

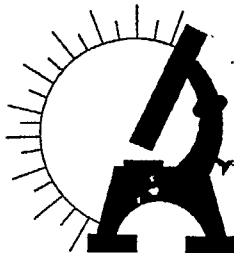
SET 1
April 26, 1999

*Abatement Plan for the Removal
of Asbestos at
ASARCO, INC.
Power House, Pump House and Tunnel*

Prepared for:

ASARCO, INC.
ATTN: Peggy Munsell
2301 E. Palsano
El Paso, Texas 79902

Prepared by:



**Sun
City
Analytical,
Inc.**

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.*

Proposed Start 6/1/99
 Notification 5/14/99 (1)

BID TABULATION FORM
 ASBESTOS ABATEMENT AT THE
 ASARCO

SCAI PROJECT NUMBER 99-EP-110

SHEET OF

CONTRACTOR	Spinning Systems	ARI	ICE	Daela	ERI
BID ITEM: 1					
	No Bid	\$119,989.00	53,969.00	59,469.00	\$142,640.00
		\$4,176.00	8' 6,300.00	\$5,470.00	\$3,840.00
TOTAL BID					
Unit Price					
Thermo Removal Full Containment		\$36.00	\$7.00	\$10.00	\$22.00
ACM Tank Removal		\$13.00	\$10.00	\$10.00	\$22.00
Thermo Glovebag		\$45.00	\$35.00	\$10.00	\$60.00
Proof of Experience		✓	✓	✓	✓
Proof of qualifications		✓	✓	✓	✓

BID DATE 5/11/99

BID TIME 2:00 P.M.

REVIEWED BY J. C. Cline

Acme - no show
 for Bid

April 26, 1999

ABATEMENT PLAN

Design For:

ASBESTOS ABATEMENT
at the
ASARCO Power House, Tunnel and Pump House

FOR
ASARCO, Inc.
Attn: Peggy Munsell
2301 East Paisano
El Paso, Texas 79902

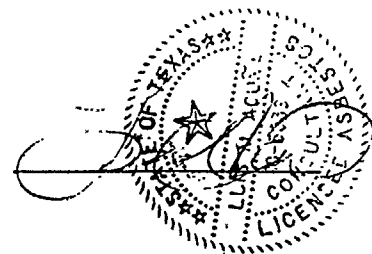
LICENSED ASBESTOS CONSULTANT AGENCY:



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
SUN CITY ANALYTICAL, INC.
1409 MONTANA AVENUE
EL PASO, TEXAS 79902



ASARCO ELP 0012972

TABLE OF CONTENTS

BID ANNOUNCEMENT (4)

ASARCO CONTRACT (Blue Pages)

SUPPLEMENTARY CONDITIONS (6)

BID FORM (8)

PROJECT SCHEDULE (10)

SECTION 01010 SUMMARY OF WORK (11)

1.01	Statement of Work	11
1.02	Project Objectives	11
1.03	Description of Work	14

SECTION 01030 SPECIAL PROCEDURES OR CONDITIONS (13)

1.01	ASARCO - Power House	13
1.02	Alternate Procedures	13
1.03	Pre-abatement Inspection	13
1.04	Schedule of Abatement	13
1.05	Site Security	13
1.06	Emergency Repairs	14
1.07	Medical Emergencies	14
1.08	Rental Equipment	14
1.09	Patented Products	14
1.10	Electrical Work	14
1.11	Special Garments and Training	15
1.12	Noise Hazard	15
1.13	High Heat & Steam Line Hazard	15
1.14	Landscape	15
1.15	Building Interior	15
1.16	Heat Stress	16
1.17	Precedence Regarding Conflicts And/Or Questions	16
1.18	Dispute Resolution	16

SECTION 01043 PROJECT COORDINATION (17)

1.01	Work Requirements	17
1.02	Personnel Qualifications	18
1.03	Permits	19

SECTION 01091 DEFINITIONS AND STANDARDS (20)	
1.01 Applicable Publications:	20
1.02 Definitions:	21

SECTION 01300 SUBMITTALS (27)	
1.01 Submittals with Contractor's Proposal:	27
1.02 Submittals required at Pre-Abatement Meeting:	27
1.03 Submittals required Daily during Abatement:	29
1.04 Submittals Required at Conclusion of Project	30
1.05 Disapproved Submittals:	30

SECTION 01410 TESTING LABORATORY SERVICES (31)	
1.01 Air Monitoring and Sampling:	31
1.02 Third-Party Air Monitoring:	32
1.03 Methods of Analysis:	33
1.04 Clearance Samples	34

SECTION 01500 TEMPORARY FACILITIES & CONTROLS (35)	
1.01 Temporary Buildings	35
1.02 Telephone Service	35
1.03 Water for Construction	35
1.04 Electricity for Construction	35
1.05 Employee Conduct	35
1.06 Advertising	36
1.07 Barricades	36
1.08 Security	36
1.09 Toilets	36

SECTION 01513 AIR FILTRATION SYSTEM (37)	
1.01 Air Filtration System	37

SECTION 01527 WORK AREA PROTECTION (42)	
1.01 Preparation	42
1.02 Fire Protection	43
1.03 Viewing Window	43

SECTION 01528 ENTRY INTO CONTROLLED AREAS (45)	
1.01 Entry and Exit of Work Area	45

SECTION 01560 RESPIRATORY PROTECTION (47)	
1.02 Respiratory Protection	47

SECTION 01562 PERSONNEL PROTECTION (49)	
1.01	Personnel Protection: 49
1.02	Worker Protection 49
SECTION 01563 DECONTAMINATION UNITS (51)	
1.01	Enclosures: 51
SECTION 01632 PRODUCTS (53)	
1.01	Materials: 53
1.02	Equipment: 54
SECTION 01701 PROJECT CLOSEOUT (56)	
1.01	Reestablishment of the Work Area and Systems: 56
SECTION 01712 CLEANING & DECONTAMINATION (57)	
1.01	Clearance Air Monitoring: 57
SECTION 01714 WORK AREA CLEARANCE (59)	
1.01	Clearance Air Monitoring: 59
SECTION 01716 DISPOSAL PROCEDURES (61)	
1.01	Disposal Procedures 61
SECTION 02081 GENERAL REMOVAL PROCEDURES (63)	
1.01	Procedures: 63
SECTION 02082 GLOVEBAG REMOVAL (65) <u>TS</u>	
1.01	Procedures: 65
1.02	Glovebag Procedures 65

DRAWING

AA-1

END OF THIS SECTION

**BID ADVERTISEMENT
FOR
ASBESTOS ABATEMENT
AT
ASARCO Power House
P.O. Box 1111
El Paso, Texas 79999**

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 ^{2pm} ~~11:00~~ a.m. (MST), Tuesday May 11th, 1999 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. Bid proposal when submitted indicates the Bidder will furnish all bonds and 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 **Thursday April 29th 1999, 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 **Thursday April 29th 1999** 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 from SUN CITY ANALYTICAL, INC., after April 26, 1998 and at the Bid walk through. A fifty dollar (\$50.00) non-refundable deposit is required per set of plans and specifications.

ASARCO

El Paso Plant
L. W. Castor, Unit Manager

FLYSHEET NO 1 - OTHER CONTRACTORS

Effective immediately, all supplier's who enter ASARCO property to perform any service, other than delivering material, are required to fill out the undersigned with supporting documentation.

- HSC 001 - Contractor Safety and Health Screen Questionnaire (1 of 3). EMR (Experience Modification Rate) records are required.
- HSC 002 - Contractor Safety and Health Screen Questionnaire (2 of 3). Please enter your SIC code in the section provided.
- HSC 003 - Contractor Safety and Health Screen Questionnaire (3 of 3). Provide certification records for crane, mobile equipment, and fork lift operators, if applicable.
- HSC 005 - Contractor Safety and Health Screen Questionnaire. (May be filled out during Contractor Orientation). However, a management signature is required.
- HSC 006 - Site Entry Release. (May be filled out during Contractor Orientation).
- Safety Manual or copy of policies and procedures.

Additional Requirements:

- Site orientation, approximately 2-4 hours in duration. Orientation is required once the Contract has been awarded. Scheduled with Peggy Munsell, (915 521-3640).
- Biological Monitoring may be required depending on Contract Specifications.
- Medical Evaluation Release is required to wear a respirator (1910.134 revision). A statement letter (list personnel), from Management or authorized personnel, is adequate.
- On-site Contractors must attend a monthly safety meeting and meet the requirements for that meeting.

Attachments:

- Typical Contractor Safety and Health Program Elements. (Informational only).
- Form FP/10-97 - Fixed Price Construction or Repair Contract. (For review).

Once the Contractor has been evaluated by the Safety Department and found to meet plant requirements, approval will be good for one year. The Contractor must maintain a good safety standing and continue to meet plant requirements throughout the current year. **NOTE: Purchasing cannot issue a purchase order for any services until the requirement items have been satisfied.**

Required forms are to be filled out as soon as possible and returned to the contract administrator with whom you are dealing. Contract issues should be addressed to the following individuals:

Edward L. Reed
Materials Manager (Tucson Office)

(520) 798-7765 Fax (520) 798-7782

Safety issues or questions should be addressed to Peggy A. Munsell, Safety and Health Director at (915) 521-3640.

fusers\peggy\contract\fly1.doc
04/15/99

ASARCO Incorporated • P.O. Box 1111 • El Paso, Texas 79999 • (915) 541-1800 • Fax (915) 541-1866

ASARCO ELP 0012978

FLYSHEET NO. 3 - INSURANCE REQUIREMENTS

1 OF 2

The Contractor shall, for the mutual protection and benefit of both Owner and Contractor, procure, pay for and maintain in full force and effect, at all times during the performance of the work and until final acceptance of the work, policies of insurance issued by a responsible carrier or carriers acceptable to Owner which afford the following coverage:

Workers' Compensation

- Statutory

Employers' Liability

- Not less than \$500,000

Comprehensive General Liability including Independent Contractors' Broad Form Contractual, Broad Form Property Damage, Personal Injury, Completed Operations and Products coverage (such Completed Operations and Products coverage shall be provided for a period of two (2) years after final completion of the work and final acceptance by the Owner), and deletion of any exclusion pertaining to explosion, collapse, underground property damage, radiation and pollution hazards.

- Not less than \$2,000,000 combined single limit for both bodily injury and property damage

Comprehensive Automobile Liability including Owned, Non-Owned, and Hired Car coverage.

- Not less than \$2,000,000 combined single limit for both bodily injury and property damage

Contractors' Professional Liability Insurance including but not limited to errors and omissions coverage.

- Not less than \$1,000,000

FLYSHEET NO. 3 - INSURANCE REQUIREMENTS

2 OF 2

All policies, with the exception of Workers' Compensation and Contractor's Professional Liability, shall name Owner, its subsidiaries, directors, officers, agents and employees as additional insured, and shall expressly provide that the interest of same therein shall not be affected by any breach by Contractor of any policy provision. All policies shall expressly provide that no less than thirty (30) days prior written notice shall be given to Owner in the event of material alteration to or cancellation of the coverage evidenced by such policies. Further, the Workers' Compensation policy shall contain an endorsement waiving the insurers' right of subrogation against Owner, its subsidiaries, agents and affiliated companies, and their directors, officers, agents and employees.

Prior to any equipment or personnel being brought onto Owner's premises in accordance with the terms of this Agreement, Contractor shall deliver to Owner a Certificate of Insurance for each policy obtained pursuant to this Agreement evidencing each of the provisions specified in this Article along with the signed Agreement.

Upon renewal of each policy, Contractor shall provide to Owner a certificate of insurance evidencing all of the provisions specified in this Article.

Contractor will maintain the original of all policies, endorsements and certificates, and provide Owner with copies of same upon request of Owner.

FLYSHEET NO. 2 - INSURANCE REQUIREMENTS

TO WHOM IT MAY CONCERN:

Attached please find ASARCO Incorporated's requirements concerning contractor's insurance. Since you are currently performing work for Asarco's El Paso Plant or are anticipating being awarded a contract, all insurance requirements must be met and a copy of such Certificate of Insurance must be on file with Asarco.

The following statements also MUST be included in each policy and shown on the Certificate of Insurance:

- (1) "ASARCO Incorporated is named as an additional insured as its interest may appear with respect to the above liability policies."
- (2) "Insured hereby waives the insurer's right of subrogation against ASARCO Incorporated, its subsidiaries, agents and affiliated companies, and their directors, officers, agents and employees."

Please fax a copy of the insurance certificate to Edward L. Reed, Materials Manager, ASARCO Tucson Office at (520) 798-7782 or call if there are questions, (520) 798-7765.

CONTRACTOR SAFETY AND HEALTH SCREENING QUESTIONNAIRE # HSC 001

Please complete this form and return it to the undersigned at your earliest convenience. This information will be kept on file and used to evaluate contractors for our various projects.

SEND COMPLETED QUESTIONNAIRE TO: P. Munsell, Safety & Health Director
ASARCO
PO Box 1111
El Paso, TX 79999 (915 521-3640)

Obtain from your insurance agent (or state fund, if possible) your workers' compensation insurance experience modification rate (EMR) for the three most recent rating periods and complete the following:

POLICY YEAR:	EMR:	If your EMR is exactly 1.0 for any policy year, is it because your firm is (or was) too new or too small to have an EMR calculated?
Most recent policy year:		☐ YES ☐ NO
1 year prior:		
2 years prior:		

We require verification of the above information. Any of the following methods will be acceptable:

- a. Furnish a letter from your insurance agent, insurance carrier, or state fund (on their letterhead) verifying the EMR data listed above;
- b. Provide a copy of the last three years' "Experience Rating Calculation Sheets" which your insurance carrier should forward to you annually; or
- c. Provide a copy of the pages of your last three years' insurance policies that show the experience modification rate and the coverage period.

If you were required to complete OSHA 200-S Reports for the last three years, please attach copies as well as completing this section. If you were not required to complete OSHA 200-S Reports, please provide the following information:

Three previous calendar years:	19__	19__	19__
Number of employees:			
Number of medical treatment cases*:			
Number of lost workday cases**:			
Number of fatalities:			
Exposure hours***:			
Number of lost workdays****:			

DEFINITIONS

* Medical Treatment Case - A case resulting from a work accident or illness that does not result in lost time or restricted work where the contractor employee receives treatment administered by a physician or by registered personnel under the standard orders of a physician. Medical treatment does not include first-aid cases, even though first aid is administered by a physician or registered professional personnel, but does not include loss of consciousness or incidents that require more than one dose of a prescription medicine.

** Lost workday case - Any injury or illness that results in the employee being unable to work the next scheduled shift, or any injury or illness where the employee, following medical treatment is:

- assigned to a temporary job;
- working at a permanent job less than full time; or
- working at a permanently assigned job but unable to perform all the duties normally required.

