator with filters (where required) and shall dress in clean protective clothing, the exception shall be that workers intending to reuse contaminated protective clothing stored in the equipment room shall enter the equipment room wearing respirators.
- F. Asbestos contaminated footwear shall be stored in the equipment room when not in use in the work area. Upon completion of abatement, dispose of footwear as asbestos contaminated waste or clean thoroughly inside and out using soap and

water before removing from work area or from equipment and access area. Store asbestos contaminated protective clothing in the equipment room for reuse or place in receptacles for disposal with other asbestos contaminated materials.

- G. Workers shall not eat, drink, smoke or chew gum or tobacco, or utilize sanitary toilet facilities at the work site except in established locations outside the work and containment areas, and enclosures.
- H. Workers shall not wonder off into other areas of the plant other than those that area specified.
- I. Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbances of asbestos-containing or asbestos contaminated waste materials and until final clean-up is completed. This includes removal of fixtures, ceilings, or anything else which may disturb the ACM.
- J. Provide and post, in the Equipment Room and Clean Room, the decontamination and work procedures to be followed by workers.

END OF THIS SECTION



SECTION 01563 DECONTAMINATION UNITS

1.01 Enclosures:

- A. General Requirements: Several types of enclosures are used, one for the workers and equipment entry and exit of the work area, a second as a holding area for waste storage and load-out area, and a third as a separation between the work area and the non-work area. Enclosure types required for this project shall be governed by special instructions on this specification.
- B. Enclosures can be portable pre-fabricated units or site fabricated units. Contractor shall submit for approval the type of enclosures to be used for this project. The submittal shall be submitted in conjunction with Section 1300 of this specification and included, but not be limited to the following:
 - 1. Floor Plan layout with dimensions showing all components.
 - 2. Material list with sizes and thickness.
 - 3. Plumbing layout showing shower(s), piping, drains, filtration systems(s) and water heater (if used).
 - 4. Electrical (if used) a layout showing lighting and/or outlets.
 - 5. Photographs may be submitted in conjunction with the above items.
- C. The minimum width of any way of exit access shall in no case be less than 28 inches. Where a single way of exit access leads to an exit, its capacity in terms of width shall be at least equal to the required capacity of the exit to which it leads. Where more than one way of exit access leads to an exit, each shall have a width adequate for the number of persons it must accommodate.
- D. Worker and Equipment Enclosure: Shall consist of 3 (three) compartments; clean room, shower room and equipment room separated by airlocks. The envelope of the enclosure shall be leak free.
- E. Clean Room: This room shall be provided with a locker or container for each worker's street clothing, respirators, respirator cartridges, clean work clothing, towels, and personnel supplies. Joint use of this space for other functions, such as office, storage of equipment, materials or tools, shall be prohibited.
- F. Shower Room: This room shall have an adequate number of showers, soap, shampoo and containers (plastic bags) for respirator cartridges. Shower(s) shall be piped with hot and cold or warm water. The room is to be free of any leaks. Under no circumstance shall the shower room be used for cleaning equipment.
- G. Equipment Room: This room shall be used for storage of equipment such as ladders, vacuums, scraping tools, non-disposable footwear, hardhats, goggles and any additional asbestos contaminated work items. This room shall be provided with receptacles, such as plastic bags or approved containers, for the use of disposable coveralls (if used) and asbestos contaminated waste before exiting to the shower. The room may also be provided with a wash area for equipment.
- H. This area shall be cleaned daily (several times a day is recommended) to prevent asbestos debris from being tracked into the shower area.
- I. Airlocks: Airlock curtain (door) shall be formed by two (2) overlapping sheets of plastic (4 mil, minimum) the full height and width of the passageway, each sheet being attached at the ceiling and one side. Each sheet is to be attached on opposite sides of the passageway. The sets of curtains (overlapping sheets) are required, one at each end of a space forming a vestibule, dead space. The space (vestibule) shall be two (2) feet in length by the width of passageway for enclosures

and four (4) to six (6) feet in length by width of passageway for other location requiring airlocks.

- J. Filtration System: The shower drain and equipment room drain (if any) shall be connected to a filtration system before being discharged to the sanitary sewer. Filters shall be arranged in parallel banks with a 100 micron pre-filters feeding into a 1 micron final filters. Replaced filters shall be treated as asbestos contaminated waste and disposed of properly.
- K. Holding Area (Waste Storage and Load-Out): Shall consist of at least 1 (one) compartment with an air lock between the compartment and the intended disposal vehicle. The envelope of the compartment and air-lock shall be leak free. Passage between compartment and work area shall have two sheets of plastic overlapping each other.
- L. Separation(s) shall be constructed as follows:
 - 1. Framing of suitable materials such as 2 x 4 wood or metal studs shall be erected between floor with a bottom plate and ceiling with a top plate for distance. Support as required.
 - 2. Cover both sides with double layer of plastic sheeting (4 mil) with joints staggered and sealed with tape.
 - 3. Seal all edges of separation at floor, walls and ceiling with caulking to be airtight.
- M. Maintenance of enclosure systems shall be performed by the Contractor.

END OF THIS SECTION

SECTION 01632 PRODUCTS

1.01 Materials:

- A. General Requirements: Materials shall conform to the following:
1. All material shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.
 2. Store all materials subject to damage off the ground, away from wet or damp surfaces, under cover sufficient to prevent damage or contamination.
 3. Damaged or deteriorating materials shall not be used and shall be removed from the premises and properly disposed of.
 4. All material not in original containers will be reviewed by Industrial Hygienist (IH).
- B. Polyethylene plastic that is used on this project shall be limited to certified fire retardant brands. MSDSs shall be maintained on the site for the inspection of the building owner to prove the presence of this type of poly. Plastic (polyethylene) sheets shall be six mil thickness with a tear resistance of no less than M.D. 512 grams, T.D. of 2,068 grams, and a dart impact of no less than 297 rams as measured using ATSM methods D1709, D1922, and D882. Submit a sample of each thickness intended to be used.
- C. Tape: Capable of sealing joints of adjacent sheets of plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces or dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water. Submit a sample of each type to be used.
- D. Surfactant (Wetting Agent): Shall consist of 50 percent polyoxyethylene ether and 50 percent of polyoxyethylene polyglycol ether, or equivalent, and shall be mixed with water to provide a concentration of one ounce surfactant to five (5) gallons of water.
- E. Impermeable Containers shall be suitable to receive and retain any asbestos-containing or contaminated materials until disposed of. The containers must be both airtight and watertight. The containers shall be labeled in accordance with OSHA Regulations 29 CFR 1926.1101. The container shall be of six (6) mil plastic bag (submit sample), or plastic lined drum (submit brochure), etc. Submittal required for each type intended to be used in this delivery order.
- F. The Glovebag shall consist of a 6-12 mil bag equipped with long-sleeve gloves, a tool pouch, and side port opening used for water and vacuum application. The glovebag with a zipper arrangement is preferable but not mandatory. Glovebags shall be of at least 6 mil and be seamless at the bottom.
- G. Warning Labels: Container shall have the following notation in accordance with Applicable Laws 29 CFR 1926.1101.
- DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE
HAZARD**
- H. Encapsulant: A sealant specifically designed to be used after the removal of asbestos to capture any fibers which may be left on surfaces in accordance with requirements of the U.S. Environmental Protection Agency (EPA).

- I. Warning Signs: Signs shall have the following notation in accordance with Applied Laws:

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

- J. Other Materials - provide all other materials as specified in drawings; also, other materials such as lumber, nails, and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work area.

1.02 Equipment:

- A. Local exhaust ventilation systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI 29.2-79. See Section 01513. This equipment:
1. Shall be portable and equipped with a high efficiency particulate absolute (HEPA) Filtration systems in compliance with ANSI 29.2-79.
 2. Deliver its rated volume of air with a clean first stage filter, an intermediate filter and a primary HEPA filter in place.
 3. The HEPA filter shall be certified capable of removing particles to 0.3 microns at a minimum efficiency of 99.97 percent.
 4. Shall be able to deliver no less than 70 percent rated capacity when the HEPA filter is installed or measure 2.5 inches of static pressure differential on a magnehelic gage.
 5. Shall provide manometer-type negative pressure differential monitor with minor scale division of 0.02 inch of water and accuracy within plus or minus 1.0%.
 6. Shall have an electric mechanism which automatically shuts the machine off in the event of a filter breach or absence of a filter.
 7. Shall have an audible horn which sounds an alarm when the machine has shut itself off.
 8. Shall have an automatic safety mechanism which prevents a workman from improperly inserting the main HEPA filter.
- B. Vacuum equipment: Shall be portable and equipped with High Efficiency Particulate Absolute (HEPA) filters.
- C. Respirator Equipment:
1. Respirators shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health Department, of Health, Education and Welfare, under the provisions of 30 CFR Part II and shall be used in accordance with Applied Laws 29 CFR 1910.1001.