*** Exposure hours - Number of actual hours worked by employees during the calendar year.

**** Lost workdays - Number of days injured or ill employees were scheduled to work but could not.

CONTRACTOR SAFETY AND HEALTH SCREENING QUESTIONNAIRE #HSC 002

Type of work (Bureau of Labor Statistics Standard Industrial Classification Code)

____ Non-Residential Building (SIC 15) ____ Heavy (Non-Highway) Construction (SIC 16) ____ Special Trade Contractors (SIC 17) ____ Other

ARE INJURY AND ILLNESS REPORTS OR REPORT SUMMARIES SENT TO THE FOLLOWING?		(Check One)		HOW OFTEN?
		YES	NO	
Field Superintendent				
Vice President of Construction				
President of Firm				
Safety Officer/Dept. in Company (If yes, list name, title, and telephone number)				
Name: _____ Title: _____ # () _____				
Project Safety, Health, and Housekeeping Management and Inspections				
(If yes, list name and title of persons who perform inspections)				
Names: _____ Titles: _____				
List names and expected positions of key supervisory personnel planned for work at ASARCO facilities:				
NAME		POSITION		
Written safety program used? ☐ Yes ☐ No (Attach copies)		Site safety meetings held? ☐ Yes ☐ No		
Written health program used? ☐ Yes ☐ No (Attach copies)		How often?		
Safety and health training program used for new employees? ☐ Yes (see below) ☐ No		Disciplinary program available for safety violations? ☐ Yes ☐ No		
IF PROGRAMS AND TRAINING AVAILABLE AND USED, DO THEY INCLUDE THE FOLLOWING?		OSHA 29 CFR		Meets OSHA Requirements
				yes no/na
General Safety and Health Provisions and Rules				
Occupational Health and Environmental Controls and Rules				
Personal Protective and Life Saving Equipment and Rules				
Fall Protection, Prevention, Rules and Equipment				
Fire Protection, Prevention, Rules and Equipment				
Signs, Signals, and Barricades, Rules and Equipment				
Tools - Hand and Power, Rules, and Protective Equipment				
Welding and Cutting, Rules and Protective Equipment				
Electrical, Rules and Protective Equipment				
Ladders and Scaffolding, Rules and Protective Equipment				
Cranes, Derricks, Hoists, Elevators, Conveyors, Rules and Protective Equipment				
Motor Vehicles, Mechanized Equipment, Marine Operations				
Excavations, Trenching, and Shoring				
Concrete, Concrete Forms and Shoring				
Steel Erection				
Tunnels and Shafts, Compressed Air				
Demolition				
Blasting and Use of Explosives				
Power Transmission Distribution				
Asbestos Standard (OSHA)				
Arsenic Standard (OSHA)				
Lead Standard (OSHA)				
Cadmium Standard (OSHA)				
Hazard Communication Standard (OSHA)				
Lock out/Tagout (OSHA)				
Confined Space Standards (OSHA)				
Construction Lead Standards (OSHA)				
DO YOU CONDUCT?				
Pre-employment Physicals	☐ Yes ☐ No	Audiometric Baselines	☐ Yes ☐ No	
Pulmonary Function Tests	☐ Yes ☐ No	Blood Lead Baselines	☐ Yes ☐ No	
Respirator Use Medical Clearance	☐ Yes ☐ No	Cadmium Baselines	☐ Yes ☐ No	

INCLUDE IN CONTRACTOR FILE
Doc #182322

ASARCO CONTRACTOR POLICY APPENDIX 2

CONTRACTOR SAFETY AND HEALTH SCREENING QUESTIONNAIRE # HSC 003

TRAINING PROGRAM AVAILABLE FOR NEWLY HIRED OR PROMOTED SUPERVISORS		
YES (See below) _____ NO _____		
IF YES, DOES IT INCLUDE THE FOLLOWING?	(Check One)	
	YES	NO
Safe work practices		
Inspection techniques		
Toolbox safety meetings		
Emergency procedures		
First-aid procedures		
Accident prevention		
Fire protection and prevention		
Pework orientation		
Post construction clean-up and orientation		
Hazard communication		
Health and Safety regulatory standards		
QUESTIONS	(Check One)	
	YES	NO
Have you ever been inspected by OSHA or MSHA?		
If yes, have citations been issued in the last three years? (Attach copies of citations)		
Do you conduct inspections and tests of construction equipment, for example, slings,		
Are records prepared and maintained as required by federal and state laws?		
If operators of equipment are certified, enter name of person/organization/consultant providing certification for:		
Cranes		
Mobile Equipment		
Fork Lift Trucks		
COMMENTS BY CONTRACTOR OFFICIAL REFLECTING COMPANY SAFETY AND HEALTH POLICY:		
QUESTIONNAIRE COMPLETED BY:		
NAME:	TITLE:	
COMPANY:		
ADDRESS:		
TELEPHONE:	DATE:	

INCLUDE IN CONTRACTOR FILE
Doc #180519

ASARCO CONTRACTOR POLICY APPENDIX 2

ASARCO ELP 0012984

ASARCO CONTRACTOR EMPLOYEE HEALTH INFORMATION FORM

I. CONTRACTOR EMPLOYEES EXPECTED TO WORK AT ASARCO'S FACILITY MEDICAL/EXPOSURE HISTORY FOR EACH EMPLOYEE

Employee: S.S. # Address: Tel. # Expected Hours or Days at Facility
 Job Assignment/Task Expected Plant/Job Location(s): Expected Departure Date:
 Date of Birth: Company: Contractor Site Representative:

Days at Any Facility Within Last 12 mos. Medical Examination:
 with air exposures above OSHA action levels (e.g., Date: Doctor: City:
 lead - 30 ug/m³; Arsenic - 5 ug/m³; Cadmium - Other ASARCO Units Telephone #
 2.5 ug/m³ Does your Company have a Substance Abuse Program? Is Drug Testing Performed?
 As: Yes No *List Any Reported or Suspected Physical or Health Impairment or
 Pb: Smoking History: Quit Date: Problem That May Interfere with Job Performance:
 Cd: Years Smoking Packs Per Day:
 Other:

Cleared for Respirator Use by Doctor: Yes No

Fit Tested for Respirator Use: By Contractor: Yes No Date:
 By ASARCO: Yes No Date:

II. IF EMPLOYEE EXPECTED TO WORK IN AREAS WITH EXPOSURES ABOVE ACTION LEVELS

*List Any Reported or Suspected Adverse Health or Medical Conditions or Symptoms Last Chest X-Ray Date: Last 2 Blood Lead Analysis (Dates & Levels):
 Clinics, Doctors or Employment Sites performing such Last 2 Cadmium in Urine Analysis (Dates & Levels):
 exams, tests or biological monitoring: Last 2 Beta-2 Microglobulin in urine (Dates & Levels):
 Last 2 Cadmium in Blood Analysis (Dates & Levels):
 Last 2 Cadmium in Blood Analysis (Dates & Levels):
 Last 2 Urine Arsenic Analysis (Date & Level):

III. EXIT HEALTH INFORMATION

Exit Date: MRP Info: Exit Blood Lead:
 Other: Reported Symptoms
 Days On Site:

The Contractor certifies and agrees that the above information was provided directly by the employee(s) or contained within the contractor's personnel file and that each employee consented to providing this information to ASARCO. The Contractor further certifies, acknowledges and promises to provide immediately to ASARCO any updated information, follow up information or changes needed to this form, and that he has instructed his employees of the need and requirement to report such information as well.

Date Name Title Company CONTRACTOR POLICY APP 5 (HSC # 005) Doc #259442 v.3
 *Any positive responses require further evaluation by Contractor and ASARCO personnel.

**SITE ENTRY AGREEMENT AND LIABILITY RELEASE LOG¹
AND ACKNOWLEDGMENT OF SITE HAZARDS,
PROTECTIVE MEASURES, TRAINING, RULES, POLICIES**

I seek ASARCO Inc.'s permission and agreement to enter its facility for the purpose of performing work for my employer or myself or visiting and/or touring the facility. I understand that access to ASARCO's facility is restricted to its own employees and only those other persons who read, understand and sign this form, to indicate their voluntary agreement to the terms of this form, in exchange for ASARCO's granting a limited right of entry onto its property.

Since I am not an ASARCO employee, I acknowledge that understand that the ASARCO facility contains numerous dangerous and hazardous materials, conditions, equipment and operations. For example, I understand that the ASARCO facility utilizes: (1) potentially hazardous and dangerous equipment, both mobile and stationary; (2) potentially dangerous and hazardous chemicals and materials such as respirable silica dust, lead, cadmium, arsenic, zinc, silver and copper, other dusts and fumes, solvents, lubricants, process chemicals and laboratory chemicals; and, (3) potentially dangerous and hazardous production processes, traffic and storage areas where the procedures, equipment, and materials used could pose both severe and immediate risks of injury and illness and death, and long term, chronic risks of illness. By complying with government regulations, my company's safety and health programs, and ASARCO rules and policies, I understand that the risks and hazards on ASARCO's facility are minimized. I also understand that it is ASARCO policy and first priority to protect all persons who enter its facilities and the environment and that I and my employer are under a duty to comply with this policy.

In consideration of permitting me to enter this ASARCO facility, I acknowledge, certify and agree that:

1. I have been provided and understand the warnings and training related to the hazards and potential hazards on this site.
2. I have been provided and understand the site's rules and policies and agree to abide by them.

¹ This document is in two forms so that it can be used as a stand-alone document (one for every person that enters an ASARCO facility) or as the introduction to a log entry, signature book, so long as each individual is required to read the materials, the last paragraph is repeated on each page of the book and the text is posted at the entry location.

3. I have been provided with and understand the requirements and need to wear personal protective equipment (and respirators in certain areas) such as a hard hat, safety glasses, gloves, coveralls, and agree to wear and use such equipment properly.
4. I am restricted to the specific route of travel and work site as initially assigned to me by my employer and described and/or shown to me by ASARCO personnel, unless otherwise approved by ASARCO personnel.
5. I have been instructed on and understand the emergency evacuation routes and procedures and agree to follow those instructions and procedures if necessary.
6. I am experienced and competent in, and have been trained to perform the job assigned to me, and I hold all government required training certificates and licenses needed to perform this job.
7. I grant ASARCO permission to review my personnel file, medical records, biological monitoring records, air monitoring records and any other records of mine or my employer(s)' or physician(s)' related to the contract terms for my work or government regulations.
8. On behalf of myself, my dependents, my estate and my heirs and assigns, I agree to waive any and all claims against ASARCO, Inc. and its employees and agents, and release and hold them harmless from any and all damages, costs and expenses resulting from my death or any injuries or illnesses I may suffer as a result of my presence, exposure, activity, accident or event at this facility, except in cases of gross negligence or intentional acts on the part of ASARCO. In the event of my death, injury or illness in any way related to the ASARCO facility I agree and acknowledge that my sole remedy and that of my dependents, heirs and assigns will be the worker's compensation coverage and benefits provided by my employer, or any insurance benefits provided by my employer or myself.

I acknowledge and agree that my signature below indicates that I have read, understand and agree to the terms and conditions set forth above in consideration and in exchange for ASARCO granting me permission to enter its facility.

1) _____

Date	Company	Signature	Soc. Sec. No.
Admitting Guard/Emp	Project/Work	Printed Name	Work Location

I acknowledge and agree that my signature below indicates that I have read, understand and agree to the terms and conditions set forth above in consideration and in exchange for ASARCO granting me permission to enter its facility.

2)	_____	_____	_____	_____
	Date	Company	Signature	Soc. Sec. No.
	_____	_____	_____	_____
	Admitting Guard/Emp	Project/Work	Printed Name	Work Location
3)	_____	_____	_____	_____
	Date	Company	Signature	Soc. Sec. No.
	_____	_____	_____	_____
	Admitting Guard/Emp	Project/Work	Printed Name	Work Location
4)	_____	_____	_____	_____
	Date	Company	Signature	Soc. Sec. No.
	_____	_____	_____	_____
	Admitting Guard/Emp	Project/Work	Printed Name	Work Location
5)	_____	_____	_____	_____
	Date	Company	Signature	Soc. Sec. No.
	_____	_____	_____	_____
	Admitting Guard/Emp	Project/Work	Printed Name	Work Location
6)	_____	_____	_____	_____
	Date	Company	Signature	Soc. Sec. No.
	_____	_____	_____	_____
	Admitting Guard/Emp	Project/Work	Printed Name	Work Location
7)	_____	_____	_____	_____
	Date	Company	Signature	Soc. Sec. No.
	_____	_____	_____	_____
	Admitting Guard/Emp	Project/Work	Printed Name	Work Location

ASARCO CONTRACTOR POLICY

TYPICAL CONTRACTOR SAFETY AND HEALTH PROGRAM ELEMENTS

- A. Prior to beginning work, contractors must develop a site-specific safety and health program that meets all applicable safety and health regulatory requirements. Contractors must understand the importance of developing an effectively-functioning program that is pro-active and addresses the potential exposures to their employees for the particular job to be done. Potential exposures should be addressed extensively in the safety and health program.
- B. The program should describe in detail how job safety and health is to be incorporated into each phase of the work. Typical subjects to be covered in the safety and health program include:
 - 1. Accident investigation procedures
 - 2. Biological monitoring
 - 3. Bloodborne pathogen programs (e.g. contractor's emergency responders)
 - 4. Confined space procedures
 - 5. Disciplinary action
 - 6. Emergency procedures
 - 7. Fire protection and prevention
 - 8. First aid
 - 9. Hazard communication
 - 10. Incident reporting and investigation
 - 11. Lockout/Tagout
 - 12. Medical surveillance
 - 13. Occupational health programs (e.g. lead, cadmium, arsenic, construction lead and cadmium)
 - 14. Orientation for new hires
 - 15. Personal protective equipment
 - 16. Process safety management

17. Reporting unsafe acts or conditions
18. Safe work areas
19. Safe and healthful orientation for supervision
20. Special instructions and/or information
21. Supervising for safety and health
22. Toolbox safety meetings
23. Task training
24. Training mandated by OSHA or MSHA
25. Process safety management procedures

C. General Requirements for Contractors

1. Each contractor shall be directly responsible for initiating and maintaining a safety effort to prevent his employees from working under conditions which are unsafe, unhealthy, or unsanitary. The contractor's compliance with the Mine Safety and Health Act, the Occupational Safety and Health Act, state and local codes governing safe work practices, and ASARCO's site Safety Manual is mandatory.
2. Each contractor is required to conduct substance abuse screening for all prospective employees.
3. Carelessness or disregard for accepted health, safety, and fire protection standards will not be tolerated.
4. The contractor shall prohibit the use of unsafe machinery, tools, material, or equipment. These shall be identified as unsafe by tagging or by locking the controls to render them inoperable or they shall be removed from service in accordance with applicable regulations.
5. The contractor shall permit only employees who are qualified and competent by virtue of training or experience to operate equipment and machinery.
6. Contractors shall instruct their employees to recognize and avoid unsafe conditions. Employees should know the regulations applicable to their work environments to control or eliminate any hazards that cause exposure, illness, or injury.
7. Contractors shall instruct and train each of their employees required to handle or use flammable liquids, gases, toxic materials, poisons, caustics, and other harmful substances in their safe handling and use. Contractors

shall provide training to their employees on potential hazards, necessary personal hygiene, personal protective measures, and all other matters required by the OSHA Hazard Communication Standard and any other applicable OSHA or MSHA standards governing exposure to specific hazardous substances.