END OF THIS SECTION

SECTION 01701 PROJECT CLOSEOUT

- 1.01 Re-establishment of the Work Area and Systems:
- A. Re-establishment of the work area shall only occur following the completion of clean-up procedures and after IH has declared area clean.
 - B. Contractor, owner and IH shall visually inspect the site for any damage or discrepancies. Owner or IH shall generate a punch list for contractor to repair.
 - C. Any damage or discrepancies shall be repaired by contractor at his expense and reasonable fees may be retained by owner till such time as discrepancies are repaired.
 - D. Re-secure mounted objects removed from their former location.
 - E. Re-establish all work areas and electrical system in proper working order.
 - F. Final payment will be dependent on owner receiving executed waste disposal certificates, all contractor documents and Release of Material and Labor liens (AIA G706). Contractor site documentation shall be reviewed and forwarded by the Industrial Hygienist prior to any payment being made.

END OF THIS SECTION

SECTION 01712 CLEANING AND DECONTAMINATION PROCEDURES

1.01 Clean-up Procedures:

NOTE: The clean up procedures can be started by the contractor whenever his supervisor and the Industrial Hygienist inspect and approve the asbestos abatement areas. The encapsulation shall not be done until the contractor is given approval by the Industrial Hygienist on site.

- A. Remove and containerize all visible accumulations of asbestos containing material 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. All equipment not required on the project shall be decontaminated and removed from the area. All ACM disposal bags shall be removed from the containment prior to receiving approval for encapsulation or lockdown.
- B. Wet clean all surfaces in the work area using rags, mops and sponges as appropriate. (Note: Some HEPA vacuums may not be wet-dry vacuums. To pick up excess water and gross wet debris, a wet-dry shop vacuum may be used. This will be contaminated and require cleaning prior to removal from the work area).
- C. Visually inspect all areas where asbestos removal has taken place. Any dust, debris or residue in the containment area shall be considered to be contaminated and shall be treated as asbestos. The area inspection shall be accomplished using good Industrial Hygiene practices and ASTM E-1368-90, AHERA 40 CFR 763 and all applicable asbestos regulations concerning clearance and testing.
- D. The Contractor shall provide the Industrial Hygienist with all proper lighting, ladders, or scaffolding and any necessary tools to perform the clearance inspection.
- E. The Industrial Hygienist (IH) shall ensure that a thorough job of removal and clean up has been conducted. The IH has the right to terminate his inspection and re-direct further cleanup of the whole area if upon discovery of incomplete removal or discovery of debris.
- F. Upon written approval by the Industrial Hygienist in the Contractors logbook, encapsulation or lockdown shall be done on all surfaces including all poly. If the inspection fails, Contractor shall re-clean using all the above mentioned steps.
- G. When encapsulation or lockdown has been applied the Contractor shall wait for a drying period of not less than six (6) hours or at the discretion of the on-site Industrial Hygienist.
- H. When encapsulation has dried, the Contractor shall remove outer layer of poly from the wall, floors and ceilings. The ceiling poly shall be the first layer removed and shall be placed on the floor. Next remove the walls and place them on the floor. The floor shall then be rolled inward to avoid contamination of the inner layer of poly. Double bag the poly and remove from the containment as contaminated waste.
- I. Following the satisfactory removal of the outer layer of poly, another inspection shall be performed by the on-site Industrial Hygienist (IH). If any debris is found, the IH shall instruct the Contractor to re-clean the entire area. If the area is clean the IH shall begin with his first step of pre-clearance testing. (See section 01714) Clearance Testing).
- J. Upon achieving the clearance criteria for pre-clearance the inner layer of poly shall be removed following instructions of H. above. The critical barriers, air filtration

- machines and the decon shall remain in place and operational.
- K. Following the satisfactory removal of the inner layer of poly, another inspection shall be preformed by the Industrial Hygienist (IH). If any debris is found, the IH shall instruct the Contractor to re-clean the entire area. If the area is clean the IH shall begin with his final clearance testing. (See section 01714) Clearance Testing).
 - L. Upon achieving the clearance criteria for final clearance the Contractor can begin to remove all critical barriers, air filtration machines and begin his demobilization process.