8. Contractors shall instruct and train their employees required to enter confined or enclosed spaces in accordance with OSHA confined space requirements.
9. Any contractor employee reporting to work intoxicated or apparently under the influence of intoxicants or drugs will not be permitted on job site.
10. Designations of areas posted as "OFF LIMITS," "RESTRICTED ACCESS," or the like shall be obeyed by all employees.
11. Alcohol and firearms are prohibited on Facility property.
12. Any physical impairment, handicap, or medication taken regularly must be reported to a supervisor and the first aid facility.
13. Contractor employees must know the symptoms, as well as the causes, treatment, and prevention of heat stroke and exhaustion. Symptoms may be due to a combination of high heat, humidity, low air movement, tyvek suits, or job conditions.
14. Contractors working in restricted areas must ensure that biological and/or air monitoring, if required, is conducted. While ASARCO prefers that such monitoring be conducted by the contractor, any such monitoring performed by ASARCO for contractor employees is voluntary and done to enhance safety and health in the workplace. Such actions do not change or diminish the contractor's responsibilities regarding biological monitoring. If monitoring is performed by ASARCO, the delivery of monitoring results to contractor and its employees must be documented along with any preventive action required by contractor. Furthermore, any such voluntary services provided by ASARCO will be addressed in contract provisions.

D. Contractor Safety Education, Training and Promotion

1. A proven means of instituting and reinforcing a safety program is through carefully planned and conveyed safety education, training and informational activities. These activities must be presented logically and systematically to ensure that all employees know their obligations and responsibilities for achieving a safe work environment.
2. ASARCO requires contractors to convey the message that safety is a priority through a variety of activities. These activities include, but are not limited to:

- a. New hire safety and health orientation/indoctrination by contractor safety representative.
 - b. Contractor foreman safety and health orientations for employees.
 - c. Weekly contractor "Toolbox" safety and health meetings.
 - d. Project safety and health bulletin boards.
3. All newly-hired contractor employees must be required to attend a safety and health orientation on the first day of employment. The orientation will be conducted by the contractor and ASARCO prior to assigning employees to begin work. This includes all contractor personnel as well as subcontractor personnel.
4. Employees of a low risk contractor, as defined in ASARCO's Contractor Policy at Section C(1), may not require all aspects of safety and health training if accompanied by an authorized ASARCO representative but must be given appropriate hazard recognition and emergency training.
5. The contractor has primary responsibility to maintain a safe and healthy working environment.
6. Employees shall take all necessary precautions to ensure their own personal health and safety and that of other workers and to cooperate with ASARCO's safety effort.
7. The contractor must know and follow the reporting procedures for occupational injuries and illness. Every injury and illness shall be reported as required by the site and to the employee's supervisor. Any employee who has obtained outside medical treatment for an alleged work site injury or illness must report his or her injury or illness and the name of the attending physician to the first aid facility and his/her supervisor no later than the first normal scheduled workday following his or her outside medical treatment.
8. Every employee shall be informed that attendance at scheduled weekly contractor "Toolbox" safety and health meetings is mandatory. This weekly meeting will allow employees to ask questions, offer suggestions, and air complaints about safety on the project.
9. Employees shall be instructed that they are to report all unsafe acts or conditions. ASARCO's representative must be informed of any such reports. Any unresolved problems shall be reported to the Contractor Safety Coordinator and to ASARCO's representative. **IN CASES OF "IMMINENT DANGER," THE HAZARD SHALL BE IMMEDIATELY ABATED OR PROTECTIVE ACTION SHALL BE IMMEDIATELY TAKEN TO PREVENT INJURY. THE EMPLOYEE SHALL NOTIFY THE FIRST CONTRACTOR AND/OR ASARCO SUPERVISOR THE EMPLOYEE CAN FIND OF THE SITUATION. THE EMPLOYEE SHALL COMPLETE SUCH NOTIFICATION WITH ALL DUE SPEED!**

10. A safety discipline, warning letter, suspension or termination or other appropriate written notification is to be utilized in disciplining employees for unsafe acts.
11. Each employee is to be informed on established emergency procedures so that he/she may render voluntary assistance in case of serious injury, fires, evacuation, etc.
12. Every contractor employee is required to wear personal protective equipment, as mandated by applicable regulations, and ASARCO site policy. Minimum requirements for personal protective equipment are referenced in Section H.
13. All "air contaminants" regulated areas are marked throughout the Facility by posted signs. Approved respirators must be worn in these regulated areas by all contractor employees. Although the Facility has extensive controls to minimize air contaminants, systems can malfunction, or employees may be working in an area where controls are not feasible. Contractors must emphasize that employee protection depends upon proper respirator use. Again, in instances where ASARCO voluntarily provides respirators for contractor personnel, such action does not diminish or change the contractor's responsibility in connection with respiratory protection for its personnel, and such voluntary actions by ASARCO will be addressed in the contract.
14. If a contractor's employees may be exposed to hazardous substances for which OSHA has established specific compliance requirements, in addition to the permissible exposure level, e.g., arsenic, cadmium, and lead, the contractor must develop a written compliance program that meets all applicable OSHA requirements, including the following:
 - a. A description of each operation in which the hazardous substance is emitted, e.g. machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices.
 - b. A description of the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure, as well as, where necessary, the use of appropriate respiratory protection to achieve the Permissible Exposure Limit (PEL).
 - c. A report of the technology considered in meeting the PEL.
 - d. Air monitoring data that document the source of the regulated emissions.
 - e. A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.

- f. A work practice program that includes all elements required by OSHA with regard to emergency situations and a written emergency situation plan, protective clothing and equipment, and hygiene areas and practices.
- g. Any other relevant information.
- h. An administrative control plan provision and schedule, if appropriate.
- i. A description of the compliance arrangements made between the contractor and any sub-contractors that assure subcontractor compliance with applicable regulations and with these requirements.

The contractor's written compliance program must be updated at least every six (6) months, and more frequently if necessary. The contractor may be provided a copy of ASARCO programs to assist in the development of its own program. However, ASARCO's program can not be substituted for the contractors; and the contractor's program must address the specific job/project at ASARCO's facility.

E. Weekly Contractor Toolbox Safety and Health Meetings

- 1. The contractor will hold weekly safety and health meetings with the workers to discuss work practices and conditions related to safety and health.
- 2. Upcoming activities, additional materials such as health risk reminders or prior week's accidents, and the "topic of the week" will be provided by the contractor.
- 3. The contractor will make records of these meetings.
- 4. Attendance at these safety and health meetings is mandatory. Once established, the day, time, and location of these meetings should not be changed unless absolutely necessary.
- 5. Copies of records of safety and health meetings shall be available to ASARCO upon request.

F. Project Safety Bulletin Boards

- 1. In order to promote safety and maintain a highly visible safety profile on the work site, contractors shall establish safety bulletin boards.
- 2. Bulletin boards will be of sufficient size to accommodate the following material:
 - a. Appropriate Mine Safety and Health, Occupational Safety and Health, and Workers' Compensation information posters.

- b. Emergency phone numbers, e.g., fire department, ambulance, hospital, etc.
- c. ASARCO Site Safety Manual.
- d. ASARCO Independent Contractor Safety and Health Policy.
- e. Contractor Safety and Health Program.
- f. Appropriate safety posters.
- g. Green and white metal safety placard stating:

**NOTICE
YOUR CONTINUED EMPLOYMENT
ON THIS PROJECT IS DEPENDENT
UPON YOUR WILLINGNESS TO
OPERATE SAFELY.
YOU MUST FOLLOW THESE SAFETY RULES.
BELIEVE IN AND INSIST
UPON SAFETY.**

- h. Location of Material Safety Data Sheets and name and phone number of person to contact (right-to-know).
- 3. Bulletin boards will be located where they are readily accessible, may be easily read by employees, and will not be destroyed.
- 4. Each contractor has the responsibility to see that the material on the bulletin board is current.

G. SAFETY EQUIPMENT & POLICY

- 1. It is the responsibility of contractor and subcontractor management to assure strict compliance with established safety rules, regulations and policies.
- 2. Safety offenders are to be disciplined and terminated when necessary.
- 3. The safety orientation or training held for all employees shall specify verbally that violations of the Mine Safety and Health Act, Occupational Safety and Health Act and/or ASARCO's Site Safety Manual and/or Contractor Guidelines may result in penalties up to and including termination.
- 4. It is the responsibility of the contractor to communicate, to all management and hourly employees, that safety and health is the number one priority on the job site.

H. PERSONAL PROTECTIVE EQUIPMENT -- Minimum Requirements for Contractors

1. Hard Hats: ANSI approved (Z-89.1) hats or caps. Aluminum headgear is not permitted.
2. Safety Glasses or Goggles: ANSI approved clear with side shields appropriate to the job. No shade/tint glasses permitted. No contact lenses are permitted in designated work areas. Note: Should your employee wear non-safety prescription glasses he or she will wear a pair of safety goggles (OSHA approved) over the glasses.
3. Hearing: Hearing protection devices, such as ear plugs or muffs, must be provided which provide protection that meets or exceeds OSHA standards.
4. Work Clothes (where applicable): Contractors will furnish, clean and maintain all required work clothes.
5. Respirators:
 - a. Furnish, clean, and maintain appropriate respirators and cartridges that meet OSHA and ANSI standards.
 - b. Contractor employees must be fit tested to ensure a proper face seal.
 - c. Beards are not permitted. Contractor employees using respirators must be clean shaven daily to ensure proper face seal.
6. Work Gloves: Contractors will supply work gloves appropriate for the job and meeting all ANSI and OSHA standards.
7. Safety toe shoes: Must meet OSHA and ANSI minimum standards and be provided by contractors.
8. Burners: Welders will wear OSHA/ANSI approved fire resistant gloves, leathers, fire retardant jackets (long sleeve) and required eye/face protection when welding, and such protective gear will be provided by contractors.
9. Safety Belts and Lanyards: ANSI approved safety belts and lanyards must be worn at all times in areas where the danger of falling exists and contractors must provide them as required by OSHA standards. Workers must tie off, i.e., secure themselves to a part of the structure they are working on or a static line.
10. Acid Suits: Required in designated areas or in area where the potential for contact with acid exists, and OSHA required, ANSI approved suits must be provided by contractors.
11. Face Shields/Goggles: Must be worn when working with liquid metals, chemicals, or when safety glasses do not provide adequate protection.

Such protective devices must be ANSI approved, meet OSHA standards, and be provided by contractors.

I. Mobile Equipment

1. Mobile heavy equipment has the right-of-way.
2. Use installed seat belts while operating equipment.
3. Do not exceed lifting capacities of equipment.
4. Use hooks with safety latches only.
5. When using man lifts, fall protection must be in place. Safety protection checklists must be maintained for the condition of lift equipment.
6. Heavy equipment as well as light duty vehicles must be inspected at the beginning of each shift to ensure safe operating condition. Equipment operators must complete an "operator inspection card". Equipment found to have defects that affect safety must not be put into service until corrected.

J. Flammable & Combustible Materials

1. Gasoline, diesel fuel, kerosene, and flammable solvents such as naphtha, xylene, or acetone shall be handled only in approved safety cans. Containers must be properly labeled and shall not be used for other purposes.
2. All oxygen and acetylene bottles shall be kept capped (except when gauges are in use) and secured in an upright position. Oxygen and acetylene shall be stored separately.
3. All hoses and gauges must be inspected before use. They must be separated by a minimum of 20 feet or a fire wall with a burn rate of 1 hour. Fire fighting equipment must be provided and available in the work area prior to welding or cutting.
4. Compressed oxygen and fuel cylinders (tanks) must be kept upright and secured, with the regulator and valve caps on at all times. Hoses must be gathered and arranged to eliminate tripping or other hazards.
5. All flammable chemicals must be sealed in properly marked containers and stored in an OSHA approved cabinet.

K. Other Rules

1. Contractor employees are required to inspect their work sites for hazards prior to initiating work and perform repeated hazard inspections throughout the day.

2. Compressed air lines shall not be used to blow down clothing or clean work areas.
3. Contractor employees will notify the site supervisor of any exposed electrical contact points.
4. Crane hooks and headache balls shall not be ridden nor shall steel columns be climbed or used as a means of descent.
5. When working overhead, a warning sign must be posted in a visible location and the area barricaded if necessary. Tools and materials must be secured to prevent them from falling below where they may cause an accident.
6. All tools and equipment must be physically inspected for damage. Those found to be unsafe must be taken out of service for repair. Power tools cannot have a lock-on switch and must be grounded.
7. All excavated fill must be kept a minimum of 3 feet away from the hole. An access/egress ladder must be in the hole any time an employee is working in the hole. The perimeter of the hole must be barricaded and warning lights used at night.
8. Ladders must be the proper size for the job to be performed and equipped with safety shoes. Inspect each ladder for damage before using it. Do not use a ladder that is broken or shows signs of fatigue! Take it out of service. Extension ladders will be tied off and secured against a stationary rest. When climbing or descending a ladder, use both hands.
9. Scaffolds must be set up by qualified personnel only. Only appropriate scaffold sills, posts, and base plates will be used. Braces must be fastened securely. All stages or planks must have rails, toe boards, and cleats in accordance with OSHA regulations.
10. Guards, safety devices, and limit switches must be in place and operational before using any equipment.
11. Do not remove guards or safety devices to operate any equipment.
12. Use the appropriate device to block equipment being repaired. Never depend on hoist or chain blocks to do the job.
13. Use hand tools only for the purpose for which they were designed.
14. Regular housekeeping must be performed to avoid health or safety hazards.
15. In areas of potential toxic exposure, consumption of food, beverages or tobacco is prohibited.

16. In areas of potential toxic exposure, shoveling, dry or wet sweeping and brushing may be used only where vacuuming or other equally-effective methods have been tried and found not to be effective.
 17. Construction projects with potential lead exposures must independently comply with OSHA's lead construction standard.
- L. **Contractor Safety Representative:** Each contractor will designate a Facility Contractor Safety Representative who will be directly responsible for safety and health within that contractor's scope of work. This representative will communicate with ASARCO to eliminate unsafe acts/conditions at the site as required by ASARCO's contract with the contractor.
- M. **Contractor Safety Representative Must Be Required To:**
1. Conduct daily safety and health inspections of work areas to monitor contractor's safety and health activities.
 2. Work with all subcontractors and their safety representatives to eliminate unsafe conditions and/or acts.
 3. Assist with (but not limited to) the following:
 - a. Attend the contractor's "Toolbox" safety meetings.
 - b. Required employee training including voluntary first aid, CPR, self-rescuer, etc.
 - c. Industrial hygiene, environmental and biological monitoring for noise pollution, air quality, blood levels, etc., as required.
 - d. Development of statistical information for accident, injury, and illness tracking, trending and workers' compensation.
- N. **Contractors and their subcontractors are responsible for the safety and health of their own employees and must:**
1. Provide and execute all work in compliance with federal regulations, all state and local codes, ASARCO's Safety Manual and the Contractor Health and Safety Guidelines.
 2. Provide and enforce the use of required personal protective equipment .
 3. Provide supervisory investigation reports for all accidents, property damage, and environmental incidents.
 4. Attend orientation sessions addressing safety.
 5. Schedule and attend weekly "Toolbox" safety meetings for all employees.

6. Take immediate action to correct or protect against unsafe practices or conditions when discovered.
 7. Comply with OSHA's Hazard Communication Program, Construction Industry standard for lead and all other standards applicable to specific hazardous substances, Walking and Working Surface Standards, and all other applicable OSHA or MSHA standards.
 8. Report observed unsafe conditions or practices or violations of job security which are not within contractor's jurisdiction.
 9. Inspect work places, tools and equipment as required by OSHA, MSHA, manufacturer, ASARCO Safety Manual, and this guide.
 10. Provide a copy of written safety program to ASARCO.
- O. Statutory Safety And Health Requirements and Inspection:
1. The Mine and Occupational Safety and Health Acts (MSHA/OSHA)
 - a. The contractor and its employees are expected to know the requirements of MSHA/OSHA and to work diligently to comply with applicable requirements.
 - b. It is the contractor's responsibility to keep up with changes in MSHA/OSHA legislation and regulations and to comply with these changes.
 - c. The safety and health regulations and standards promulgated by MSHA/OSHA, ASARCO's Site Safety Manual and these guidelines are considered to be the minimum performance acceptable for contractors while completing a contract for ASARCO.
 - d. ASARCO facilities are regulated by MSHA and/or OSHA standards. Every effort to achieve compliance must be made by each contractor. The contractor must initiate immediate corrective action in the event a violation of these standards is discovered.
 2. OSHA/MSHA Compliance Inspections
 - a. Periodically, MSHA/OSHA compliance officers may be required to inspect workplaces for the purpose of ensuring that employers are complying with the health and safety standards.
 - b. ASARCO is to be promptly notified when an MSHA/OSHA compliance officer visits the site, or any telephone or written inquiry is received by the contractor from any MSHA or OSHA official.

- c. An MSHA/OSHA compliance officer must present his/her credentials and state specifically the nature and scope of the visit.
- d. MSHA/OSHA representatives must be treated in a courteous manner.
- e. Copies of any MSHA/OSHA citations, penalties, notices, orders, or correspondence issued to the contractor or subcontractor will be provided to ASARCO.

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

CONTRACT FOR

(Insert name of job)

THIS AGREEMENT is made the _____ day of _____, 199____,
by and between: _____
whose address is: _____
(hereinafter called the "Contractor") and _____
whose address is: _____
(hereinafter called the "Owner").

Whenever used in this Agreement, the terms "Owner" and "Contractor" shall include their respective directors, officers, employees, servants, affiliates, subsidiaries, agents, successors and assigns. The term "Contractor" shall also include any and all subcontractors and their officers, employees, servants, affiliates, subsidiaries and/or agents, suppliers and any other parties in privity with the Contractor or under the Contractor's direction or control in connection with the Work.

W I T N E S S E T H :

The Contractor and the Owner, for and in consideration of the mutual covenants set forth herein, agree as follows:

Article 1. Scope of the Work

The Contractor shall furnish all such plans, shop drawings, field engineering, labor, materials, transportation, tools, equipment and other facilities in strict accordance with the requirements and provisions set forth herein and in strict accordance with the specifications, drawings and other requirements listed below and those drawings and specifications which may be supplied by the Owner or prepared by the Contractor at the Owner's direction subsequent to the execution of this Agreement and approved by the Owner. This Agreement, the Appendices hereto and all documents listed below are incorporated herein by reference and made a part hereof and are hereinafter referred to collectively as the "Contract" or the "Contract Documents." All work required to be performed under the Contract and the Contract Documents shall be referenced herein as the "Work" or the "Project."

(Identify and Attach Specifications, Drawings and Other Requirements)

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Article 2. Time of Completion

The Work to be performed under this Contract shall begin on _____ and shall be substantially completed as defined in Article 5 by _____ and fully and finally completed by _____, plus any applicable extensions of time granted by the Owner.

Article 3. The Contract Price

The Owner shall pay the Contractor for the performance of this Contract, subject to any additions and deductions herein provided, the sum of _____ dollars (\$ _____), in lawful currency of the United States of America under the conditions hereinafter provided.

Article 4. Schedule of Values and Progress Payments

Within ten (10) days after the effective date of this Contract, the Contractor shall submit to the Owner a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract price. The schedule of values shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work. Subject to the Owner's approval, the schedule of values will provide the basis for the Contractor's progress payments.

As soon as practicable after the first day of each calendar month, the Contractor shall present to the Owner an invoice equal to the percentage of the total amount of the Contract which has been completed from the start of the Project up through the end of the preceding month, plus the cost of materials purchased during the preceding month for the Project, together with such supporting evidence as may be required by the Owner. This invoice shall be based upon the schedule of values submitted by the Contractor. Subject to verification and approval of such invoice by the Owner, payment shall be due from the Owner on the thirtieth (30th) day after the Owner's receipt of an invoice from the Contractor. The amount due from the Owner to the Contractor shall be ninety percent (90%) of the total amount due under the Contract for the Work completed, less the total of previous payments. Upon the Owner's final acceptance of all Work required under the Contract, in accordance with Article 6 below, the Owner shall pay the Contractor a sum sufficient to increase the total payments to one hundred percent (100%) of the Contract price.

Article 5. Substantial Completion

"Substantial Completion" is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with all Contract Documents so the Owner can occupy or utilize the Work for its intended use. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner a comprehensive list of items

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Contractor a sum sufficient to increase the total payments to one hundred percent (100%) of the Contract price.

Article 5. Substantial Completion

"Substantial Completion" is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with all Contract Documents so the Owner can occupy or utilize the Work for its intended use. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner a comprehensive list of items which remain to be completed or corrected relating to that portion of the completed Work. This list shall be identified by the Contractor as the "Contractor's Draft Punch List." Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract. Upon receipt of the Contractor's Draft Punch List, the Owner will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Owner's inspection discloses any item, whether or not included on the Contractor's Draft Punch List, which in the Owner's opinion prevents the Work from being substantially complete, the Contractor shall complete or correct such item upon receipt of notification by the Owner. The Contractor shall then submit a written request for another inspection from the Owner to determine Substantial Completion. When the Owner determines that the Work or designated portion thereof is substantially complete, the Owner will prepare and provide to the Contractor a Certificate of Substantial Completion which shall establish the date of Substantial Completion, and shall fix the time (if a change is required in the date originally established for final completion) within which the Contractor shall finish any remaining items of Work itemized by the Owner. This listing of remaining items of Work shall be identified as the "Owner's Final Punch List" and shall be provided to the Contractor along with the Certificate of Substantial Completion.

Article 6. Acceptance and Final Payment

(a) Upon receipt of written notice from the Contractor that the Owner's Final Punch List is complete and the Work is ready for final inspection and acceptance, the Owner shall promptly make such inspection. If and when the Owner finds the Work fully performed and acceptable under the Contract, the Owner shall promptly issue a Certificate of Final Completion. After all appropriate adjustments have been made to the Contract price, the entire remaining balance shall be paid to the Contractor by the Owner within thirty (30) days after the date of issuance of said Certificate of Final Completion.

(b) Before issuance of the Certificate of Final Completion, the Contractor shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the Work have been paid, and that the Work is free of all liens and encumbrances. The Contractor shall provide the Owner with releases of claims and liens for all of its subcontractors. In the case of disputed indebtedness or liens, the Contractor must submit a surety bond satisfactory to the Owner guaranteeing payment of all such disputed amounts when adjudicated.

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Article 8. Insurance Certificate

The Contractor shall deliver to the Owner, along with the signed Contract and prior to any equipment or personnel being brought onto the Owner's premises a Certificate of Insurance evidencing the insurance coverages described in Article 37 of this Contract.

Article 9. Compliance with Laws and Ordinances

This Contract shall be performed and all equipment, goods, services or work furnished hereunder shall be produced, sold or delivered in strict compliance with all federal, state and local laws, rules, regulations, standards and other governmental requirements in effect as of the date hereof including, but not limited to, the Occupational Safety and Health Act of 1970, 29 U.S.C. §§ 651 *et seq.* (the "Occupational Safety and Health Act"), the Mine Safety and Health Act of 1977, 30 U.S.C. §§ 801 *et seq.* (the "Mine Safety and Health Act"), the statutes enforced by the United States Environmental Protection Agency ("U.S. EPA") and all applicable regulations and standards. The Contractor will furnish to the Owner certificates of such compliance in a form acceptable to the Owner. If the Contractor performs any Work or delivers any services or goods contrary to any laws, ordinances, rules or regulations, the Contractor shall bear all costs and expenses of any kind arising therefrom. The inclusion in this Contract of any specific requirements or agreements to comply with specific laws, regulations or ordinances does not and is not intended to relieve the Contractor of its obligation to comply with all laws, rules, statutes, regulations and ordinances.

Article 10. Employment and Related Laws

To the extent the goods and services to be provided hereunder are being utilized by the Owner to fulfill obligations pursuant to a contract with the federal government or any agency thereof or to the extent otherwise applicable as a matter of law to the contracting and/or subcontracting of services or Work hereunder, the following provisions are incorporated by reference and the Contractor represents that it will comply with them: The Equal Employment Opportunity Act, E.O. 11246 and 41 CFR Secs. 60-1.4 and 60-1.7; the Employment of Veterans Act, 41 CFR Sec. 60-250; and the Employment of Handicapped Act, 41 CFR Sec. 741-4, Drug Free Workplace Act of 1988 (Pub.L. 100-690); Walsh-Healey Public Contracts Act, 41 U.S.C. § 35-45; Service Contract Act of 1965, as amended, 41 U.S.C. 351, *et seq.*; Americans with Disabilities Act of 1990, 42 U.S.C. § 12101, *et seq.*, such other laws or regulations as the federal government may require the Owner to flow down to its contractors; and all rules and regulations issued pursuant to the foregoing.

Article 11. Intent of Contract Documents

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

The intention of this Contract is to include all labor and materials, equipment, supplies, services and transportation necessary for the proper execution and completion of the Work. All services, materials, equipment, activities or Work that are not specifically identified in Article 1, shown on the drawings, stated in the specifications or other Contract Documents, or listed herein, but that are reasonably necessary for the proper completion of all Work on the Project in accordance with the highest industry standards, shall be provided by the Contractor the same as if specifically identified in Article 1, shown on the drawings, stated in the specifications or other Contract Documents, or listed herein. Contract terms which have a well-known technical or trade meaning shall be interpreted accordingly. In the event of any inconsistency, conflict or ambiguity between or among the Contract Documents, such conflict shall be resolved by referring to the Contract Documents in the following order of precedence: (1) the most recent change orders and written amendments to this Contract signed by the Owner and Contractor; (2) the terms and conditions of this Contract.

Article 12. Drawings and Specifications

The Owner agrees to furnish, without charge to the Contractor, one (1) set of reproducible specifications and prints of all drawings listed in the specifications. Where revised or additional drawings and specifications are prepared as hereinafter provided, the Owner will furnish one (1) set of such revised or additional drawings and specifications to the Contractor.

The Owner agrees to furnish supplemental drawings as may be required to clarify the Contract drawings. Supplemental drawings shall neither enlarge nor decrease the scope of the Work. Where alterations in the Contract drawings and specifications affect the extent of the Work, the changes shall be governed as provided in Article 27 of this Agreement.

The Contractor agrees to furnish to the Owner for approval three (3) sets of prints of the following drawings before proceeding with the Work covered therein:

- A. All of the Contractor's drawings which are required or produced for this Project.
- B. Any shop drawings, detail sheets or erection diagrams required for any phase of the Work.
- C. Certified dimension sheets, wiring diagrams and performance curves covering any equipment purchased by the Contractor for the Project.

The Contractor shall make any corrections required by the Owner in drawings submitted for the Owner's approval. The Owner's approval as to the design of such drawings shall not relieve the Contractor of responsibility for errors or discrepancies of any sort.

The Contractor also agrees to furnish to the Owner five (5) sets of operation and installation instructions and parts lists for all equipment furnished by the Contractor, not later than the date the equipment is shipped, including two (2) certified copies of dimension sheets, wiring diagrams and performance curves of same.

"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)

As soon as the drawings referred to in subparagraphs A and B above are completed, checked and approved by the Owner, the Contractor shall furnish three (3) complete final sets of prints to the Owner.

Upon completion of the Project and as a condition for final payment, the Contractor shall provide the Owner with three (3) sets of record drawings showing all as-built conditions on the Project.

Article 13. Order of Completion and Schedules

The Contractor shall complete any portion or portions of the Work in such order of precedence as the Owner shall require, and the time for completion of the various stages or divisions of the Work will be determined by the schedules issued by the Contractor to the Owner and mutually agreed upon by the Owner and the Contractor. Within ten (10) days after the effective date of this Contract, the Contractor shall submit to the Owner a preliminary progress and schedule indicating start and completion dates for the various stages or divisions of the Work. The Contractor shall be responsible for maintaining and providing the Owner with written schedule updates on at least a monthly basis or as otherwise requested by the Owner. The schedules and updates shall be prepared by the Contractor in a form acceptable to the Owner.

Article 14. Contractor's Understanding

To the extent reasonably practicable or consistent with trade or industry practice, the Contractor shall satisfy itself as to the nature, physical condition and location of the Work, including but not limited to all subsurface conditions, the character of equipment and facilities needed prior to and during the execution or performance of the Work, the general and local conditions, and all other matters which can in any way affect the Work under this Contract. The Owner's subsurface investigations (if provided) are made for design purposes only. The Owner does not warrant that the conditions indicated by these investigations are representative of those throughout the Work area, or in any part of it. Where reasonably practicable or consistent with trade or industry practice, the Contractor is responsible to make its own subsurface investigation to determine the impact of the subsurface conditions on its Work. Information supplied by the Owner regarding subsurface conditions is provided to supplement the Contractor's own subsurface investigation, and such information is not to be relied upon by the Contractor. The Contractor's right to recovery or relief for any condition, whether or not anticipated, obvious or latent, shall be governed by Article 44 of this Contract and shall be limited solely to an extension of the Contract performance period.