END OF THIS SECTION

SECTION 01714 WORK AREA CLEARANCE

1.01 Clearance Air Monitoring:

- A. The Contractor shall ensure completion of cleanup operations in order to commence clearance air monitoring.
- B. The Contractor shall then arrange for an Industrial Hygienist to sample the air in the work area for airborne fiber concentrations.
- C. The air sampling shall be conducted using sampling pumps calibrated at a flow rate of at not more than 10 liters per minute using collection media and procedures in accordance with 40 CFR 763 AHERA and NIOSH Analytical Method 7400 and 7402. Air volumes shall be sufficient to provide reliable results down to a concentration of 70 structures per centimeter squared or <0.05 fibers per cubic centimeter of air (f/cc) respectively. Volume requirements for electron microscope methods should be in accordance with 40 CFR 763 AHERA, the analytical laboratory.
- D. The number of samples that are required and the specific locations where they shall be taken should be established by the Industrial Hygienist.
- E. **RESERVED**
- F. All samples at all locations shall indicate concentrations of airborne fibers less than 0.01 f/cc for passing of the pre-clearance testing and <0.005 f/cc for the final PCM clearance.
- G. **RESERVED**
- H. When contractor fails to achieve clean air in any of the above said clearance sampling methods, contractor shall re-clean area till samples achieve standards set forth above. Any and all cost arising from this extra cleaning shall be the responsibility of the contractor.

END OF THIS SECTION

SECTION 01716 DISPOSAL PROCEDURES

1.01 Disposal Procedures

- A. **The Contractor is Not Responsible for disposal of the asbestos waste. All costs associated with disposal of asbestos waste shall not be part of this contract.** The Owner will dispose of the waste. Contractor shall be responsible for transportation of all asbestos containing waste to the storage areas, and proper containerizing of the asbestos waste. Contractor shall abide by all regulations and policies for handling regulated waste set forth by all regulatory agencies.
- B. On a daily basis or at the discretion of the Industrial Hygienist (IH) contractor shall remove ACM waste from containment. Contractor shall not allow excess debris to accumulate on the floor of the containment, Industrial Hygienist (IH) has the right to stop work and direct clean-up.
- C. The Contractor shall coordinate transportation of waste to the EPA approved landfill with the Industrial Hygienist on site. Prior to bringing waste transportation vehicle on site, Contractor shall coordinate with the Environmental Section of ASARCO through point of contact Ms. Peggy Munsell at (915) 521-3640. Environmental Section shall brief the operator and contractor on the steps require to enter into ASARCO. Highlight of some rules are as follows:
- I. Transportation vehicle shall be totally enclosed.
 - J. Contractor shall have empty weight and exit weight recorded through ASARCO weight station.
 - K. Contractor shall provide a bill of ladden along with manifest.
 - L. Vehicle carry proper insurance requirements.
 - M. Vehicle shall have fire extinguisher, safety kit, and spill plan available.
- D. The Contractor shall fill out and sign the Waste Manifest prior to departure to the EPA approved landfill.
- E. All dump receipts, trip tickets, and manifests must be submitted within 48 hours of dumping, unless contractor has made other written agreement with the owner or IH.
- F. Transportation of ACM waste shall be done in an enclosed compartment vehicle. The truck driver shall be knowledgeable of ACM spill plan carried in the vehicle. The Contractor shall be responsible for developing a spill plan in accordance with current city, state, federal regulations.
- G. All double bagged ACM shall be placed inside approved safety containers prior to being removed from building. Approved safety containers shall be:
- 1. DOT approved steel drums.
 - 2. Cardboard type drums with sealable tops.
- H. Approved containers shall be moved by use of buddy system, hand trucks, or carts.
- I. Truck cargo or container used to transport ACM waste shall be lined with one layer of six mil poly to prevent contamination and spillage.
- J. Truck cargo or container shall have appropriate warning labels and shall be locked to prevent entry by unauthorized personnel. Warning signs in accordance with 40 CFR part 61 NESHAPS regulations shall be placed on the vehicle when loading and unloading vehicle.
- K. Personnel loading asbestos containing waste shall be protected by disposable