Article 15. Utilities and Temporary Facilities

.....The Owner will not supply electricity, water, light, power, steam, compressed air or other.....
utilities required for construction purposes unless specifically so provided in the Contract.

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Where such items are not supplied by the Owner, they shall be furnished by the Contractor, and the Contractor shall, in either case, be required to make the necessary connections, provide approved shut-off and safety devices and furnish and install all temporary lines required to bring them to the point of use. The Contractor shall construct and maintain all necessary temporary facilities for the completion of the Work. The Contractor shall provide and maintain adequate sanitary facilities at the Project site. Upon completion of the Work, all such facilities shall, unless the Owner shall otherwise direct, be removed from the premises and the site cleared.

Article 16. Status and Responsibility of the Contractor and its Personnel

It is understood and agreed that the status of the Contractor and its subcontractors hereunder is that of an independent contractor, that their personnel performing services or Work hereunder shall under no circumstances be deemed to be employees of the Owner, and that any Worker's Compensation Insurance coverage and Occupational Safety and Health Administration ("OSHA") or Mine Safety and Health Administration ("MSHA") training required for such personnel will be the sole responsibility of the Contractor. Notwithstanding the aforesaid understanding, the general instructions of the Owner in connection with accomplishing the Work to be done hereunder shall be followed by the personnel of the Contractor.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the Work any unfit person or anyone not skilled in the Work assigned to him.

During the term of the Contract, it shall be the Owner's prerogative to require changes in the personnel of the Contractor's employees assigned to the Work when in the opinion of the Owner, their work is not conducive to the required scope of Work.

If for any reason the Contractor's employees or any of its subcontractor's employees or agents acquire a status imposing liability on the Owner for employers' contributions or taxes under the Federal Insurance Contribution Act, the Federal Unemployment Tax Act, any State Unemployment Tax or Wage Protection Act, any savings, profit sharing, pension, equity participation, or other benefit plans or for the violation of any federal, state or local act, statute or regulation, then the Contractor shall be solely and exclusively liable for, and shall indemnify, defend and hold harmless the Owner against the same so as to relieve the Owner from any and all liability, loss or damage therefor and from the responsibility for making reports or keeping records with respect thereto.

Article 17. Environmental Safety and Health Policy & Training

By accepting this Contract and beginning performance hereunder, the Contractor acknowledges that providing a safe and healthy workplace and protecting the environment is the Owner's first priority. The Contractor further agrees that any of its officers, agents, employees or subcontractors that enter the Owner's premises will be trained by the Contractor in the following areas: (a) applicable safety and health protection procedures, laws and regulations of federal, state and local governmental agencies, including but not limited to, OSHA and MSHA and/or

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

their state or local equivalents; (b) applicable environmental protection laws, procedures and regulations enforced by federal, state and local governmental agencies including, but not limited to, the U.S. EPA and/or their state or local equivalents; and (c) the Owner's site policies, rules and procedures.

Article 18. General Safety and Health Provisions

a. The Contractor agrees to fully comply with all Owner control procedures relating to facility access, including but not limited to, employee identification and information requirements, sign in/out and Work initiation/termination notification procedures. The Contractor agrees to comply with all Owner requirements applicable to the Contractor employee presence on site, including but not limited to, the use of respirators and personal protection equipment (e.g., hard hats, seat belts, gloves, safety glasses and coveralls) and the general safety and health provisions set forth below. The Contractor and its subcontractors and employees will complete and provide to the Owner the forms contained within Owner's Contractor Policy, and any other requested forms relating to safety, health and environmental protection.

b. The Contractor shall designate a job site representative to be its safety supervisor and that person shall be responsible for promoting safety, health, and accident prevention, interest in compliance with applicable laws, rules and regulations among its employees, and coordinating such activities with the Owner and any subcontractors and suppliers of the Contractor.

c. The Contractor shall convey in writing and orally to its employees that they must notify the Contractor and the Owner immediately of any safety or health concerns, newly discovered hazards or problems they may have at the Project, regardless of whether such concerns or problems relate to any job site policy, law, rule, regulation or any physical condition or process involving the Project premises or any circumstances, or any actions or inactions of the Owner or the Contractor. Upon receipt of such notice from an employee, or as follow-up to any oral or written notice issued by the Owner to the Contractor's site personnel, the Contractor must notify the Owner in writing within twenty-four (24) hours, of the stated concern, hazard or problem and what corrective and/or protective action has been taken and/or remains to be taken to evaluate the problem, mitigate the problem, prevent its recurrence, and effectively communicate with affected employees.

d. The Contractor acknowledges and agrees that it has been provided with and reviewed the Owner's Contractor Policy, safety and health rules and training materials and agrees to institute and follow such rules and apply them to the Work performed under this Contract.

e. The Contractor shall take all reasonable precautions to ensure the safety and health of all persons working at the Project and all persons who may in any way be affected by the Work, including but not limited to:

1. The Contractor agrees to limit its travel on the Owner's premises and facilities solely to that necessary for performing the contracted Work or services, and to be

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

accompanied by the Owner's personnel, unless authorized in writing to be unaccompanied following initial Work site arrival.

2. The Contractor agrees to comply with the Owner's substance abuse policies.
3. The Contractor agrees to become familiar with and train its employees in the physical characteristics of the worksite, including, but not limited to, any hazards, restricted areas, protective measures and applicable emergency and evacuation procedures.
4. The Contractor agrees to provide safe, functional equipment and materials and any training, testing or certifications that are necessary, appropriate or required to utilize such materials and equipment, including all equipment and tools needed to perform the job, and to provide approved personal protective equipment and clothing and respirators appropriate for the type of Work and Work location. The Contractor also agrees to maintain such equipment, materials and tools in good working condition.
5. The Contractor agrees to be subject, at any time, to the Owner's Contract compliance monitoring, including inspections, testing, and the Owner's acceptance or rejection of Contractor-provided equipment, materials and tools employed or used to complete the Work.
6. The Contractor agrees to obtain the Owner's written approval of its subcontractors and their employees before utilization on the Owner's premises. The Contractor must ensure that subcontractors meet the same safety and health requirements and provide the same information to the Contractor as the Owner requires of the Contractor. The Contractor in turn must provide copies of all such information to the Owner.
 - f. The Contractor shall take all reasonable precautions to assure that it discovers, is made aware of and corrects any unsafe or unhealthy conditions, circumstances, actions or inactions that arise at the Project and that directly or indirectly affect any of the Contractor's personnel or the personnel of any other contractor or the Owner at the site.
 - g. The Contractor shall promptly advise the Owner of any investigation or inspection of the Project site or the Contractor's workplace by any federal, state or local governmental agency and shall permit the Owner to participate fully in such inspections, and shall provide copies of inspection reports and notices of violations, and advise the Owner in writing of the progress and outcome of any such inspection or investigation or related litigation.
 - h. The Contractor shall immediately notify the Owner (and if requested provide a detailed written report) of every accident involving injury to personnel or occupational illnesses or damages to the Owner's property occurring in connection with the Work or on the Owner's facility, and agrees to assist the Owner with any accident investigation in which the Contractor

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

has any involvement by providing access to and preserving the Work area and by producing any and all related documents and records and any employees who have knowledge of, were involved in, or may have witnessed the accident for interviews. The Contractor also agrees to record and report all required information to all appropriate federal, state and local regulatory agencies and to provide copies of such reports and information to the Owner. The Contractor shall also report to the Owner employee days and hours worked while on company premises.

i. The Contractor acknowledges and agrees that any safety or health advice or training, inspections, safety or health equipment, health or biological monitoring or other safety or health services that may be provided or performed by the Owner for itself or the Contractor, its subcontractors or their employees is strictly voluntary and is provided solely to enhance safety and health in the workplace. Any such actions by the Owner shall not be alleged to change or diminish or relieve the Contractor or its subcontractors of contractual, legal or governmental responsibilities in these areas and shall not constitute, nor be alleged in any inspection, investigation or legal proceeding to constitute control, supervision or direction by the Owner of the Contractor's or its subcontractor's employees.

j. The Contractor agrees to provide the Owner with its written safety program and certify that all required training has been completed in a timely manner pursuant to the applicable federal and state laws and regulations, and provide such completed forms as requested by the Owner to demonstrate compliance with this provision.

k. The Contractor agrees to use and employ a safety and health program at least as comprehensive as that included in Owner's Contractor Policy and to conform to all requirements and information requests set forth in said policy. If additional precautionary requirements are agreed to, they are set forth in Appendix A hereto and the Contractor agrees to comply with them.

Article 19. General Environmental Provisions

a. The Contractor is responsible for proper management, storage, removal and disposal of all supplies and materials utilized in the Work and waste materials generated in the course of performance of the Contract pursuant to the Owner's rules, and all applicable laws, ordinances, rules, regulations, standards and/or other governmental requirements related thereto, including but not limited to, those of OSHA, MSHA, the U.S. EPA, the Department of Transportation and all federal, state, municipal and local governmental agencies, and the applicable fire codes, including but not limited to, appropriate containers, labels, warnings and placards, and secondary containment for materials containing hazardous substances or petroleum.

b. The Contractor may store supplies, materials and wastes only in areas designated by the Owner. The Contractor may not store any wastes on the Owner's property in excess of ninety (90) days. If the Contractor utilizes any materials designated by federal, state or local law as a hazardous substance or hazardous waste, such materials must be stored in appropriate containers and spill control equipment must be available in the storage areas.

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

c. In the event of a fire or a spill or release of hazardous materials or wastes on the Owner's property, the Contractor will take actions necessary to prevent harm to the environment and human health, and immediately notify the Owner in accordance with the notice provision contained in Article 52, as well as the appropriate governmental authorities.

d. The Contractor is responsible for all costs associated with removal and off-site disposal of all hazardous and non-hazardous wastes. The Contractor must inform the Owner in accordance with the notice provision contained in Article 52 at least ten (10) days before any waste material is transported off-site for recycling or disposal.

e. In the event that the Contractor leaves any materials, supplies or wastes on the Owner's property (except those placed in a designated on-site land disposal unit with the Owner's written permission) after completion of the Work, said materials, supplies or wastes will be disposed of by the Owner at the Contractor's expense.

f. Prior to commencement of the Work, the Contractor will provide the Owner with a Material Safety Data Sheet for all materials and supplies to be utilized on the Owner's property in the course of performance of the Contract. At the Owner's discretion, the Owner may require that the Contractor utilize a substitute product that is less hazardous.

g. The Contractor is responsible for making all such Material Safety Data Sheets available to its own employees and those of its subcontractors pursuant to the Occupational Safety and Health Act.

h. Unless the Owner provides prior written approval to the Contractor, the Contractor may not bring any materials onto the Owner's property nor utilize any products that contain the following substances: asbestos, chlorofluorocarbons (CFCs), chlorinated solvents, or polychlorinated biphenyls (PCBs).

Article 20. Assessment For Contractor Violations And Audit Of Contractor Compliance

The Contractor recognizes and acknowledges that violations by the Contractor of health, safety, environmental and other statutory and regulatory authority may result in civil and/or criminal fines and penalties or in other damages and losses to both the Owner and the Contractor. The Contractor agrees that the Owner shall have the right to assess or backcharge the Contractor in an amount equal to that which OSHA, MSHA or U.S. EPA is authorized to assess for health and safety or environmental violations where the Owner reasonably determines that the Contractor, its agents, subcontractors or employees have committed such a violation. The Owner also shall have the right to inspect or audit the Contractor's records, conduct or actions during the performance of this Contract for the purpose of monitoring the Contractor's compliance with and enforcement of the terms of Articles 17 through 20. The Owner's remedies against the Contractor for violation of the terms of this Article shall not be limited to those set forth herein.

Article 21. Patents and Other Intellectual Property Rights

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

The Contractor shall indemnify, defend and hold harmless the Owner against and from any and all claims, losses, costs, damages, expenses, actions or other proceedings growing out of or resulting from the alleged infringement or infringement of any patent or other intellectual property rights by the Contractor in the performance of this Contract. This provision shall not apply to patented articles or processes specified in drawings or specifications furnished by the Owner provided any such claim is not attributable to the Contractor's negligence in the use of such patented articles or processes.

Article 22. Surveys, Permits and Regulations

If involved in the subject matter of this Contract, the base lines and mean datum will be established by the Owner, the control lines and levels and all general layout Work will be the responsibility of the Contractor. All controls established by the Contractor shall be preserved and maintained throughout the life of the Contract.

Unless otherwise specified, the Owner shall furnish all land surveys required. Permits and licenses of a temporary nature necessary for the prosecution of the Work shall be secured and paid for by the Contractor. Permits, licenses and easements for any permanent structures or any permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified.

The Contractor shall provide all notices required by law which bear on the conduct of the Work as drawn and specified. If the Contractor observes that drawings and specifications are at variance therewith, the Contractor shall promptly notify the Owner in writing. If the Contractor performs any Work knowing it to be contrary to any such law, rule or regulation, and without such notice to the Owner, the Contractor shall bear all costs arising therefrom.

Article 23. Protection of the Public, the Work and Property

The Contractor shall provide and maintain all necessary watchmen, barricades, red lights and warning signs and take all necessary precautions for the protection and safety of employees on the Project, of all other persons and of adjacent private and public property. The Contractor at all times shall maintain adequate protection of the Work from loss and damage and shall protect the Owner's property and all persons thereon from injury, damage or loss by reason of any act or omission of the Contractor or any subcontractor.

In an emergency affecting safety, life or the Work or of adjoining property, the Contractor is, without special instructions or authorization from the Owner, hereby authorized to act at the Contractor's discretion to prevent such threatened loss or injury. The Contractor shall also so act if instructed by the Owner.

Any compensation claimed by the Contractor on account of an emergency of this nature shall be determined by mutual agreement and failing which, shall be resolved pursuant to Article 45.

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Article 24. Inspection of Work

The Owner and its representatives shall at all times have access to the Work, and the Contractor shall provide safe and proper facilities for such access and for inspection. However, the mere fact that the Contractor's facilities or Work have been inspected is not to be interpreted as a determination by the Owner that the Contractor's Work is acceptable or that Contract requirements have been waived.

If the specifications, the Owner's instructions, laws, ordinances or any public authority require any item of material, equipment or Work to be specially tested or approved, the Contractor shall give the Owner timely notice in writing of its readiness for inspection. If the inspection is by an authority other than the Owner, the Contractor shall give the Owner notice of the date fixed for such inspection. The Owner shall conduct all inspections promptly. Where practicable, such inspections shall occur at the source of supply.

If any Work should be covered up by the Contractor before examination by the Owner without approval or consent of the Owner, it must, if required by the Owner, be uncovered for examination and properly covered again at the Contractor's expense. Even though the Owner has examined a particular item of Work, the Owner may order re-examination of such Work, and if so ordered, the Work must be uncovered by the Contractor. If such Work is found to be in accordance with the Contract, the Owner shall pay the cost of re-examination and replacement. If such Work is not in accordance with the Contract, the Contractor shall pay such cost.

Article 25. Contractor's Covenants/Supervision and Superintendence

The Contractor shall maintain a competent staff at all times to supervise and perform the Work. The Contractor shall maintain on the Project during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Owner. Directions for contract compliance by the Owner may be given to the superintendent and shall be binding on the Contractor. Directions for contract compliance shall be confirmed in writing upon the written request of the Contractor. The Owner maintains the right to direct the Contractor to increase or modify the method or manner of supervision or superintendence on the Project if it deems necessary for contract compliance.

The Contractor shall use its best judgment and skill in dealing with labor matters, and take all reasonable steps to avoid labor disputes. In the event of any strike or threat of strike, slowdown, featherbedding or other like practices, the Contractor shall apprise the Owner of all relevant facts and implications of the particular labor problem involved, and shall consult in good faith with the Owner in an effort to reach a mutually satisfactory solution to such labor problem and, so far as reasonably possible, to protect the Owner against delays affecting the Work or damage or losses to its other operators.

Article 26. Qualification and Performance of the Contractor's Employees

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

The Contractor shall at all times supply a sufficient number of skilled workmen to diligently pursue the Work. Where required by applicable statutes, codes, rules, regulations and ordinances, all workmen engaged in such Work shall present evidence by certificate or otherwise that they are qualified to do the Work in conformity with such statutes, codes, rules, regulations and ordinances.

Article 27. Changes in the Work

The Owner, without invalidating this Contract, may at any time order extra Work or initiate changes in the Work by altering, adding to or deducting from the Work. If such extra Work or change involves a change in cost or in the time required for completion, the Contract price and Contract performance period shall be increased or decreased in accordance with the terms hereof and the instructions contained in Appendix B to this Contract. The Owner will initiate the change process by issuing to the Contractor the form in Appendix B entitled "Change Order Directive Form" ("CODF"). The Owner shall describe or itemize in the CODF the changes to be made by the Contractor. Upon receipt of the CODF, the Contractor shall complete and submit promptly to the Owner, the "Contractor Change Order Proposal Form" included in Appendix B and include therein an itemized statement of the extension or reduction in the time for completion of this Contract which the Contractor deems reasonable, and the Contractor's calculation of the adjustment in the Contract price resulting from the changes or extra Work. The Contractor's calculation of its proposed adjustment to the Contract price shall be completed in accordance with the form in Appendix B entitled "Instructions For Preparing Change Order Proposal." The Owner and the Contractor both must execute the completed CODF to memorialize a change order. The CODF must be fully executed by the Owner and the Contractor before Work on the changes is begun unless the Owner issues a written order to the Contractor to proceed immediately with the Work identified in the CODF. Where the circumstances require it, the Owner shall have the right to direct the Contractor to use a pricing methodology other than that set forth herein.

In the event the parties cannot agree upon the increase or decrease in the time for completion or in the amount of the Contract price adjustment under this Article 27, then the Contractor shall nevertheless proceed with the Work, including any extra Work or changes, and the dispute shall be settled in accordance with Article 45 hereof. Any dispute as to the amount of a change shall be resolved in accordance with the formula contained in the form attached hereto entitled "Instructions For Preparing Change Order Proposal."

No extra Work shall be performed or change shall be made except by written order of the Owner, and no claim for an increase in the Contract price or an increase in the time for completion shall be valid unless the extra Work or change was ordered in writing.

The Contractor may initiate the change order process under this Article 27 by requesting that the Owner issue a Change Order Directive Form. However, unless the Owner issues a Change Order Directive Form to the Contractor, this Article 27 shall not apply to and shall not provide the basis for a Contractor-initiated change, constructive change or equitable adjustment request, or claims of any nature, including but not limited to claims for changed conditions,

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

· differing site conditions, defective specifications, delay, disruptions, or loss of productivity and efficiency.

Article 28. Warranty and Quality

The Contractor warrants that all goods, materials and services shall: conform to the specifications, drawings, samples or other description agreed to by the Contractor and the Owner; meet the highest industry standards for merchantability and workmanship; be free from all defects; and comply with all applicable laws and regulations. All goods and materials incorporated into the permanent Work shall be new. Such warranties shall survive the Owner's inspections, tests and acceptance for a period of twelve (12) months from the date the Owner issues a Certificate of Final Completion covering the Work. The Contractor's obligations and the Owner's rights hereunder shall remain in full force and effect beyond the twelve (12) month period to cover any defects that are latent or could not have been discovered through reasonable use of the goods or the services provided. If any goods or services performed are defective or otherwise not in conformity with the requirements of this Contract, the Owner, in addition to its other rights including the right to recover direct, consequential or incidental damages, attorney's fees and costs, may reject the same for full credit or require proper correction, replacement or completion thereof at the Contractor's expense. All rejected goods may either be returned to the Contractor at the Contractor's expense, or may be held by the Owner for disposition at the Contractor's risk and expense. The Contractor shall at all reasonable times permit inspection and testing by the Owner of all items, work in process, materials and workmanship covered by this Contract. The Contractor's warranty obligations shall survive termination.

Article 29. Deduction for Uncorrected Work

If the Owner deems it inexpedient to correct Work that has been damaged through the fault or neglect of the Contractor, or that was not done in accordance with the Contract, an amount to compensate the Owner fully for such damage or non-compliance shall be deducted from the Contract price. If the parties cannot agree on the amount of such deduction, it shall be determined in accordance with Article 45 hereof.

Article 30. Correction of Work Before Final Payment

The Contractor shall, within ten (10) days of receipt of written notice, remove from the premises all materials whether incorporated in the Work or not, and take down all portions of the Work, where the Owner has advised the Contractor that such materials or Work fail to meet Contract requirements. The Contractor shall within ten (10) days replace and re-execute the Contractor's own Work in accordance with this Contract and without expense to the Owner and shall bear the expense of making good all Work of other contractors destroyed or damaged by such removal or replacement.

If the Contractor does not remove such Work and materials within ten (10) days after service of written notice, the Owner may remove them and may store the materials at the expense of the Contractor. If the Contractor does not pay the expense of such removal and storage within ten

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

(10) days thereafter, the Owner may, upon ten (10) days' written notice, sell such materials at auction or at private sale and shall pay to the Contractor the net proceeds thereof, after deducting all the cost and expense that should have been borne by the Contractor. Should such cost and expense exceed the auction or sale price, the Contractor shall pay such difference promptly to the Owner upon the presentation of a substantiating invoice by the Owner. The Contractor waives all rights to claim damages or any other remuneration, except as required by law, for sale of materials at auction or private sale. Any dispute under this Article shall be determined in accordance with Article 45 hereof.

Article 31. Inspection and Correction of Work After Final Payment

Neither inspection by the Owner or its representative, nor the Owner's Certificate of Final Completion or final payment, nor any provision in this Contract shall relieve the Contractor of liability for providing faulty materials or workmanship.

Article 32. Owner's Right to Terminate Contract for Cause

Any of the following reasons shall provide the Owner with a basis for terminating the Contractor's Contract for cause: (1) any proceeding is instituted by or against the Contractor seeking to adjudicate it as bankrupt or insolvent, or seeking liquidation, winding up, reorganization, arrangement, adjustment, protection, relief or composition of its debts under any law relating to bankruptcy, insolvency or reorganization or relief of debtors or seeking the entry of an order of relief or the appointment of a receiver, trustee or other similar official for it or any substantial part of its property; or (2) the Contractor admits its inability or fails to pay its debts generally, or shall make a general assignment for the benefit of its creditors; or (3) the Contractor at any time fails, refuses or neglects to supply enough properly skilled workmen or proper materials; or (4) the Contractor fails to make prompt payments to subcontractors or for material or labor; or (5) the Contractor disregards laws, ordinances or the instructions of the Owner; or (6) the Contractor violates any provision of this Contract; or (7) the Owner reasonably determines that the Contractor has not timely or satisfactorily performed its Contract Work. If the Contractor shall fail to remedy any such default or deficiency to the satisfaction of the Owner within ten (10) days after the Owner's issuance of written notice to the Contractor, then the Owner may, without prejudice to any other right or remedy it may have under this Contract or as a matter of law, terminate the employment of the Contractor for the Contractor's default and take possession of the premises and of all material, tools and appliances thereon and finish the Work by whatever method the Owner deems appropriate and expedient.

If the unpaid balance due on the Contract for Work performed to the date of termination of the Contractor exceeds all loss or damages of the Owner caused in whole or in part by the Contractor's default, including but not limited to, any financial losses or expenses incurred or suffered by the Owner as a result of a delay in completion of the Work and the expense of finishing the Work and compensation to the Owner for the Owner's managerial and administrative services, and attorneys' fees and expenses, then such excess shall be paid to the Contractor within a reasonable time after final completion of the Project. If such loss or damages to the Owner shall exceed such unpaid balance, the Contractor shall not be entitled to payment of

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

the unpaid balance and shall further pay to the Owner all damages incurred by the Owner which were caused in whole or in part by the Contractor. Following termination, the Owner may complete the Contract Work and reprocur the necessary services for completing the Work, and the Contractor shall be liable for any additional damages or costs incurred by the Owner.

Article 33. Owner's Right to Terminate Contract for Convenience (Without Cause)

The Owner may, at any time, terminate the Contractor's services under the Contract for any reason whatsoever or for its convenience by giving the Contractor not less than fifteen (15) days' written notice of termination setting forth the effective date of termination. In the event of such termination, the Owner shall pay to the Contractor the balance due on the Contract price for Work actually performed, accepted and approved by the Owner prior to the effective date of such termination, less payment previously made by the Owner on account thereof and less any damages or loss the Owner may have incurred as a result of the Contractor's performance or conduct. The Owner shall have the right to audit and review all amounts claimed by the Contractor pursuant to this Article. The Contractor shall not be entitled to demand any damages, consequential or otherwise, compensation or indemnity of any kind as a consequence of such termination.

Article 34. Removal of Equipment

In the case of termination of this Contract before completion for any cause whatsoever, the Contractor shall promptly remove any part or all of the Contractor's equipment and supplies from the property of the Owner, failing which the Owner shall have the right to remove such equipment and supplies at the expense and at the risk of the Contractor, without liability of the Owner for any damage to, or loss of the same.

Article 35. Use of Completed Portions

The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding the time for completing the entire Work or such portions may not have expired; but such taking possession and use shall not be deemed an acceptance or approval of any Work not completed in accordance with this Contract.

Article 36. Payments Withheld

The Owner may withhold all or part of any progress or final payment to the extent necessary to protect the Owner from loss or damage on account of:

- a) Damaged or defective Work not remedied;
- b) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor or the Owner;

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

- c) Failure of the Contractor to make payments properly to subcontractors or for material or labor;
- d) A reasonable doubt that this Contract can be completed for the balance then unpaid or within the time specified;
- e) Damage to the Owner's property or the work of another contractor;
- f) Failure of the Contractor to make satisfactory progress or to meet the established schedule or milestones;
- g) The Contractor's violation of any applicable laws, ordinances, rules, regulations, instructions and/or other general regiments; and
- h) Any other penalty, fine, damage or cost incurred or sustained by the Owner or that may be incurred or sustained.

Article 37. Contractor's Insurance

The Contractor shall, for the mutual protection and benefit of both the Owner and the Contractor, procure, pay for and maintain in full force and effect, at all times during the performance of the Work through the Owner's issuance of a Certificate of Final Acceptance of the Work, and for completed operations, policies of insurance issued by a responsible carrier or carriers acceptable to the Owner which afford the following coverages:

- a. Workers' Compensation - Statutory.
- b. Employer's Liability - Not less than \$500,000.
- c. Comprehensive General Liability including Independent Contractors' Broad Form Contractual, Broad Form Property Damage, Personal Injury, Completed Operations and Products coverages (such Completed Operations and Products coverages shall be provided for a period of two (2) years after final completion of the Work and final acceptance by the Owner), and deletion of any exclusion pertaining to explosion, collapse, underground property damage, radiation and pollution hazards. - Not less than \$2,000,000 combined single limit for both bodily injury and property damage.
- d. Comprehensive Automobile Liability including Owned, Non-Owned, and - Not less than \$2,000,000 combined single limit for both bodily injury

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Hired Car coverages.

and property damage.

All policies, with the exception of Workers' Compensation, shall name the Owner, its subsidiaries, directors, officers, agents and employees as additional insureds, and shall expressly provide that the interest of same therein shall not be affected by any breach by the Contractor of any policy provision. All policies shall expressly provide that no less than thirty (30) days' prior written notice shall be given to the Owner in the event of material alteration to or cancellation of the coverages evidenced by such policies. Further, all policies shall contain endorsements waiving the insurer's right of subrogation against the Owner, its subsidiaries, agents and affiliated companies, and their directors, officers, agents and employees.

Upon renewal of each policy, the Contractor shall provide to the Owner a Certificate of Insurance evidencing all of the provisions specified in this Article.

The Contractor will maintain the original of all policies, endorsements and certificates, and provide the Owner with copies of same upon request of the Owner.

Article 38. Indemnity by the Contractor

The Contractor agrees to indemnify, defend and hold harmless the Owner from and against all claims, suits or demands of any kind and description, and from and against all alleged or actual damages, loss, fines or penalties which the Owner or the Owner's property may sustain, incur, suffer or receive and which arise or allegedly arise in whole or in part from the Contractor's performance under this Contract or from any other conduct, actions or inactions by the Contractor. The Contractor's indemnity obligations include, but are not limited to payment of all judgments, legal fees and expenses incurred by the Owner. The Owner's rights and the Contractor's indemnity obligations hereunder shall apply with full force and effect even if the Owner or any third party is or may be liable or responsible in part for the claim, suit, demand, damage, loss, fine or penalty sustained, incurred, suffered, or received. However, the Contractor's indemnity obligation shall apply for the amount and to the extent that the Contractor is at fault for or the cause of such loss or damages. The Owner's rights and the Contractor's obligations hereunder shall survive the expiration or termination of this Contract.

The Contractor's duty of indemnity shall apply with full force and effect even if the Owner provides the Contractor with environmental safety, health and training materials, goods or services or otherwise voluntarily assists the Contractor in protecting people and property and meeting its compliance obligations hereunder. The Contractor acknowledges that any such services provided by the Owner are provided voluntarily and solely for the purposes of assisting the Contractor in protecting the environment and people.