- clothing including head, body and foot protection and at a minimum, half-facepiece, air-purifying, dual cartridge respirators equipped with high efficiency filters.
- L. Loading of any vehicle shall be closely monitored to avoid overloading vehicle capacity. Contractor shall ensure proper load bearing distribution of ACM waste.
 - M. The disposal Contractor shall have a spill plan in effect for spills that may occur in transportation or unloading. Any bag found to be broken at landfill shall be re-bagged and area of contamination shall be cleaned up immediately.
 - N. Asbestos waste containers shall be placed on the ground at the disposal site. The Contractor shall ensure that bags are not pushed or thrown out of the transport vehicle.
 - O. Personnel unloading containers at the Storage Site shall wear protective equipment consisting of disposable head, body and foot protection and, at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with high efficiency filters.
 - P. Upon completion of un-loading vehicle the poly used to protect the vehicle shall be discarded as ACM waste. Any spillage discovered shall be cleaned and area decontaminated immediately by the disposal contractor.

END OF THIS SECTION

SECTION 02081 GENERAL REMOVAL PROCEDURES

1.01 Removal Procedures

- A. See Section 01560 and Section 01563 for minimum personnel protection. Industrial Hygienist (IH) shall authorize commencement of removal procedures. Clean and isolate the work area in accordance with Section 01527.
- B. **Spray all asbestos material with a mixture of encapsulant and amended water, using spray equipment capable of delivering a low pressure mist to reduce the release of asbestos fibers. Adequately wet the ACM to the substrate.**
Spray the ACM continuously during the removal practices to maintain adequate wet conditions and minimize fiber release and dispersion. Follow all manufacturers recommended procedures if a manufactured product is used for removal processes.
- C. Saturated asbestos containing material shall be removed in manageable sections. As ACM is removed, material will be placed in a suitable container (6 mil(0.152mm) polyethylene bags or drum). Material shall not be allowed to dry out prior to containerizing. Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.
- D. All material removed shall not be thrown or dropped to the floor. Removal of intact and manageable sections is highly recommended as it will reduce fiber dispersion. All ACM containerized shall be carefully lowered to the ground floor by asbestos personnel; where this is not feasible, contractor may use other mechanical means to lower containers. Mechanical means may include but is not limited to inclined chutes, scaffolding, and pulleys, etc.
- E. Containers (6 mil(0.152mm) polyethylene bags or drums) shall be sealed when full. All ACM containerized shall be double lined. Bags shall not be overfilled as wet material is heavier than dry material. All containerized material shall be sealed with suitable duct tape, do not use wire or cord as it may break the container. All containerized material shall be decontaminated on the exterior surfaces before leaving the work area.
- F. Large components removed intact shall be wrapped in 2 layers of 6 mil(0.152mm) polyethylene sheeting secured with tape for transport to the landfill.
- G. Asbestos containing waste with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) will tear the polyethylene bags and should be placed into drums for disposal.
- H. After completion of all stripping work, surfaces from which asbestos containing materials have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residue.
- I. Clean-up shall proceed in accordance with Section 01712.
- J. After the work area has been rendered free of visible residues, and Industrial Hygienist (IH) inspection and approval, a thin coat of a satisfactory encapsulating 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.

END OF THIS SECTION

SECTION 02082 GLOVE-BAG METHOD OF ABATEMENT

1.01 Procedures

- A. Lock out and tag out all electrical power where actual asbestos removal will occur.
- B. Asbestos removal shall be performed by full containment. If glove bag method is used, then single layer secondary containment shall be erected. See Section 02081 General Removal Procedures.

1.02 Glove-bag Procedures

- A. The glove-bag shall consist of a 6-12 mil(0.152-0.305mm) bag fitted with long sleeve gloves, a tool pouch and an opening for water spray nozzle. The glove-bag shall be seamless at the bottom.
 - 1. Materials necessary but not limited to, shall be:
 - a. glove-bag
 - b. sprayer
 - c. HEPA vacuum
 - d. utility knife
 - e. nylon scrub brush
 - f. encapsulant
 - g. wire cutters
- B. A team of two persons shall perform the glove-bag method.
- C. Before work begins, all necessary Sections of this specification shall be followed. See Section 01527 Work Area Protection, Section 01560 Respiratory Protection, Section 01562 Personnel Protection and Section 01563 Decontamination Units.
- D. Mix the surfactant with water in the sprayer. Bring into the work area all materials that will be used.
- E. Check the pipe where asbestos removal will be done, if it is damaged, wrap the entire length of pipe in poly and candy-stripe with duct tape. If pipe is abandoned, remove in manageable sections. If pipe is not abandoned, proceed with installing the glove-bag. Install all glove-bags before any removal begins. Seal all exposed ends with duct tape or bridging encapsulant.
- F. Place a sheet of poly underneath the pipe wide enough to cover the area where debris might fall to floor. Usually 2 feet(0.61m) extending on either side of pipe.
- G. Each glove-bag shall be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.
- H. Glove-bags shall be smoke-tested for leaks and any leaks sealed prior to use.
- I. Glove-bags may be used only once and may not be moved. Glove-bags shall not be used on surfaces whose temperature exceeds 150°.
- J. Prior to disposal, glove-bags shall be collapsed by removing air within them using a HEPA vacuum.
- K. Proceed with Section 01712 Cleaning and Decontamination, Section 01714 Work Area Clearance, Section 01701 Project Closeout, Section 01716 Disposal Procedures.