Article 39. Surety Bonds

Unless otherwise provided in writing by the Owner, the Contractor shall furnish a bond covering the faithful performance of this Contract and the payment of all obligations arising

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

thereunder, in such form as the Owner may prescribe and with such sureties as it may approve. If such bond was required by instructions given prior to the receipt of bids, the premium shall be paid by the Contractor; if subsequent thereto, it shall be paid by the Owner. If any change in Work is authorized pursuant to the terms of this Contract, the Contractor will be solely responsible for securing and maintaining bonds reflecting such change.

Article 40. Liens

Where permitted by applicable law, the Contractor shall not file a lien or encumbrance on the property in connection with the Project. Where the applicable law prevents the Owner and the Contractor from agreeing that the Contractor will not file a lien or encumbrance, neither the final payment nor any progress payment shall become due until the Contractor, if required, shall deliver to the Owner a complete release of all liens and claims arising on account of labor, materials, machinery or equipment in respect of which such payment is to be made and an affidavit that so far as the Contractor has knowledge or information, the releases include all the labor and materials for which a lien could be filed. The Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner to indemnify the Owner against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall pay to the Owner all monies that the Owner may be compelled to pay in discharging such a lien, including all costs and attorneys' fees.

Article 41. Assignment

The Contractor shall not assign or sublet this Contract in whole or in part, nor shall the Contractor assign any monies due or to become due it hereunder, without the prior written consent of the Owner.

Article 42. Coordination of Work

The Contractor shall conduct and coordinate all Work on the Project so as to cause no interference when possible, or a minimum of interference when such interference is unavoidable, with the Owner's activities and operations. Where interference with the Owner's operations becomes absolutely necessary, permission shall be requested by the Contractor not less than seventy-two (72) hours in advance.

When other contractors or the Owner's personnel are working on the Project on the immediate premises, the Contractor agrees to so schedule the Contractor's Work so as not to make it necessary for the Contractor to damage or otherwise alter any Work that has been completed by such other persons. If the Contractor fails to do so, then the Contractor shall replace or repair the damaged Work at the Contractor's own expense and in a manner satisfactory to the Owner.

If any part of the Contractor's Work depends upon the proper execution of the Work of any other person, the Contractor shall inspect and promptly report in writing to the Owner any defects in such Work that render it unsuitable for such proper execution and results. The

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Contractor's failure to so inspect and report in writing shall constitute an acceptance of such other Work as fit and proper for the reception of the Contractor's Work.

Article 43. Subcontractors and Suppliers

The Contractor will not employ any subcontractor without the prior written approval of the Owner, and the Contractor agrees to be responsible for any failure by the subcontractor to comply with the terms and conditions of this Contract which are in any way applicable to such subcontractor. Nothing herein shall be deemed to create a contractual relationship between any such subcontractor and the Owner or provide a basis for any claim by a subcontractor against the Owner.

All of the Contractor's subcontractors and suppliers shall be apprised of the terms and conditions of this Contract and shall be held liable, accountable for and subject to these terms and conditions in their own subcontract work and supply contracts to the same extent and degree that the Contractor is or would be liable, accountable for and subject to these terms and conditions in its Contract Work. It shall be the Contractor's duty to ensure that its subcontractors and suppliers accept and comply with the terms and conditions of this Contract and the Contractor shall supply to the Owner evidence of such compliance in a form acceptable to the Owner or provide a basis for any claim by a subcontractor against the Owner.

Article 44. Contractor Claims

If the Contractor is delayed, disrupted or interfered with or suffers damage or loss of any kind at any time in the progress of the Work by an act or neglect of the Owner, or a separate contractor employed by the Owner, or by changes or alleged changes ordered in the Work, or by an event giving rise to a claim of any nature (except changes that the Owner initiates under Article 27 above), or by a force majeure event (as defined in Article 51), then the Contractor's sole remedy against the Owner shall be the award of a change order extending the Contract performance period for such reasonable time as the Owner may determine. All claims for extension of the Contract time shall be made in writing to the Owner no more than twenty-one (21) days after the occurrence of the event giving rise to the claim, otherwise they shall be waived. An extension of the performance period of the Contract, to the extent permitted by the Owner, shall be the Contractor's sole and exclusive remedy from and against the Owner for any and all damages, losses, expenses or costs (consequential or otherwise) sustained by the Contractor in connection with or arising from changes or alleged changes, delays, suspension, acceleration, hindrance, obstruction, unanticipated or differing site conditions, costs, duration-related economic injury, loss of productivity, extended home office overhead or any damages or expenses of whatever type and amount to the Contractor. The Contractor hereby waives its rights to claim and be compensated for monetary damages, losses, expenses or costs (consequential or otherwise) in connection with, or arising from such events or circumstances. This Article shall not preclude the Owner from recovering from the Contractor all direct, consequential or other damages it may sustain, including but not limited to repurchase costs that are caused by or arise in any way from the actions of the Contractor, its subcontractors or any of their officers, agents, affiliates or employees.

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Article 45. Disputes

Claims, disputes or other matters in question between the parties to this Contract shall first be subject to mediation before arbitration. A demand for mediation shall be made within thirty (30) days after one party has notified the other party in writing that a dispute or claim has arisen. After the expiration of the thirty (30) day period, the parties may nevertheless agree in writing to submit the claim or dispute to mediation. Any mediation shall be held in accordance with the Construction Industry Mediation Rules of the American Arbitration Association in effect when the dispute arises, unless the parties mutually agree otherwise. The mediation shall take place at a mutually convenient location in the city closest to the Owner's facility originating this Contract. Demand for mediation shall be filed in writing with the other party to this Contract and with the American Arbitration Association. Any dispute or difference arising out of, or in connection with, this Contract which cannot be amicably settled between the parties by mediation shall be finally settled by arbitration under the Rules of Construction Arbitration of the American Arbitration Association. The arbitration shall take place at a mutually convenient location in the city closest to the Owner's facility originating this Contract. The resulting decision of the arbitrators shall be final and binding on the parties. Judgment upon any award rendered by the arbitrators may be entered in any court having jurisdiction thereof. In no event shall the demand for mediation or arbitration be made after the date when institution of legal or equitable proceedings based upon such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

Article 46. Title

Title to all Work completed or in the course of construction shall be in the Owner; and title to all machinery, equipment and materials to be incorporated in the Work shall be in the Owner as soon as they are delivered on the site of the Project.

Article 47. Technical Information

The term "technical information" as used in this Contract includes, but is not limited to, technical data, reports, models, drawings, specifications, operating manuals, designs, computations, formulas, apparatus, processes, patentable or unpatentable inventions and other engineering data. The Contractor agrees to accept the Owner's decision as to whether any particular information is technical information which has been made or conceived under this Contract.

It is understood that in the course of the Contractor's performance hereunder, the Contractor may learn or have access to technical information of the Owner. Unless otherwise required by law, the Contractor agrees that it and its personnel will keep in confidence all such technical information of the Owner and will not use or disclose the same without the Owner's written consent, either during the term of this Contract or at any time thereafter.

The Contractor agrees to disclose to the Owner all technical information made or conceived by it or its personnel in performance, or resulting from performance, under this

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

Contract. The Contractor agrees that all such technical information or inventions made or conceived by it or its personnel shall become and remain the free and unrestricted property of the Owner and that the Contractor shall assign or cause the same to be assigned to the Owner. The Contractor agrees that it and its personnel will keep in confidence all such technical information made or conceived by the Contractor or its personnel and that the Contractor and its personnel will not use or disclose the same without the Owner's written consent, either during the term of this Contract or at any time thereafter.

The Contractor agrees, upon the request and at the expense of the Owner, to make or cause its personnel to make applications for patents in such countries as the Owner may designate on those of the aforesaid assigned technical information or inventions which the Owner believes to be patentable and to assign all such applications to the Owner or its order; and to give the Owner, its attorneys and solicitors all reasonable assistance in preparing such applications, and in prosecuting such applications in the patent office or offices involved and in defending and enforcing any patent that may be issued upon any such application; and to execute all papers that may be reasonably required in the prosecution of such applications or to vest in the Owner or its assigns said inventions, applications and patents.

Article 48. Cleaning Up

The Contractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by the Contractor or the Work. At the completion of the Work, the Contractor shall remove all of its rubbish, tools, scaffolding and surplus materials from and about the site and the Contractor shall leave the Work "broom clean" or its equivalent, unless more exactly specified.

Article 49. Adaptability of Plans and Specifications

Except in the case of patented products for which there is no adequate substitute, the Contractor will not, without the prior written approval of the Owner, prepare any drawings or specifications or do any engineering or planning for the prospective use or installation of any tool, piece of equipment, or material in the Work which is of such a character that such drawings, specifications, engineering or planning could not be used with equal facility in connection with the product of all or most manufacturers of such tools, equipment or materials, or any substitute therefor.

Article 50. Engineering Approval

The Contractor agrees to order no material or equipment and to do no actual construction, and to permit no Work to be done by any subcontractor or supplier of materials or equipment until the drawings relating thereto, the lists and specifications of materials, the equipment to be used and the supplier have been approved by the Owner. During construction, the Contractor shall make no substitution of material without the prior written approval of the Owner.

Article 51. Force Majeure

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

"Force majeure" shall be any cause beyond the control of the parties hereto which they cannot reasonably have foreseen and guarded against. Force majeure includes but is not limited to, acts of God, labor disputes, financial crises, fires, riots, civil commotions or civil unrest, incendiarism, interference by civil or governmental authorities, and acts of war (declared or undeclared). Should any dispute arise between the Owner and the Contractor regarding a force majeure event, such dispute will be resolved pursuant to Article 45 of the Contract.

Article 52. Notice

Written notice shall be deemed to have been duly served if delivered by hand or sent by certified or registered mail, in each case to the address or addresses of each party set forth on the first page of this Contract and to the attention of the facility, plant, or contract manager as appropriate. Also, where written notice is required under the Contract from the Contractor to the Owner, the Contractor shall also send separate notices to the Owner's Plant Manager, Project Manager and Environmental Manager at the plant address set forth on the first page of this Contract. Each party shall advise the other in writing of any applicable address change.

Article 53. Governing Law

This Contract including all Contract Documents as well as performance and all disputes hereunder, shall be governed by and construed in accordance with the laws of the state or commonwealth where the Owner receives the beneficial use of the Work. The Owner shall be deemed to receive the beneficial use of the work at the permanent location where the structure or facility is being or will be constructed.

Article 54. Entirety Clause/Waiver

The terms and conditions of this Contract constitute the sole, exclusive and entire agreement between the Owner and the Contractor. Any modifications must be set forth in writing and signed by the Owner's and the Contractor's duly authorized representatives. If any provision herein is held to be invalid by any competent court, the remaining provisions of this Contract shall survive and remain in full force and effect. Any waiver by the Owner of any term, right or obligation under this Contract shall not be construed as a waiver for all purposes or for all subsequent opportunities for performance under this Contract.

**"FIXED PRICE" CONSTRUCTION OR REPAIRS CONTRACT
(FORM FP-10/97)**

IN WITNESS WHEREOF, the parties by their duly authorized representatives have executed this Contract and entered into this Contract on the dates set forth below. The date provided below by the final signatory to this Contract shall be the effective date of this Contract.

_____, **CONTRACTOR**

By: _____

Print Name: _____

Address: _____

Title: _____

Date: _____

_____, **OWNER**

By: _____

Print Name: _____

Address: _____

Title: _____

Date: _____

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 insure 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 insure:
 - 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 The following airborne fiber levels have been established for IH to use as grounds for stoppage of abatement work or and/or ordering immediate clean up of all area

A. When air samples reveal 0.20 F/CC in containment IH may warn Contractor of high levels and may stop work if he continues to exceed 0.20 F/CC in containment.

B. When air samples reveal 0.01 F/CC inside clean room or during load-out IH shall stop work and insure proper clean-up procedures are used.

C. Any time air samples reveal air levels of greater than 0.01 F/CC outside regulated area, work must stop until corrective action is taken.

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.

- recommendation will be accepted).
2. Name of contact person on at least one on going abatement project.
 3. Notarized statement that offerer's firm or company performing work for the past three (3) years has not received any notice of violation regarding compliance with any applicable asbestos law. If notice of violation has been received by the offerer, circumstances involved should be described in the notarized letter for consideration by the Owner and its Consultant.

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: Remove and dispose of asbestos containing material described in *page 12 in SECTION 01010 item 1.03 (B)* as shown on drawing AA-1. Price includes all work specified in the plans, specifications and any addendum.

Dollars \$ _____

UNIT PRICES: Additive/Deductive Unit Prices

ACM THERMO removal Full Containment	\$ _____ per LF	_____ Dollars per LF
ACM Tank Removal	\$ _____ per SF	_____ Dollars per SF
ACM THERMO removal glovebag procedure	\$ _____ per EA	_____ Dollars per EA

Respectfully submitted:

(Firm Name)

By

(Authorized Signature)

(Title)

Firm's Address: _____

Seal _____

Phone (____) _____

PROJECT SCHEDULE ASARCO Power House

ACTIVITY	DATE AND TIME	LOCATION
Advertisement	BY INVITATION ONLY	BY INVITATION ONLY
Bid Advertisement	By invitation only	By ASARCO
Pre-bid walk-thru	April 29 th , 1999 10:00 a.m. (MDST)	ASARCO 2301 Paisano El Paso, Texas
Bids Due	May 11 th , 1999 11:00 a.m. (MDST)	Sun City Analytical 1409 Montana El Paso, Texas
Bids Open	May 11 th , 1999 11:00 a.m. (MDST) Public Opening	Sun City Analytical 1409 Montana El Paso, Texas
Contract Award	TBA	
Pre-Construction	TBA	
Begin Project	June 1, 1999 8:00 a.m. (MDST)	ASARCO 2301 Paisano El Paso, Texas
Project Complete	June 25, 1999 3:30 p.m. (MDST)	ASARCO 2301 Paisano El Paso, Texas
Final Acceptance	June 25, 1999 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, removal of ACM pipe and fitting insulation, tank insulation, debris. (using full containment or glovebag procedures) 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 or fiberglass fibers in excess of the shown in these specifications.
 - C. The Contractor shall insure that no asbestos contamination occurs outside any containment erected.
 - D. The Contractor shall insure that all asbestos waste is disposed of in accordance to these specification and all applicable laws. All construction waste contaminated with asbestos containing waste from this project shall be disposed of in an EPA approved landfill.
 - 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 insure that all special precautions, as stated in these documents, have been taken to protect electrical motor control centers and other electrical equipment on the first floor work area.
- 1.03 Scope of Work:
- A. Remove asbestos from the areas shown at the pre-bid conference, in the drawings, 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:

- 1. Removal and disposal of asbestos containing THERMO pipe Insulation, flue insulation, tank insulation, cement insulation from areas identified on the plans and specifications (please refer to drawing AA1). Price includes all work specified in the plans, specifications and any addendum.
- 2. The Contractor is responsible for removing the metal jacket covering over pipe and tank insulation. Contractor is responsible for removing and replacing metal floor grading to access piping and decontamination under certain motors or pumps. These areas shall be shown at the mandatory walk through.