END OF SECTION

SECTION 02084 ACM FLOORING REMOVAL

1.01 Procedures

- A. Lock out all electrical power where actual asbestos removal will occur.
- B. Removal of asbestos flooring shall be performed using all personal protective equipment to include half face respirator with filter cartridges. Contractor shall erect decontamination station as per SECTION 01563 on all areas of abatement.
- C. The use of a "Shot Blast" machine for the removal of floor tile mastic will not be allowed on this project or as part of this contract, unless use of wetting/misting, full negative pressure and/or HEPA vacuums are used in conjunction with the machine. It is preferred that mastic solvent meeting the specification below, be used. If the use of such machine causes damage to floor surface, Contractor shall be responsible to return floor surface to as found condition. NO gasoline, or propane powered equipment shall be allowed on this project.
- D. The use of a pneumatic or electric "chipper" machine will not be allowed for this project, or as part of this contract.

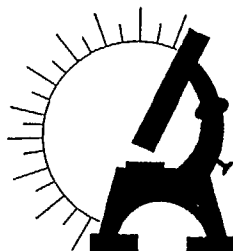
1.02 Removal of Asbestos Flooring:

- A. Set up barrier tape, warning signs, and control center.
- B. The containment shall be as follows:
 - 1. All windows, doors, and other openings shall be sealed with 6 mil (0.152mm) poly.
 - 2. All walls shall be prepped with splash guard made of 6 mil (0.152mm) polyethylene. This splash guard shall extend from just top of floor tile up to eight feet high on the walls.
- C. Minimum respirator shall be half mask with HEPA cartridges. Asbestos workers shall use gloves, rubber boots and tyvek suits (or equivalent).
- D. Establish air filtration system (See SECTION 01513).
- E. Removal of Asbestos Flooring shall be accomplished using a two man team. One man shall spray amended water with equipment capable of a "mist", and the other shall pry up tile with hand tools. No sand grinding or drill machine shall be used to remove tiles.
- F. Removal of ACM mastic shall be done using solvents that emit little to no odor (Aromatic vapors < 100 PPM). Any solvent used shall have flash point of greater than 200°F (93.33°C). Contractor shall be asked that all MSDS's on solvents are in Hazard Communication Program. All ACM workers shall be aware of what solvent is being used and the health and problems associated with this solvent. Contractor shall ensure that solvent does not have violent reaction when it comes in contact with water.
- G. Special care shall be taken by the Contractor not to allow mastic solvents to penetrate foundation expansion joints around the perimeter or into the adjacent floor tiles. If penetration and contamination of solvent becomes apparent, abatement of the solvent and any repairs shall be required of the Contractor at no extra cost to the Owner, regardless of monetary loss to the Contractor.
- H. All ACM material and debris shall be double bagged and disposal procedures in SECTION 01716 of this manual shall be followed.
- I. Contractor shall ensure that the encapsulation used on the floor surface will allow for adequate adhesion of the new flooring to be placed following completion of

- abatement activities.
- J. SECTION 01712 CLEANING AND DECONTAMINATION PROCEDURES shall be followed when directed by IH. Contractor shall contact IH for visual inspection prior to begin Cleaning and Decontamination.
 - K. Clearance testing shall be performed by the IH (Architect's representative). The results of the IH shall be the final word on clearance levels.
 - L. Upon acceptable clearance levels, re-establish work areas and systems back to normal operations. Repair/ Restore any and all damaged areas back to original condition.

END OF SECTION





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