3. In some areas the pipes are at a distance of 15 feet or more above the floor level. The Contractor shall insure the proper OSHA fall protection requirements are met.
4. The following is an approximate quantities:

POWER HOUSE

- a. 2,350 l.f. of thermo pipe insulation
- b. 880 s.f. of tank and large valve insulation
- c. 360 s.f. of flue insulation.
- d. 50 s.f. cementitious material
- e. 125 large fittings
- f. 253 small fittings
- g. 700 s.f. duct insulation.
- h. 200 l.f. tunnel insulation
- i. 30 l.f. pipe insulation in pump house

TUNNEL

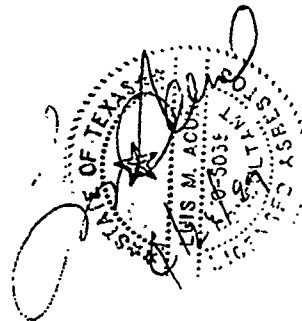
- a. 180 l.f. of thermo insulation and decontamination of tunnel.

PUMP HOUSE

- a. 60 l.f. of thermo insulation on pipes inside the pump house and outside the pump house.

- C. Additive/Deductive Unit Prices for work described on the specifications for **Asbestos Abatement at ASARCO Power House**. 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.

END OF THIS SECTION



SECTION 01030 SPECIAL PROCEDURES OR CONDITIONS

1.01 The ASARCO Power House

A. Before beginning abatement the Contractor shall do the following:

1. Insure 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 voltage power boxes are located below piping in certain areas and shall be protected against water damage.*
3. Obtain written approval from the Building Owner representative before beginning work.
4. Minimum respiratory protection necessary for all asbestos removal at this project site shall be PAPR.

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 insure they are registered at the front gate prior to entering the plant.*
- b. *Contractor shall insure 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 June 1st, 1999 and be completed by June 25th 1999.*

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. Site security personnel shall ensure that air filtration equipment is operational at all times, shall restrict unauthorized entry into the regulated area and ensure that the containment is intact at all times. Site security personnel shall keep a daily log of all events.

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. All personnel on job site shall know where a telephone is located and what the emergency phone number are.
- 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 THE ASARCO POWER HOUSE SUPERVISORY PERSONNEL.

- 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. To schedule this course, contractor shall contact 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 barred from entering the premises.

1.12 Noise Hazard

- A. ASARCO, Inc. has designated the Power House as a high noise area. This project involves working around this high noise area. Contractor shall, at no cost to its employees, provide hearing protection throughout the duration of this project.
- B. The owners representative has the authority to enforce this hearing protection program.

1.13 High Heat and High Pressure Steam Line Hazard

- A. *The project involves working around high pressure steam lines with super heated steam. Contractor shall insure that all personnel are made aware of the dangers of working with high pressure steam and super heated pipes. The areas where the contractor are working will be shut off, however there are other piping systems still active inside the working areas. Contractor shall tag this pipes and insure that all employees do not disturb these pipes.*

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 insure 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.

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 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 insure 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.
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.
- 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.
 1. Proof they have attended ASARCO orientation:

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. 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; Final 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

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 of the building 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. Tunneling - 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. Proof of Asbestos Abatement experience:

1. Documentation of at least 3 years experience using OSHA, EPA, 763 AHERA regulations (letters of recommendation will be accepted).
2. Name of contact person on at least one on going abatement project.
3. Notarized statement that offerer's firm or company performing work for the past three (3) years has not received any notice of violation regarding compliance with any applicable asbestos law. If notice of violation has been received by the bidder, circumstances involved should be described in the notarized letter for consideration by the Owner and its Consultant.

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.
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. Proof that notice has been submitted for permission to dump waste at EPA approved Landfill.
- 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. Glove bag.
5. Warning signs, labels and barrier tape.
6. Disposable clothing.

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 be 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 insure 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 of 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.
- 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 Contractors 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 Contractors'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 Contractors 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 sampled was analyzed.
- H. All personnel samples for asbestos shall be in accordance with 29 CFR 1926.1101 and as specified in this manual. The Contractors 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.

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 used for reference in establishing clearance criteria. The baselines 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 bag 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 participant 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

ASARCO ELP 0013056

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 designate 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 personnel.
- 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 Contractor 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 may use the toilets facility of ASARCO. ASARCO has a designated break and shower facility available for use by contractor personnel. The contractor shall be responsible for maintaining this facility clean.. Contractor shall lose privilege of these facilities if they are not kept clean at all times. Contractor shall provide chemical latrines whenever the ASARCO facilities are not available.

END OF THIS SECTION

SECTION 01513 AIR FILTRATION SYSTEM

1.01 Air filtration system

- 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.

Total CFM = Volume of work area / 15 min

(Total M³/min = Volume of work area / 15 min)

Number of units = Total CFM / 80% capacity of unit

(Number of units = [Total M³/min] / [80% 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 Mutal (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 performed 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 insure 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

All poly used on this project shall be limited to certified fire retardant brands.

- 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 areas have high voltage power boxes below the ACM piping that shall be protected against damage. Contractor shall be responsible for all damages and monetary losses due to power outages caused by damaging electrical equipment. All electrical equipment below work area are going to remain live. Provide temporary power and lighting. Insure 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 all movable objects within the work area using a HEPA filtered vacuum and/or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the work area and carefully stored in an uncontaminated location. This shall be done with strict coordination with Industrial Hygienist (IH).
- E. Preclean all fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery behind grills or gratings where access may be difficult but contamination significant. After precleaning, enclose fixed objects in 4 mil polyethylene sheeting and seal securely in place with tape.
- F. Cover floors in the work area 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.
- G. 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.

- H. 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. (Vinyl sheeting may be used for improved traction on floors.)
- I. Cover walls in the work area with two (2) layers of 6 mil fire rated polyethylene sheeting. They can be decontaminated by using HEPA vacuums and wet cleaning techniques. Walls with mortar joints (i.e. tile) are considered porous. In addition, openings through these walls to uncontaminated areas of the building must be sealed.
- J. Walls shall be covered with two layers of 4 mil polyethylene sheeting. 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.
- K. Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This will require additional support/attachment when air filtration ventilation systems are utilized.

1.02 Fire Protection

A. General Requirements:

1. The Contractor shall employ his supervisor or a designated safety control officer to provide training to the workers of the proper use of fire extinguishers, implementation of Fire Safety Program and proper evacuation of the containment area.
2. Training shall meet the minimum requirements of OSHA 1926.150(a)(5).
3. All fire protection equipment shall be in place before any preparation or removal of asbestos will be allowed. Such equipment shall be clearly identified with an appropriate signs.
4. All combustible rubbish, including bagged asbestos, shall be removed from the containment on a daily basis. Absolutely no bulk debris shall be allowed to remain in the containment over night.
5. During demolition or alterations, existing sprinkler installations shall be retained in service as long as practicable.
6. Contractor shall provide a safe means of egress from fire and any type of emergencies.

B. Work Area:

1. Polyethylene used on this project shall be limited to certified fire retardant brands.

Material Safety Data Sheets (MSDSs) shall be maintained on the site for the inspection by any outside agencies of jurisdiction to prove the presence of this type of poly.

2. Smoke/heat detectors shall be adequately spaced about the containment and/or work area. A minimum of one per 1000 square foot of floor space is required. One shall be placed 15 feet from the decontamination station.
3. The Contractor shall provide a 4A/60BC chemical extinguishers for every 1000 square feet, or fraction, of containment area (IAW Texas Department of Health regulations 295.60 (m)(1). All Workers shall be with-in a maximum of 100 feet travel distance of a fire extinguisher.
4. All air filtration units shall be able to be switched off from a single switch located at the control center. In the event that a fire starts or a smoke and/or heat detector is activated, the air filtration units shall be immediately switched off. The machines shall remain in the off mode until such time as it has been verified that a fire does not exist.

C. Cleanroom and/or Decontamination Unit

1. A smoke and/or heat detector shall be located in the cleanroom area.
2. 4A/60BC chemical extinguishers shall be located at either end of the decontamination unit.

1.03 Viewing Inspection Window

- L. Where feasible, a minimum of one clear 1/8 inch(3.2mm) thick acrylic sheet measuring approximately 18" x 24" (450mm x 600mm) may be installed by the Contractor as a viewing inspection window at eye level on a wall in each containment enclosure.
- B. All such windows shall be sealed leak-tight with industrial grade duct tape.

END OF THIS SECTION

SECTION 01528 ENTRY INTO CONTROLLED AREAS

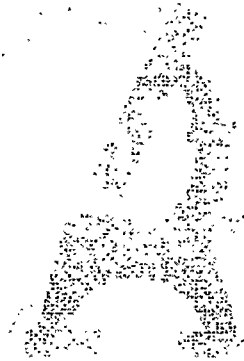
1.01 Entry and Exit of Work Area

- 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



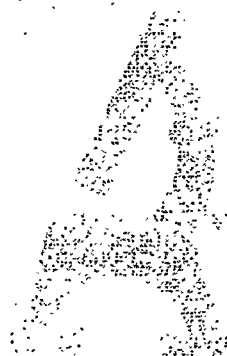
SECTION 01560 RESPIRATORY PROTECTION

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. Air purifying respirators (half-mask or full-face) with high efficiency particulate (HEPA) filters shall **ONLY** be used for pre-abatement activities, and when removing waste from outside the containment to disposal storage, and/or when loading and unloading the covered waste disposal storage facility.
- E. **PAPR shall be the only respirator worn when OSHA Class I asbestos abatement project are performed.** Type C supplied air or SCBA with full face piece operated in a pressure demand mode shall be used inside any containment utilizing pressure differential to maintain inward air flow. The Type C air supply must also have an auxiliary self-contained SCBA operating in a pressure demand mode, or high efficiency particulate (HEPA) filter which provides a 15 minute escape time in the event of compressor failure or malfunction. See Section 01030 for respiratory protection specified.
- 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 worksite except in established locations outside the work and containment areas, and enclosures.
- H. 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.
- I. 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 manometric 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 position during preparation activities.
- E. Re-establish all work areas and electrical system in proper working order. Remove contaminated HVAC system filters and dispose of as asbestos contaminated waste. Install new filters in HVAC systems.
- 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 insure 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 performed 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 insure completion of cleanup operations in order to commence clearance a monitoring.
- B. The Contractor shall then arrange for an Industrial Hygienist to sample the air in the work are 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) respectfully. 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. Aggressive sampling shall be performed with portable fans circulating air in the work area to simulate actual use conditions. The number of fans necessary for circulating air shall be determined by the Industrial Hygienist (IH). Air filtration ventilation units shall not be utilized for this purpose but must remain on at all times until clearance has been achieved.
- F. All samples at all locations shall indicate concentrations of airborne fibers less then 0.01 f/cc for passing of the pre-clearance testing and <70 structures per millimeters squared for final TEM clearance.
- G. The final clearance shall be a two step process, a pre-final and a final-final set of air samples.
 - 1. Pre-final samples shall be taken when the Industrial Hygienist (IH) on site declares area is ready for final testing. The process for this testing shall be with one layer of poly containment, decon-station, and air filtration system still in place. When samples are analyzed and all samples are found to be <0.01 f/cc then contractor shall proceed to step 2. (final-final testing).
 - 2. Containment poly shall be removed, but decon-station, air filtration machine, and critical barriers shall remain in place and air tight. Industrial Hygienist (IH) shall take air samples in area and when air samples are analyzed and found to be <0.70 s/mm², the Industrial Hygienist (IH) may declare area clean.

- H. When contractor fails to achieve clean air in any of the above said clearance sampling method contractor shall reclean area till samples achieve standards set forth above. Any and all co. 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 responsible for disposal of all the asbestos waste. The disposal 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 required to enter into ASARCO. Highlight of some rules are as follows:**
 - 1. **Transportation vehicle shall be totally enclosed.**
 - 2. **Contractor shall have empty weight and exit weight recorded through ASARCO weight station.**
 - 3. **Contractor shall provide a bill of ladden along with manifest.**
 - 4. **Vehicle carry proper insurance requirements.**
 - 5. **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 insure 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 insure 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-facepiece, 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

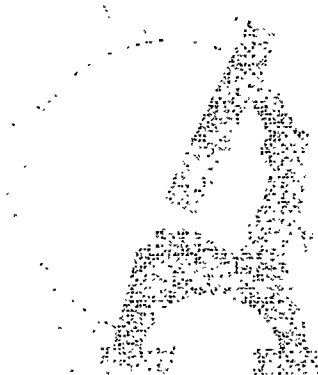
NOTE: No asbestos removal shall be done without written authorization from the Industrial Hygienist (IH) on site. Contractor shall commence all asbestos removal with PAPR or Type C supplied air, with Grade D air, unless substantial historic data (in compliance with OSHA 1926.1101) is presented to the IH prior to the pre-constructive meeting. This historical data shall clearly show that the current project is compatible with the prior asbestos project and that the air counts indicate that the respirator chosen for the asbestos removal provides adequate worker protection. Under no circumstances shall any respirator be less than a PAPR respirator for any friable asbestos removal. Where there is no data to support the down grading of the respirator, the IH on site can obtain substantial air monitoring data to allow the contractor to down grade respirator. At anytime the air counts violate respirator protection value, as determined by the onsite IH, the contractor shall upgrade to the respirator the IH so designates.

- 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 containing material with amended water solution, removal encapsulant, or chemical remover 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. (Note: 1) High temperature components such as boilers and pipes may not permit the application of some encapsulants. 2) If insulation or acoustical materials are to be reapplied to the abated area, be certain that the encapsulant selected will permit good adhesion to the substrate. A small area should be tested before application).

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

END OF THIS SECTION



SECTION 02082 GLOVEBAG METHOD OF ABATEMENT

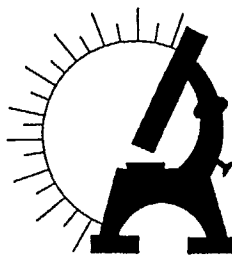
1.01 Procedures

- 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 Glovebag Procedures

- A. The glovebag 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 glovebag shall be seamless at the bottom.
 - 1. Materials necessary but not limited to, shall be:
 - a. glovebag
 - 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 glovebag 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 glovebag. Install all glovebags 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 glovebag shall be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.
- H. Glovebags shall be smoke-tested for leaks and any leaks sealed prior to use.
- I. Glovebags may be used only once and may not be moved. Glovebags shall not be used on surfaces whose temperature exceeds 150° f. Special glovebags shall be used on hot steam lines.
- J. Prior to disposal, glovebags 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



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